



# YOUR **Best Home**™

## GREAT BUYS FOR YOUR

- KITCHEN
- BEDROOM
- LIVING ROOM
- BATHROOM
- HOME OFFICE
- LAUNDRY
- BACKYARD



\$12.99US \$13.99CAN

0 73917 08262 9 04>

APRIL 2021 **CR** **CRG**  
Please display until April 19, 2021

KITCHEN



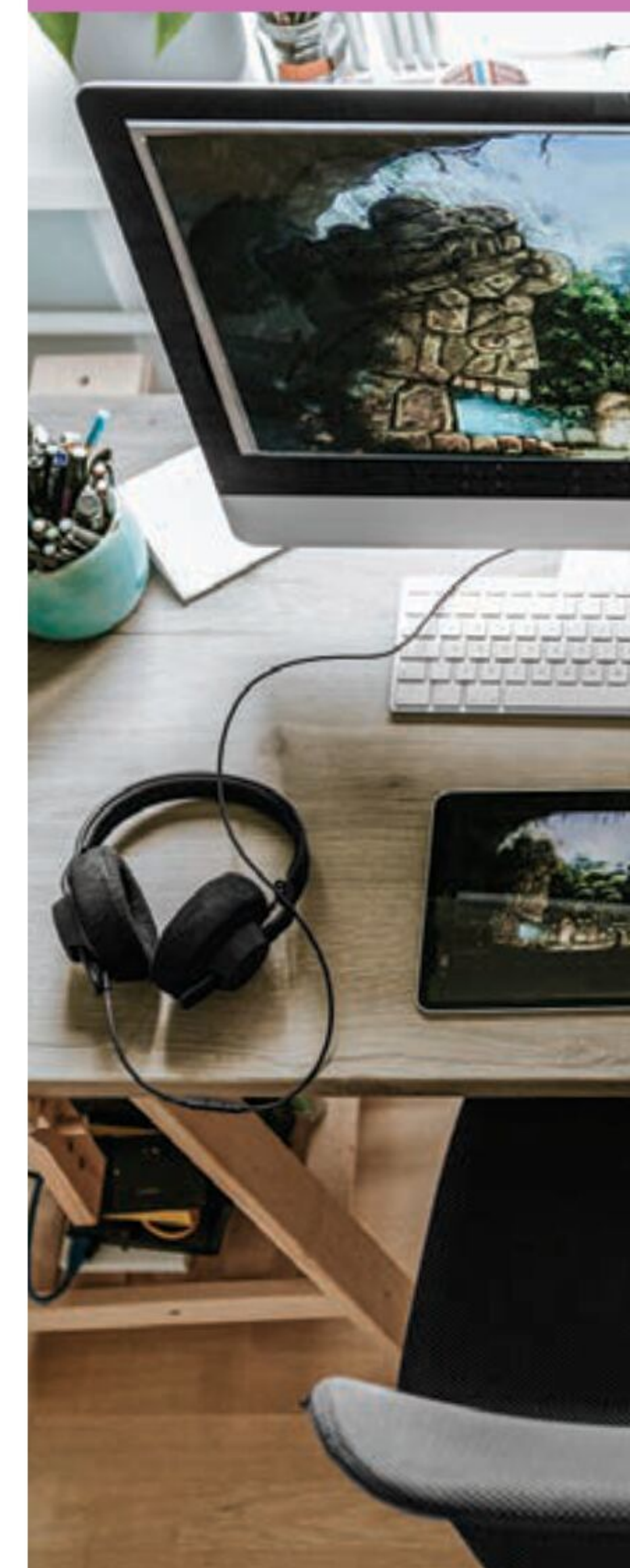
P. 8

BED & BATH



P. 30

TECH & HOME



3 **Updates**

The best wireless chargers, reliable standby generators, top-tested rice cookers, air purifier know-how, and the eight things you should never clean with vinegar. **RATINGS**

KITCHEN

10 **Keeping Food Fresher, Longer**

Storage tips for 14 favorite foods. Plus: organizing your fridge for food safety.

14 **Refrigerators With Plenty of Room**

Need more space to stow your huge grocery hauls? Find the best fit for your needs here. **RATINGS**

20 **Top-Notch Energy-Efficient Dishwashers**

If you could use some help with cleanup duty, there's good news: The top models from our tests get your dishes cleaner—while using less water and energy. **RATINGS**

P. 10



23 **Cooktop + Wall Oven or Range?**

If you're remodeling, consider the pros and cons of trading your range for a cooktop and wall oven combo. **RATINGS**

26 **The Best Meal-Prep Helpers**

Take your home-cooking game to the next level with these countertop appliances. **RATINGS**

BED & BATH

32 **The Sleep-Better Bedroom**

Try these expert steps to easier rest. Plus: top mattress cooling pads. **RATINGS**

34 **Find the Best Mattress for Your Size and Sleep Style**

Whether you're tall or small, sleep alone or with a partner, our extensive tests can guide you to the perfect mattress match. **RATINGS**

39 **Picking the Pillow of Your Dreams**

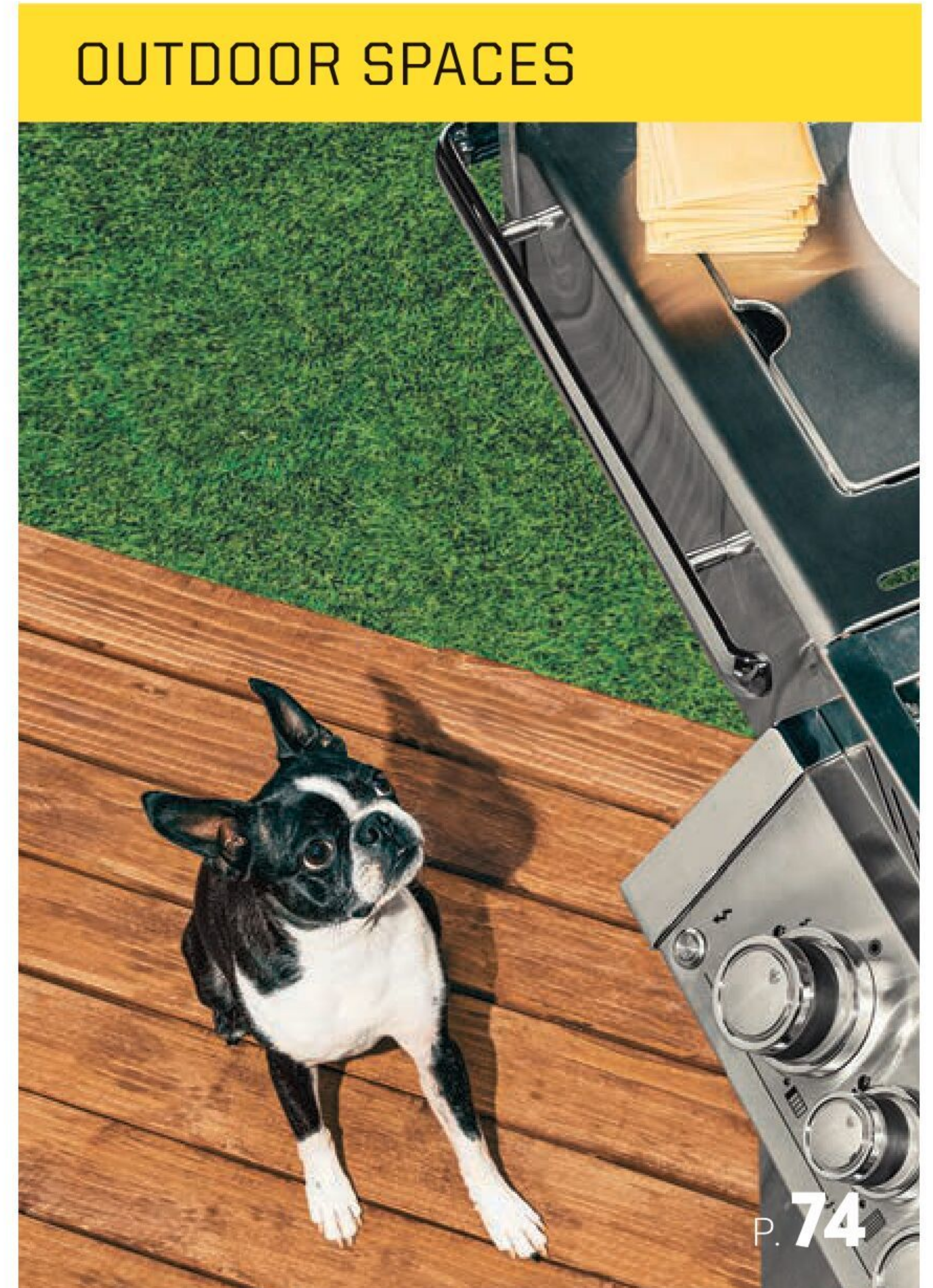
Here's how to choose the right combination of softness and support—and the top picks from our tests. **RATINGS**

40 **5 Things to Know Before Buying Sheets**

Will they shrink? Wrinkle? Fit on an extra-deep mattress? Our ratings help you answer these questions, and more. **RATINGS**

**ON THE COVER**

Photographer: Hulya Kolabas



**42 Royal Flushes**

A new toilet isn't the most glamorous home purchase, but it's one of the most important. We help you decide. **RATINGS**

**44 The Basics on Bidets**

It can save on paper—but is a bidet right for you and your bathroom? Find out here. **RATINGS**

**TECH & HOME OFFICE**

**48 Your Ultimate Smart Home Toolkit**

Make your home safer, more secure, and easier to manage with the latest smart home helpers. **RATINGS**

**56 Set Up a Comfortable Home 'Office' Anywhere**

Learn how to adapt any space for work. **RATINGS**

**58 Outfitting Your Home Gym**

Get the gear you need—on your budget. **RATINGS**

**LAUNDRY & TLC**

**64 Refreshing Your Laundry Area**

The top machines from our tests can help ease wash-day woes. **RATINGS**

**69 The Best Way to Clean Your Floors**

Find the best vacuums, steam mops, and carpet cleaners for every mess. **RATINGS**

P. 82



**OUTDOOR SPACES**

**76 Outdoor Updates That Will Pay You Back**

Spruce up your exterior to improve your home now, and reap resale rewards later. **RATINGS**

**79 Deck Out Your Deck**

Create an outdoor living "room" by upgrading your deck's safety and style. **RATINGS**

**82 The Right Grill for Every Cook**

From burgers to brisket, we have the grill you need for the foods you love. **RATINGS**

**88 The Tools You Need for Easy Outdoor Upkeep**

Use our top-rated picks to keep your yard looking neat and tidy. **RATINGS**

**96 Create a Backyard Theater**

Treat yourself to film al fresco with these winning projectors. **RATINGS**



## Your Home, Only Better

SPENDING EXTRA TIME at home in the past year may have made you a bit more aware of your house's shortcomings. Maybe you suspect that your "office" setup (AKA a chair pulled up to the kitchen table) is what's causing your neck to ache, or your dishwasher is showing the strain of all those home-cooked meals, or you could really use a better hangout setup in your backyard.

You're in luck: Where you have problem areas, Consumer Reports has solutions. Our team of home experts—researchers, engineers, market analysts, reporters, and more—can help you improve every room, and the yard or deck, too. On the pages that follow, you'll find our exclusive ratings and reviews of

over 800 home products, plus buying advice, and cleanup tips.

You can trust us because we're nonprofit and independent: We buy all the products we test, and we don't accept any ads—so we can tell it like it is. We're always on your side, protecting your interests, your safety, and helping you make your home the very best it can be: a haven where you'll be happy to work, play, and live.

—The Editors of  
Consumer Reports

**RATINGS** Overall Scores are based on a scale of 0 to 100. We rate products using these symbols:

❌ POOR   
 ⚠️ FAIR   
 👍 GOOD  
👍👍 VERY GOOD   
 👍👍👍 EXCELLENT

### CONNECT WITH US

**FACEBOOK**  
fb.com/consumerreports  
fb.com/SomosCR

**TWITTER**  
@consumerreports  
@SomosCR

**YOUTUBE**  
/consumerreports

**PINTEREST**  
/consumerreports

**INSTAGRAM**  
@consumerreports

**LINKEDIN**  
/company/  
consumer-reports

# YOUR Best Home™

**President and CEO** Marta L. Tellado

**Senior Vice President, Chief Operating Officer** Leonora Wiener  
**Vice President, Chief Content Officer** Gwendolyn Bounds

**Editorial Director, Print** Ellen Kunes

**Deputy Editor, Print Publications** Amanda Lecky

**Design Director** Matthew Lenning

**Creative Director, Brand** Young Kim

**Associate Design Director** Sheri Geller

**Art Directors** Lisa Slater, Tracy Stora

**Photo Editors** Emilie Harjes, Karen Shinbaum

**Senior Director, Content Development** Glenn Derene

**Deputy Director, Content Development** Christopher Kirkpatrick

**Associate Directors, Content Development** Scott Billings, Althea Chang

**Enterprise Editor** Kevin Doyle

**Senior Director, Content Impact & Corporate Outreach** Jen Shecter

**Special Projects** Joel Keehn, Director; Margot Gilman, Associate

Director; Lisa L. Gill, Rachel Rabkin Peachman, Brian Vines, Deputies;

Ryan Felton, Donna Rosato, Writers

**Editorial Director, Digital** Erle Norton

**Senior Director, Product Testing** Maria Rerecich

**Associate General Counsel** Camille Calman

**Director, Lab Operations** Lilian Kayizzi

**HOME & APPLIANCE:** Eric Hagerman, Content Lead *Editors/Writers:*

Daisy Chan, Mary Farrell, Paul Hope, Sara Morrow, Haniya Rae, Perry

Santanachote, Daniel Wroclawski *Product Testing:* John Galeotafiore,

Emilio Gonzalez, James Nanni, Testing Leads; John Banta, Susan

Booth, Tara Casaregola, Lawrence Ciuffo, Enrique de Paz, Bernard,

Deitrick, Cindy Fisher, Rich Handel, Misha Kollontai, Ginny Lui, Joan

Muratore, Joseph Pacella, Christopher Regan, Frank Spinelli, Dave

Trezza, Michael Visconti

**Chief Scientific Officer** James H. Dickerson

**Food Safety** James E. Rogers, Director; Sana Mujahid; Tunde Akinleye,

Amy Keating

**Content Operations** Robert Kanell, Director

**Copy Editing** Leslie Monthan, Copy Chief; Noreen Browne,

Alison France, Wendy Greenfield

**Fact Checking & Research** David Schipper, Associate Director;

Tracy Anderman, Sarah Goralski, Christine Gordon, Karen Jacob,

Jamison Pfeifer

**Premedia** William Breglio, Associate Director; Eugene Chin, William

Hunt, Anthony Terzo

**Production** Nancy Crowfoot, Associate Director; Eric W. Norlander,

Manager; Letitia Hughes, Terri Kazin, Aileen McCluskey

**Photography** John Powers, John Walsh

**Imaging** Francisco Collado, Mark Linder

**Chief Research Officer** Kristen Purcell

**Consumer Engagement Testing** Charu Ahuja, Director; Samuel

Chapman, Linda Greene, Dana Keester

**Statistics & Data Science** Michael Saccucci, Director; Debasmita Das,

Kristen Dorrell, Dina Haner, Keith Newsom-Stewart

**Survey Research** Karen Jaffe, Simon Slater, Associate Directors; Dave

Gopioian, Kendra Johnson, Debra Kalensky, Martin Lachter, Jane

Manweiler, John McCowen, Adam Troy, Tian Wang, Tess Yanisch

**Consumer Insight** Frank Yang, Associate Director; Selina Tedesco

**Marketing** Dawn Nelson, Senior Director

**Procurement Operations** Steven Schiavone, Associate Director

**Administration** Decarris Bryant, Dawn Yancy Elleby

**VICE PRESIDENTS: Financial Planning & Analysis** JoAnne Boyd;

**Chief Digital Officer** Jason Fox; **Advocacy** David Friedman;

**Chief Intelligence Officer** Esther Han; **General Counsel** Michael

Hubner; **Research, Testing & Insights** Liam McCormack; **Chief**

**Human Resources Officer** Rafael Pérez; **Chief Marketing Officer**

Lauren Stanich; **Chief Social Impact Officer** Shar Taylor; **SVP, Chief**

**Financial Officer** Eric Wayne

**CR**™ Copyright © 2021 Consumer Reports, Yonkers, New York 10703. Published by Consumer Reports, Yonkers, New York 10703. All rights reserved, including the right of reproduction in whole or in part in any form. ISSN: 2766-3612

Manufactured in the United States of America.

# Updates



LEADING THE CHARGE  
**Samsung 15W Qi Certified Fast Charge Wireless Charging Stand \$60**

■ 5/5 CHARGING

■ 5/5 EASE OF USE

2 HR., 30 MIN. CHARGING TIME

**IN THE KNOW**

## THE EASE OF WIRELESS CHARGERS

DESIGNED SO THAT your smartphone simply rests on a pad or stand, wireless chargers allow users to forgo the usual fumble of plugging in a charging cable. But is that convenience

worth buying yet another tech accessory? To find out, we tested six wireless chargers. All are Qi-compatible (Qi is pronounced “chee”)—a near-universal wireless charging standard that works with many smartphones—and support Samsung’s Fast Charge technology, meaning if you have a recent high-end Samsung phone, they should provide even quicker charging.

Our lab technicians evaluated how easy the chargers were to

use. They also measured how long it took for each device to fully charge both an iPhone 11 Pro Max and a Samsung Galaxy S10 (both compatible with wireless charging), then averaged those times. Though there were some differences in charging speeds, all the products powered up the phones in a reasonable amount of time and didn’t short out when sprayed with a small amount of water. (Good to know if your charger lives on a kitchen counter.)

The fastest model by far is the Samsung 15W stand above. The benefit of a stand, rather than a flat pad, is that it’s easier to see notifications on your phone while you charge it. And it features an LED light that makes it easy to see whether your phone is fully charged.

But for a family, a multidevice charger, such as the Anker below, may be best. In our tests, it charged two phones at once in the same amount of time as just a single phone.

CONVENIENT FOR A NICE PRICE

**Samsung Wireless Charger Pad 9W \$40**

■ 4/5 CHARGING  
 ■ 5/5 EASE OF USE

2 HR., 52 MIN. CHARGING TIME



CHARGES TWO PHONES AT ONCE

**Anker PowerWave 10W Charger \$50**

■ 4/5 CHARGING  
 ■ 4/5 EASE OF USE

2 HR., 52 MIN. CHARGING TIME



LONG WARRANTY (UP TO 3 YEARS)

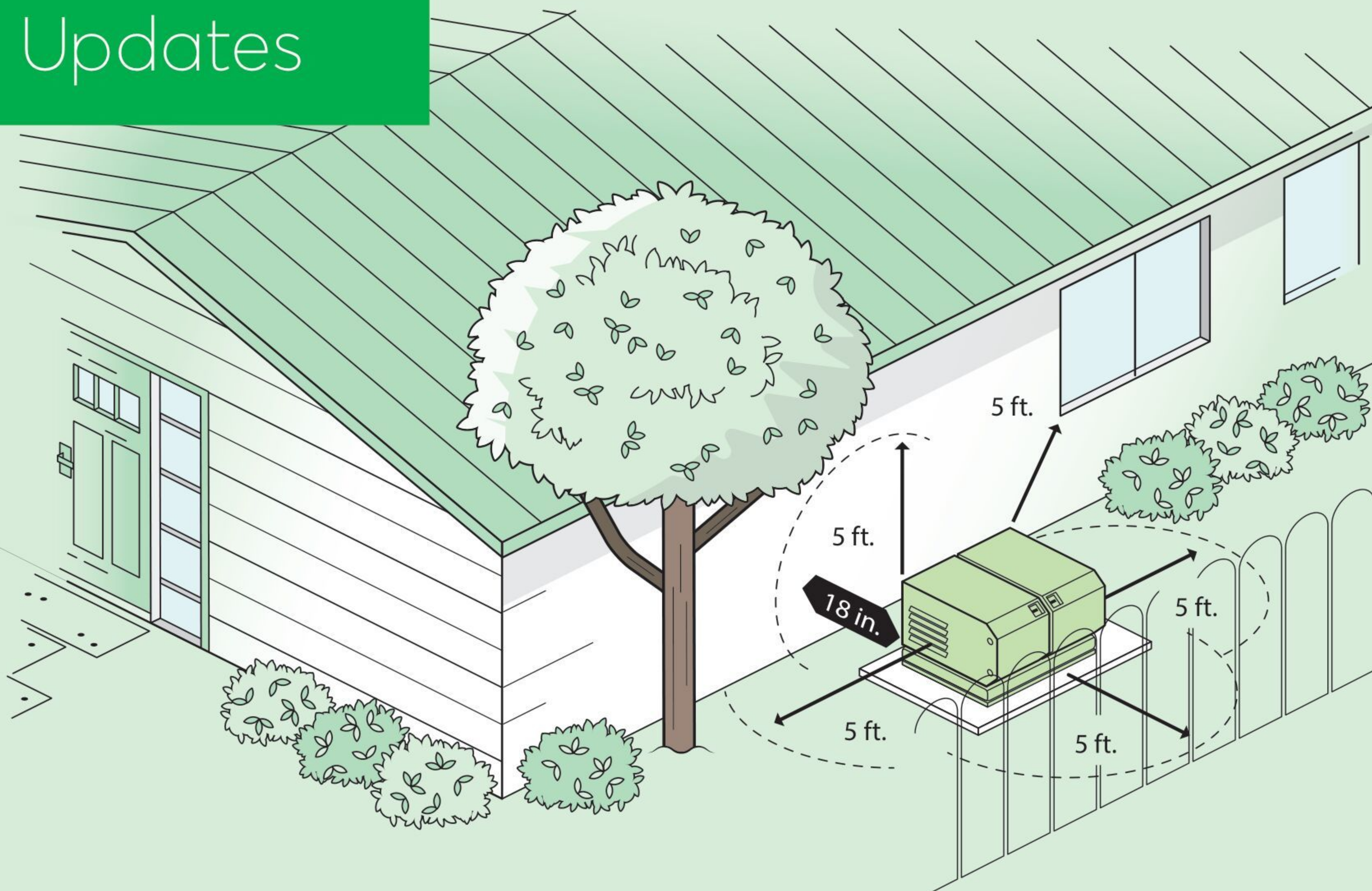
**Belkin BOOST UP Wireless Charging Pad 10W \$40**

■ 4/5 CHARGING  
 ■ 2/5 EASE OF USE

2 HR., 52 MIN. CHARGING TIME



ILLUSTRATIONS: RODRIGO DAMATI



**CLEARANCE FROM HOUSE WALLS/ BUILDING:**  
Minimum of roughly 18 inches

**VERTICAL CLEARANCE:**  
Minimum 5 feet

**CLEARANCE FROM SHRUBS/TREES/ VEGETATION AND FENCES:**  
Minimum 3 to 5 feet

*Guidelines vary slightly by generator model; consult your manual and local building codes.*

## PRODUCT SPOTLIGHT

### HOME STANDBY GENERATORS

WHEN A STORM HITS, home standby generators (sometimes referred to as whole home generators) are the gold standard in residential backup power. In the event of an outage, a standby generator

kicks on automatically, with an output anywhere between 8,000 and 20,000 watts—that’s enough to power everything in your house with ease. But they cost a pretty penny for that convenience: between about \$2,000 and \$4,000. All require professional installation—which can cost as much as the generator itself—and you’ll need a permit from your town.

The majority of standby generators are fueled by either natural gas or propane.

Natural gas versions can run indefinitely, because they connect right to your home’s main gas pipe. Propane-powered versions typically connect to a home’s propane storage tank; with a full 250-gallon tank of propane, most of the generators we’ve tested run anywhere from 5 to 15 days.

CR tests home standby generators by using them to power energy-hogging devices such as space heaters, well pumps, and large window air

conditioners right up to their maximum claimed output. We note whether they deliver steady, constant power—even during surges in demand, like when an air conditioner or well pump kicks on. Use our ratings chart below to see which one might be right for you.

A more affordable option: a portable generator, which costs between \$500 and \$1,200 but can generally power only a handful of essential items. See our picks below.

	OVERALL SCORE	PRICE	POWER DELIVERY	POWER QUALITY	NOISE	EASE OF USE	CLAIMED OUTPUT (WATTS)
<b>STANDBY GENERATORS</b>							
Sized to power an entire house, standby models can typically run quietly for days or weeks without refueling. These models are powered by natural gas (NG)* or liquefied petroleum gas (LPG), such as propane.							
<b>SMALL HOME GENERATORS</b>							
🔋 <b>Champion</b> 100174 <sup>†</sup>	<b>94</b>	<b>\$2,350</b>	⬆️	⬆️	⬆️	⬆️	NG 7,500/LPG 8,500*
✔️ <b>Winco</b> PSS8B <sup>†</sup>	<b>92</b>	<b>\$4,400</b>	⬆️	⬆️	⬇️	⬆️	NG 7,600/LPG 8,400
✔️ <b>Generac</b> 6998	<b>90</b>	<b>\$2,000</b>	⬆️	⬆️	⬇️	⬆️	NG 6,000/LPG 7,500
<b>LARGE HOME GENERATORS</b>							
✔️ <b>Champion</b> 100179 <sup>†</sup>	<b>93</b>	<b>\$3,000</b>	⬆️	⬆️	⬇️	⬆️	NG 11,000/LPG 12,500
✔️ <b>Cummins</b> RS13A <sup>†</sup>	<b>91</b>	<b>\$3,400</b>	⬆️	⬆️	⬇️	⬆️	NG 13,000/LPG 13,000
<b>PORTABLE GENERATORS</b>							
✔️ <b>Dewalt</b> PMC168000	<b>71</b>	<b>\$1,050</b>	⬆️	⬆️	⬇️	⬆️	8,000
✔️ <b>Generac</b> 7675	<b>68</b>	<b>\$1,000</b>	⬆️	⬆️	⬇️	⬆️	8,000
<b>Champion</b> 100592	<b>59</b>	<b>\$750</b>	⬇️	⬆️	⬇️	⬆️	6,250

<sup>†</sup>Price includes transfer switch.



**PRODUCT SPOTLIGHT**

**THE VALUE OF A GOOD RICE COOKER**

STOVETOP RICE SEEMS easy enough—you measure out the rice and water, and set it on the burner. But there are variables that can lead to mushy or burnt rice, including timing, how hot the burner is, the type of pot you use, the tightness of the lid’s seal, and even your kitchen’s humidity level. Rice cookers shrug off all those variables because they’re a sealed vessel with a precisely controlled heat source. The best ones make perfect rice every time with the press of a button—convenient if you regularly make fried rice, arroz con pollo, or plain steamed rice. But our experts wanted to know: Do all rice cookers consistently deliver great rice—and why buy one over a multi-cooker with a rice function?

So we tested six rice cookers

from popular brands, cooking small and large batches of long-grain white rice and long-grain brown rice. A panel of trained tasters then judged each batch in a blind side-by-side taste test. The ideal batch of rice was cooked evenly top to bottom—no mushy or crunchy pockets—with soft, fluffy grains. Then tasters compared the taste from each model with rice made in a multi-cooker. We also evaluated convenience, such as how easy each model was to clean, and the clarity of control settings.

“Most rice cookers perform very well, though some weren’t as good at making brown rice,” says Larry Ciuffo, CR’s lead rice cooker tester. **“But even the lowest-rated rice cookers make better rice than any multi-cooker we’ve tested—and often cost much less,”** he says. And many can also cook oatmeal or other grains. Of course, a dedicated rice cooker can’t slow-cook or pressure-cook meats, so buying one depends on whether grain dishes are a priority for you. At right, see a few of the best rice cookers we tested, as well as a top-rated multi-cooker.



**76**

OVERALL SCORE



PERFECT RICE, BUT PRICEY

**✓ Zojirushi NP-GBC05**  
\$270

■ 4/5 RICE COOKING

■ 5/5 CONVENIENCE

This 3-cup induction model makes great rice but takes its sweet time—almost 45 minutes to cook white rice and 90 minutes for brown rice. Still, it’s the best-performing rice cooker we tested, and the only model we tried that has raised buttons and audio cues for people with visual impairments.

**70**

OVERALL SCORE



BUDGET-FRIENDLY BUY

**✓ Instant Zest 8-cup**  
\$30

■ 4/5 RICE COOKING

■ 4/5 CONVENIENCE

Note that the Zest’s “8-cup” name refers to cooked rice. It turns out white rice in a little over 30 minutes and brown rice in about 60. Though the white rice was cooked through, it was often too sticky. Brown rice had a good texture and a nice bite. It also has presets for making quinoa and oatmeal.

**64**

OVERALL SCORE



BEST FOR SEASONED RICE

**Aroma ARC-954SBD**  
\$40

■ 4/5 RICE COOKING

■ 4/5 CONVENIENCE

White rice takes about 45 minutes, and brown rice about 55 in the Aroma. Some brown rice came out a bit undercooked, and some white rice was slightly mushy. But if you make seasoned rice, you may like using its sauté mode to soften onions or toast spices. It also has presets for quinoa and oatmeal, and a five-year warranty.

**WHAT ABOUT A MULTI-COOKER?**

**82**

OVERALL SCORE



TOP MULTI-COOKER

**✓ Zavor Lux LCD ZSELL02**  
\$160

■ 4/5 RICE COOKING

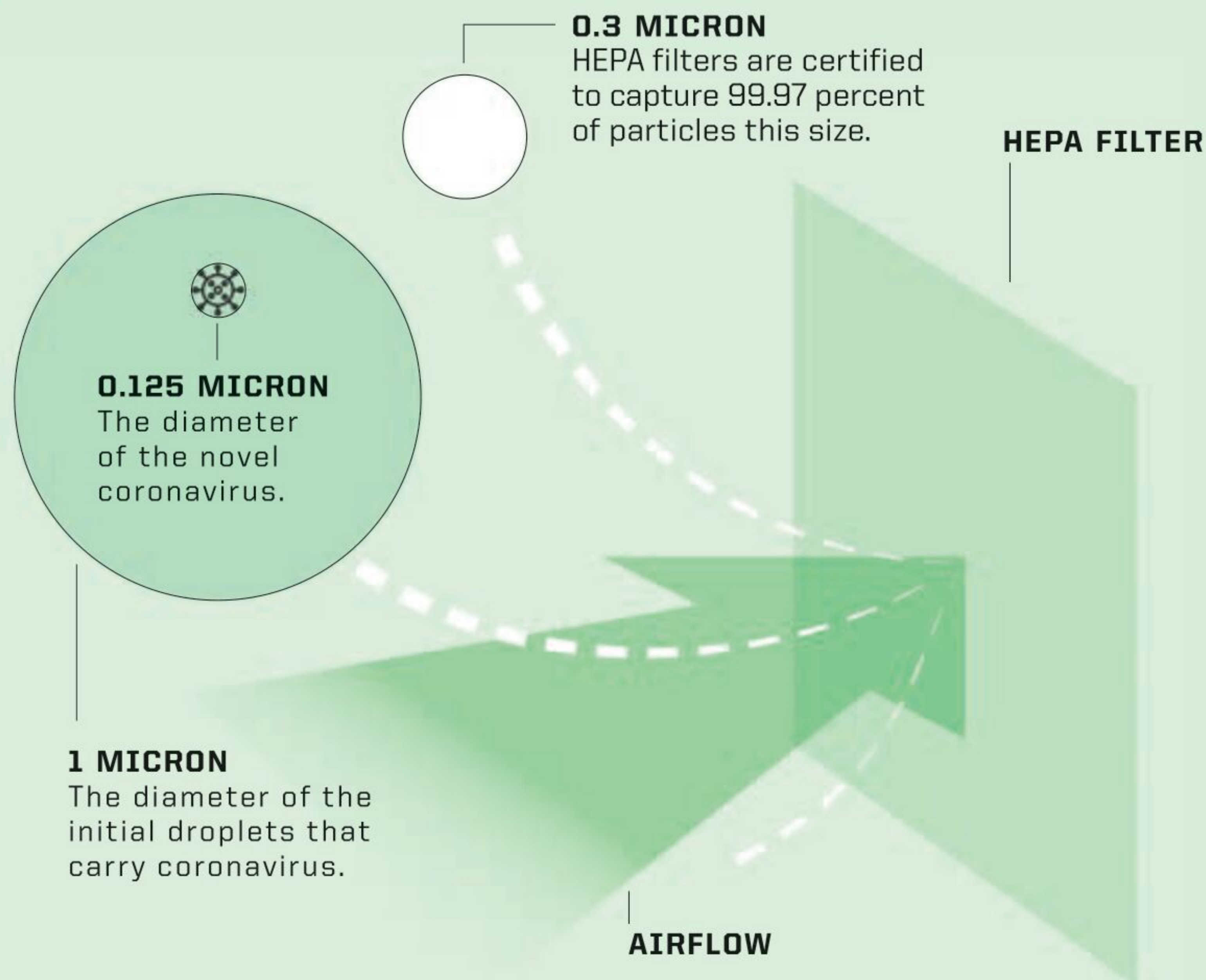
■ 4/5 CONVENIENCE

This 10-function multi-cooker rates Very Good at cooking rice—but it still falls short of the rice made by any rice cooker we tested.\* That said, the Zavor can help with a lot more tasks: It’s Excellent at pressure-cooking and slow-cooking, and Very Good at steaming veggies.

\*We rate different appliances on different scales, so a Very Good rating for rice cooking in a rice cooker is held to a higher standard than a Very Good rating for rice cooking in a multi-cooker. All Access and Digital members can find more at CR.org/rice-cookers.

## HEALTH UPDATE

### CAN AN AIR PURIFIER HELP YOU STAY SAFE FROM THE CORONAVIRUS?



IN ADDITION TO helping filter out indoor allergens and pollutants, air purifiers may be a worthy tool to help prevent the spread of COVID-19 in a few limited scenarios. If someone in your household has COVID-19, for example, running one in their isolation room may help protect healthy caregivers.

“In theory, if an air purifier removes viruses from the air, it reduces concentrations in the room and thus reduces the potential for exposure,” says Linsey Marr, PhD, an environmental engineer and professor at Virginia Tech who specializes in airborne disease transmission, air

quality, and nanotechnology.

Our understanding of how the coronavirus spreads is evolving, but current thinking is that it travels via droplets expelled through coughing, talking, and breathing. Though most of the droplets fall to the ground quickly, some smaller particles may stay in the air for longer—which an air purifier with a high-efficiency particulate air (HEPA) filter may be able to catch.

HEPA filters, which are certified to capture 99.97 percent of particles that are 0.3 micron in diameter, can also catch particles of other sizes, including viruses. The

novel coronavirus itself is 0.125 micron, but Marr says the initial droplets it travels in are larger, around 1 micron—a size easily caught by HEPA filters.

The faster air can cycle through a filter, the better its chances of catching virus particles, says James Dickerson, CR’s chief science officer. You’ll know how fast an air purifier cleans air by its CADR (clean air delivery rate) number on the box. We recommend a CADR of more than 240, and to follow the recommended room size.

Still, even the most efficient air purifiers aren’t enough. Social distancing, mask-wearing, and hand-washing are critical.

### 3 TOP-RATED AIR PURIFIERS

✓ **Blueair Classic 605** \$830

**88**

OVERALL SCORE



✓ **Honeywell HPA300** \$250

**76**

OVERALL SCORE



✓ **Alen BreatheSmart Classic** \$649

**72**

OVERALL SCORE



For more ratings, All Access and Digital members can go to [CR.org/air-purifiers](https://www.consumerreports.org/air-purifiers).

PHOTOS, BOTTOM LEFT TO RIGHT: CONSUMER REPORTS; ECOBEE; WALT DISNEY TELEVISION/ADAM TAYLOR/GETTY IMAGES; CONSUMER REPORTS

## CR Time Traveler HOME INNOVATIONS

**1936** We test 15 new “automatic irons,” which provide temperature controls that can be adjusted for different fabrics.



**1947** CR tests four new automatic washers that rinse and wring out laundry, “all without the help of a housewife.” One bargain buy washes just as well as the others, for \$105 less.



**1956** We test a popular new type of TV: “portable” sets with handles and small screens around just 14 inches. Their picture isn’t as clear as the one on regular-sized TVs we test, but consumers love them.



**1966** We test an unusual but convenient type of electric can opener: the handheld Ronson Can-Do. In our review we say “it is very fast, almost disconcertingly so.”





**HOW TO CLEAN PRACTICALLY ANYTHING...**

**8 VINEGAR NO-NOS**

It's not a clean-all cure-all. Don't use distilled white vinegar on these:



**COUNTERTOPS**  
Vinegar's acid etches and dulls natural stone, such as limestone, marble, and granite. It can make counters lose their shine and deteriorate the finish on them. Instead, try a dish towel dipped in mild detergent or use a cleaner designed for natural stone.

**KNIVES**  
Keep vinegar away from metals (including copper and aluminum). Its corrosive action can damage the finish on some knives and dull a knife's edge, says Jim Nanni, head of appliance testing for CR. Instead, use dish soap and warm water.

**WASHING MACHINES**  
Vinegar is sometimes used as a fabric softener or to get rid of stains and odors in laundry, but it can damage (or even melt) the rubber seals and hoses in some washing machines, causing leaks. One expert we spoke with said front-loaders can be especially susceptible.

**FLOORING**  
Many flooring manufacturers warn against using vinegar to clean your hardwood floors. Using it can even void the warranty in some cases. Diluted vinegar can dissolve the finish that protects the wood and leave it cloudy, dull, or scratched.

**STAINLESS STEEL & SMALL APPLIANCES**  
"There are different grades of stainless steel on large and small appliances," says Nanni. "Some are less resistant to rusting, which can be spurred on by vinegar." On small appliances, also avoid any rubber parts that vinegar can corrode.

**ELECTRONIC SCREENS**  
Never use vinegar on your computer, phone, tablet, or TV. "It can damage a screen's anti-glare properties and make a touch screen less responsive," says Antonette Asedillo, a tester at CR. Use a soft cloth dampened with water instead.

**DISHWASHERS**  
You may have heard that running a dishwasher with a bowl of vinegar in it helps get rid of hard water film. But CR's testers tried it, and it didn't do a thing to remove hard water film. Specially formulated dishwasher cleaners from major brands, such as Affresh or Finish, can work better.

**CLOTHES IRON**  
Using vinegar to clean the inside of your iron can permanently damage the appliance. Always consult the user manual for cleaning instructions. Some irons have a button you press to flush the steam-generation system clean.

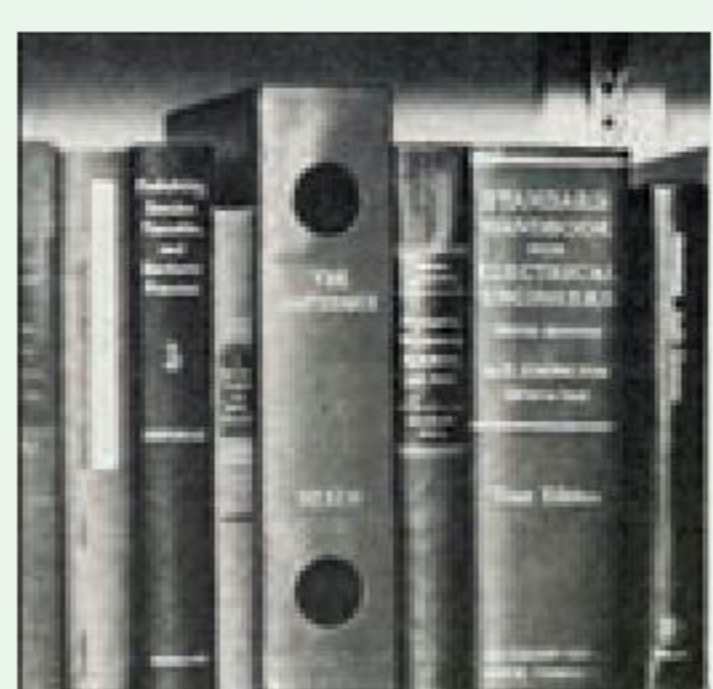
**SAY YES TO VINEGAR ON THESE**

**WINDOWS**  
Ammonia-based formulas, including some Windex products, can cause streaks or film on windows. For a cheap, streak-free alternative, mix up your own white vinegar and water solution.

**COFFEE MAKERS, BLENDERS, AND TOASTERS**  
The plastic and glass surfaces on most small kitchen appliances, such as blenders, and the outside of toasters are safe to clean with vinegar.

**CARPETS**  
If you spill wine or juice on your carpet, vinegar can help. Mix 4 cups of water, a tablespoon of dish soap, and a quarter-cup of white vinegar, and let it sit on the stain for 5 minutes or so. A mix of one part white vinegar and one part water can help with pet stains.

**HUMIDIFIERS**  
You can use vinegar to remove water scaling, then disinfect the unit with a bleach solution following the manufacturer's instructions.



**1997** The year's hottest home innovation is the DVD. CR tests three of the first players on the market and urges consumers to wait to buy, because prices (around \$600) are just too expensive.



**2013** Jamie Siminoff presents the original iteration of the Ring, a WiFi-connected video doorbell, then called the "doorbot," on the TV show "Shark Tank."



✓ **Nest Learning Thermostat**  
\$250

**83** OVERALL SCORE

**1977** CR tests 24 DIY home burglar alarms, including a model with new motion-detecting technology, cleverly disguised as a book.



**2007** Stuart Lombard claims to create "the world's first smart thermostat." He says other thermostats were "not internet-connected, they were dumb as a doorknob."



**2021** The Nest Learning Thermostat, which can be controlled by an app, tops our lab ratings of smart home thermostats, though it's also one of the priciest.

# KITCHEN



**RATINGS:**

REFRIGERATORS  
P. 16

DISHWASHERS  
P. 22

RANGES  
P. 24

COOKTOPS  
P. 25

SLOW COOKERS  
P. 28

TOASTER OVENS  
P. 28

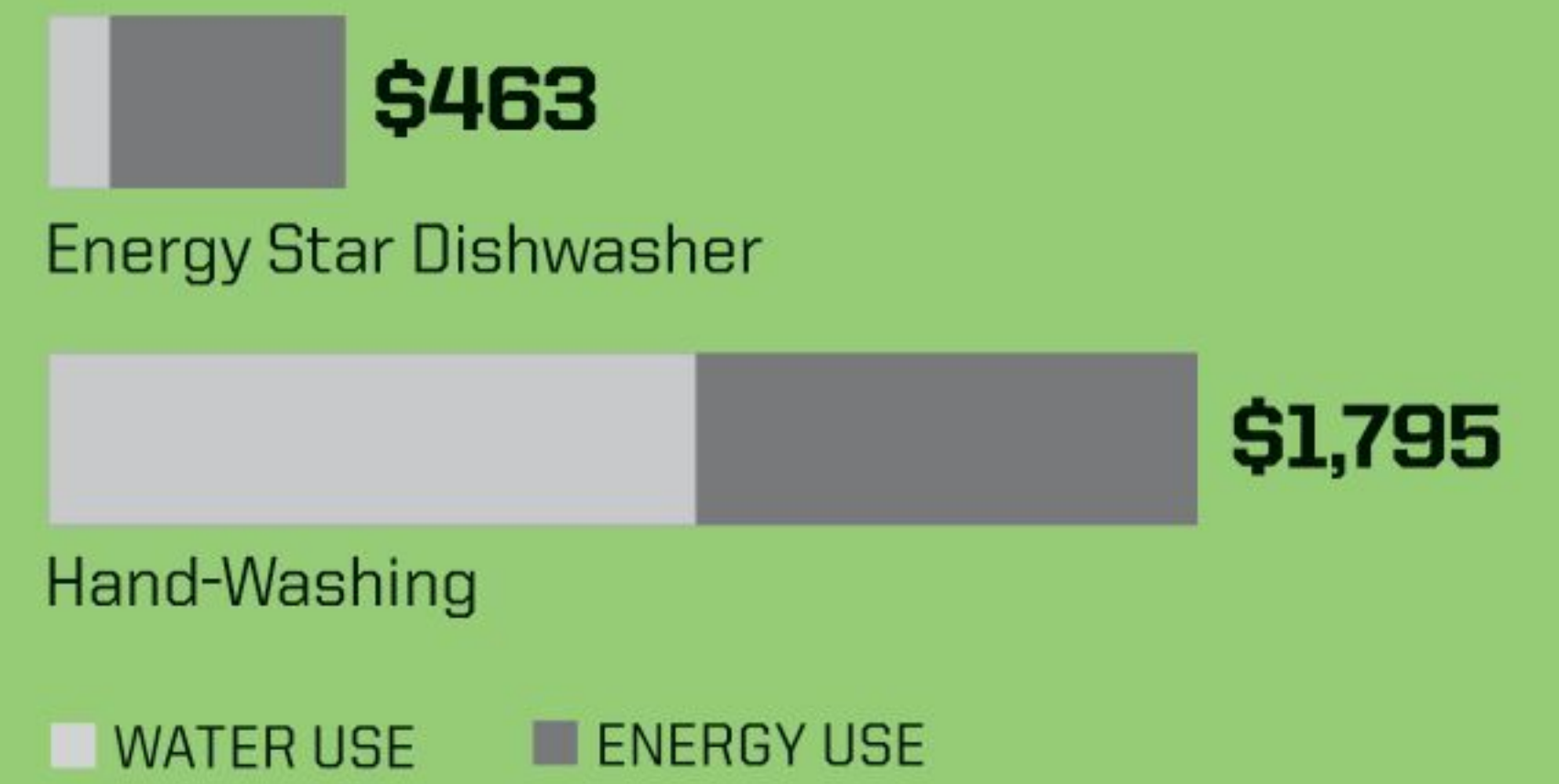
AIR FRYERS  
P. 28

BLENDERS  
P. 29

MULTI-COOKERS  
P. 29

WAFFLE MAKERS  
P. 29

**The cost of hand-washing vs. using an energy-efficient dishwasher\***



\*Over 12 years. Source: Energy Star.





## Keeping Food Fresher, Longer

Storing your ingredients the right way can help stretch your food budget—and ensure that you always have what you need on hand.

**KEEPING THE FOOD** you buy as fresh as possible for as long as possible requires some storage strategizing, especially because you might be looking to limit trips to the grocery store these days. Simple organization techniques can help you avoid waste and maintain the safety of all your grocery items.

The first rule of keeping food fresh is to check the temperature in the places where you store

it. Kitchen cabinets should be between 50° F and 70° F, says Jackie E. Ogden, family and consumer sciences agent at the University of Georgia Extension and president of the American Association of Family and Consumer Sciences (AAFCS). Set the fridge to 37° F and the freezer to 0° F or below.

Next, don't take those "best by" dates on packages as gospel—even for fresh

foods such as yogurt, milk, and eggs. "It's easy to interpret them as 'throw out on this date' when what they may really mean is 'this food may taste best before this date, give or take,'" says Amy Keating, RD, a nutritionist at CR. "But consumers should examine foods past their 'best by' dates for signs of spoilage, and when in doubt, throw it out."

And when you're storing dry goods, the key word to remember as you select containers is "airtight," says Nancy Bock, senior director of communications and marketing at the AAFCS. That helps to keep bacteria and moisture out.

When freezing foods for future use, wrap tightly and be sure to write the date you froze it on the packaging.

### STAY-FRESH TIPS FOR 14 FOODS

- **Bananas** Once the fruits reach the level of ripeness you prefer, put them in the fridge. They'll continue to ripen, but at a much slower rate. If you end up with overripe bananas, peel and wrap them tightly and store in the freezer. You can use them for baking or in smoothies.

- **Bread** Never refrigerate bread or baked goods such as bagels, according to the National Wheat Foundation. Doing so can make these products go stale up to six times faster than if you stored them in a breadbox, a kitchen cabinet, or somewhere else dark and cool. But Ogden notes that especially in warm, humid climates, the choice may basically be stale vs. moldy. For longer storage, you can freeze bread. Wrap it tightly in foil or plastic wrap and put it in a sealed container (such as a zip-top plastic bag) and it will keep for three months. You can take out what you need and let it come to room temperature and use it, or go straight from the freezer to the toaster.



**When freezing foods, wrap tightly and be sure to write the date you froze it on the packaging.**

■ **Broth, noncream soup, and pasta sauce** If you've used only part of the can or container, transfer the remainder to an airtight freezer container, leaving space at the top for expansion, and freeze.

■ **Butter** It lasts one to two months in the fridge. But it can also be stored, tightly wrapped in an airtight freezer container, in the freezer, where it lasts from six to nine months.

■ **Cheese** Hard (cheddar, Swiss) or soft (brie, Bel Paese) cheeses can be frozen for up to six months. The caveat? The texture will become more crumbly, so it's best to plan to use it for cooking, not snacking. Hard cheeses are likely to fare better, but they also last up to six months in the fridge, anyway. (Soft cheeses should be eaten within one to two weeks.) Shredded cheese lasts for one month when refrigerated, but you can extend that to three to four months by freezing it.

■ **Coffee beans** Don't refrigerate! Beans easily absorb moisture, smells, and tastes from the refrigerator. You can keep your week's supply in an opaque, airtight container somewhere cool and dark to retain best taste. But you can store beans in small, freezerproof packages for up to a month if you're buying in bulk.

■ **Eggs** If you're planning to eat or cook with them within three to five weeks after purchase, the fridge is generally fine (though they'll taste better when fresher). Or eggs can be frozen for about a year. Crack and lightly beat whole eggs before freezing them in tightly sealed freezer containers. (After freezing, yolks can get hard and not blend once thawed, according to the Department of Agriculture, hence the need to beat the egg before freezing.) Egg whites can be frozen without beating.

## TO DO

### DEEP-CLEAN YOUR FRIDGE

You know how gross it gets inside! Here's how to get rid of the gunk, goo, crumbs, and crud.



#### SHELVES, BINS, AND WALLS

Take out the shelves and bins so that you don't have to leave the door open (which makes the compressor work harder to keep everything cold). Wash glass and plastic shelves or bins in a sink with warm, soapy water and a sponge. "If the shelves or bins are very cold or from the freezer, give them a chance to warm up before washing them," says Larry Ciufo, CR's test engineer for refrigerators. "The sudden temperature change from contact with warm or hot water could cause them to crack and break." Clean wire shelves and baskets with a bristle brush, but avoid abrasive cleaning pads. Then wipe the walls in the fridge and freezer using warm, soapy water and a sponge. Dry everything or the moisture will freeze, and frozen foods could end up sticking to them.



#### WATER/ICE DISPENSER AND ICEMAKER

Water and ice dispensers can get mineral buildup from your home's water. So wipe the dispenser using a sponge and a mixture of equal parts water and white vinegar. If the buildup on the dispenser tray is too thick to remove with the sponge, remove it and soak it in the mixture.

Remove and empty the ice bin, and wipe it down with a wet cloth or with soap and warm water.



#### DOOR GASKET

The door gasket is the piece of rubber that lines the doors of the refrigerator. It's easy to overlook the dirt and grime that inevitably collect in its creases, but leaving them can cause air leaks. And that makes your fridge have to work harder to keep food cold.

Clean the gaskets by pressing a damp sponge or cloth into the folds and wiping them. Next, run a dry cloth through the creases. If you leave water in the gasket creases and close the fridge doors, the water won't be able to evaporate and mold could form as a result.

If there's mold in the gasket creases, clean them using a disinfectant. (Check your owner's manual to see which cleaners are safe to use on the material.)



#### CONDENSER COILS

Condenser coils dissipate heat from the refrigerator to keep it cold. They're usually located on the back of the fridge or underneath it behind the grille. For built-ins, check the top of the appliance.

Over time, dust, dirt, and other debris can collect on the coils and act as an insulator, making it harder for the coils to keep the refrigerator cool. To clean the coils, first pull the fridge away from the wall or remove the grille (depending on where the coils are located).

Then vacuum the coils using a soft-brush attachment.

Egg yolks alone need special treatment before freezing to make sure they're usable when they thaw. If you're planning on using them in something sweet, beat in 1½ teaspoons of sugar for every 4 yolks; if you're going to make something savory, beat in ⅛ teaspoon of salt for every 4 yolks. Then freeze in a freezer container.

■ **Flour** If you use your flour only once a year and just leave the bag folded over in the cupboard, it might not work as well or may even get bugs. Refrigeration and tight wrapping can keep your flour bug-free and

extend all-purpose or bread flour's usable life to two years. For those who don't use flour often, it may be more practical to store it in the freezer, where it will keep indefinitely.

Whole-grain flour degrades more quickly. In a cool, dry place, it can keep from one to three months (Ogden advises just one); twice that if frozen.

■ **Grapes** Even in the fridge, these fruits can go bad in less than a week. But you can preserve them for months by freezing them. Just wash and dry them (remove the stems). Then place them on a baking



**Dried pasta in an unopened package can be stored and used for up to two years, even past its "best by" date, but refrigeration won't extend its usable life.**

sheet that has been covered with wax paper and freeze. Once they're frozen through, you can put them in an airtight sealed container in the freezer.

■ **Greens** There's not a lot you can do to extend the refrigerator life of, say, lettuce, beyond keeping it wrapped in the crisper drawer, where it can keep for up to a week, Ogden says. Spinach, however, can last 10 months when frozen. Blanching and freezing will also work for broccoli, cauliflower, corn kernels, and okra.

■ **Milk** Depending on how it has been transported and stored, a carton of pasteurized milk may or may not be okay a few days past the date on the label—a sniff will probably tell you. But, Ogden says, if you freeze it, the milk will be usable for up to three months. Be sure to leave 'head space' in the container if you're freezing it because it will expand.

■ **Pasta** Dried pasta in an unopened package can be stored and used up to two years, even past its "best by" date, but refrigeration won't extend its usable life. If the package has been opened, it's good for up to one year (just one to three months for egg noodles). Storing it in airtight containers will help prevent it from going stale. Fresh pasta lasts just four to five days in the fridge or six to eight months in the freezer.

■ **Strawberries** Prevent berries from going moldy quickly by removing the stems and placing them in a paper-towel-lined container. Refrigerate, and don't wash the berries until you are ready to use them.

■ **Whole grains** Generally, stored in an airtight container in a cool, dry place, such as your cupboard, whole grains will keep for about six months. Keeping them in the freezer can double that shelf life.



# HOW TO ORGANIZE YOUR FRIDGE TO MAXIMIZE FRESHNESS

## 1 SET THE RIGHT TEMPERATURE

The danger zone for food—the temperature where disease-causing bacteria can grow—begins at 40° F. CR's experts recommend keeping your refrigerator's internal temperature at about 37° F and, to keep food thoroughly frozen, your freezer's temp at 0° F. But our tests have found that the temperature controls inside a fridge aren't always the most accurate. To make sure your fridge is really cold enough, you may want to buy a fridge thermometer.

## 2 SAFELY STORE LEFTOVERS

If you have a large amount of still-warm leftovers—a pot full of stew, for instance—store it in several smaller containers. That way, the individual containers will cool down faster, giving disease-causing microbes less time to grow. Also, it's best to store your leftovers on the top shelves and toward the front of the fridge so that you don't forget about them.

## 3 USE CRISPER DRAWERS

Different kinds of produce will stay fresh longer in different levels of humidity. If your fridge's crisper drawers can be set to either high or low humidity, it's best to have one of each drawer. Foods that ripen quickly belong in the low-humidity drawer; these

include apples, grapes, ripe avocados, peaches, pears, plums, ripe melons, mushrooms, peppers, and squash.

Produce items that are prone to wilting, such as any leafy greens, broccoli, cauliflower, carrots, and green onions, should be placed in the high-humidity drawer.

## 4 STORE MEAT AND EGGS LOWER

The lowest shelf is often the chilliest area. (A fridge thermometer can help you find the cold spot.) Put items such as

such as raw meat, milk, and eggs here. Store raw meat on a tray so that juices don't leak onto the shelf.

## 5 BE SMART ABOUT THE DOOR

The door of your fridge generally runs warmer than the shelves, so don't place quicker-to-spoil items such as milk on the fridge door. Instead, use the door for items like butter and juice.

## 6 WATCH FOR COLD SPOTS

Try to avoid placing items directly in front of the vents that distribute cold air inside your fridge. This can cause items to freeze. Keeping the vents clear also allows air to circulate within the appliance, helping to maintain food at the right temperature.

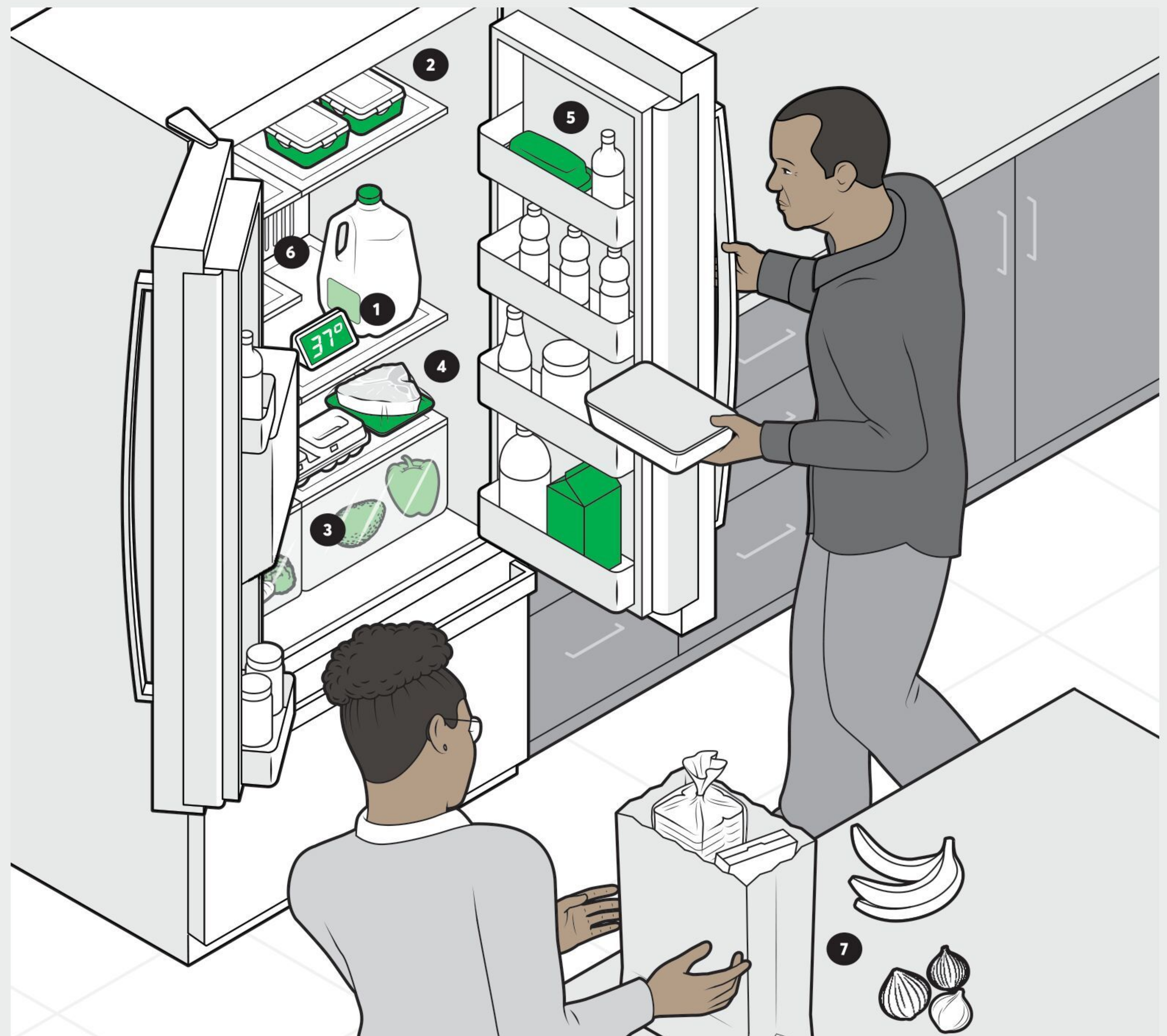
## 7 KNOW WHAT TO LEAVE OUT

Certain items should not be stored in the fridge. These include bananas, bread, tomatoes, coffee,

garlic, potatoes, and onions (don't store these last two items side by side).

## BONUS TIP: AVOID OVERLOADING

If you're limiting grocery trips because of the coronavirus pandemic, you might be stocking up more than usual at the store. Still, it's best not to overload your refrigerator, because overfilling can also hamper air circulation.





## Refrigerators With Plenty of Room

Here's how to find a fridge that will fit your weekly fresh food haul. Plus, ratings for the best models for every space and budget.

**IF YOU'RE LOOKING** for a spacious refrigerator to store a full week's worth of groceries, you'll see plenty of oversized options for sale.

But though manufacturers tout their models' roomy interiors, CR's measurements of the usable capacity of the hundreds of refrigerators in our tests have shown that most refrigerators fall short of their capacity claims, some by

as much as 32 percent. (We measure the actual storage space inside—shelves and all—while manufacturers treat the fridges like an empty box.)

To find a model with the storage you need, zero in on the usable capacity column in the Features & Specs section of our refrigerator ratings on page 16. And keep in mind that you don't want to get stuck with a supersized electricity bill,

so you'll want to pay attention to the energy-efficiency score as well.

Of course, your very top criteria when choosing a new fridge should be performance. During testing, we outfit each refrigerator with thermocouples in a climate-controlled chamber and monitor it for a month, collecting more than 5.4 million temperature readings that

### TOP-RATED PICKS



✓ LG  
LNXS30866D  
\$4,100

**81** OVERALL SCORE



GE GFE28GYNFS  
\$2,725

**73** OVERALL SCORE

PHOTOS: COURTESY BOSCH (TOP LEFT); ISTOCKPHOTO (RIGHT)





### 5-MINUTE FIX

## HOW TO CHANGE THE BUILT-IN WATER FILTER

Does your refrigerator beep whenever you use the water dispenser? Is the flow of water slower than usual? Is the “change filter” light blinking over and over again? If so, it’s time to change the water filter—something you should do every six months. Not sure whether your fridge even has a water filter? If there’s a water dispenser, it probably does. Here’s how to find and swap out the filter.

#### STEP 1

**Find the Water Filter**  
Look for the filter off to one side of the top fridge compartment, or behind the trim plate between the floor and the bottom of the fridge door—a favorite hiding place for Whirlpool side-by-sides. If you have a built-in, it might also be behind the service panel at the top of the appliance. It’s a rare feature on bottom-freezer models—only three models of that type in our ratings have water dispensers, and none have filters. Still can’t find it? Search the model number and “manual,” and scan the PDF for “filter.”

#### STEP 2

**Remove the Filter Cover**  
Some twist off, some have tabs you squeeze, and some have an eject button.

#### STEP 3

**Remove the Spent Filter**  
Depending on the make and model of refrigerator, you may need to first swing the old cartridge out from its slot. Then either pull it straight out of the housing or twist it counterclockwise, then pull it out. Check the packaging of the new cartridge for instructions (and avoid breaking a plastic part).

#### STEP 4

**Install the New Filter**  
Insert the new filter into the housing; it should lock in place. If you had to twist it to remove it, you’ll need to twist it clockwise to seat it in place.

#### STEP 5

**Flush Out the Filter**  
Dispense about 2 gallons of water to remove air and contaminants from the water line. You can use it to water your plants. If your fridge has an indicator to change the filter, remember to reset it. You should be good for about six months.



identify warm and cold spots, to determine which models will keep your food fresh longer. We also factor in survey data from thousands of CR members to judge brand reliability and satisfaction.

All that data—and then some—inform each model’s Overall Score. Our ratings are now sorted by width so that you can easily find the best fridge that will fit in your kitchen. The most common widths are 30, 33, and 36 inches.

At left, we’re highlighting two top French-door-style fridges from our tests. For many more models in other configurations, see our ratings on page 16.

# KITCHEN

## Ratings > Refrigerators

Brand + Model	Overall Score	Price	Survey Results		Test Results					Features & Specs									
			Predicted reliability	Owner satisfaction	Thermostat control	Temperature uniformity	Energy efficiency	Noise	Ease of use	Cabinet-depth model	Exterior height (in.)	Exterior width (in.)	Exterior depth (in.)	Total usable capacity (cu. ft.)	Energy cost/yr. (\$)	Energy Star	Icemaker	Water dispenser	Stainless/SS-look option
<b>TOP-FREEZERS, 31-INCH AND WIDER WIDTHS</b>																			
✓ LG LTCS24223S	77	\$1,080	↑	↑	↑	↓	↑	↑	↓		69	33	32	19.3	65	●	●	●	
✓ Samsung RT21M6213SG	77	\$1,100	↑	↓	↑	↓	↑	↑	↓		68	33	32	20.2	51	●		●	
✓ Samsung RT21M6215SG	76	\$1,100	↑	↓	↑	↓	↑	↑	↓		68	33	32	20.2	62	●	●	●	
✓ Maytag MRT311FFFM	72	\$1,050	↑	↓	↑	↑	↑	↓	↓		66	33	31	17.5	56		Opt.	●	
✓ GE GTS21FSKSS	69	\$1,010	↑	↓	↑	↑	↑	↓	↓		67	32	32	17.6	56		Opt.	●	
Whirlpool WRT511SZDM	66	\$1,020	↑	↓	↓	↓	↑	↑	↓		66	33	32	18.1	57		Opt.	●	
Kenmore 79433	64	\$1,100	↑	↓	↓	↓	↑	↑	↓		69	33	32	19.4	71	●	●	Int.	●
GE GIE21GSHSS	63	\$1,255	↑	↓	↓	↑	↑	↑	↓		67	33	33	17.7	62	●	●	●	
Insignia NS-RTM21SS7	61	\$775	—	—	↓	↓	↑	↓	↓		67	33	34	18	51	●	●	●	
<b>TOP-FREEZERS, 29- TO 30-INCH WIDTHS</b>																			
✓ Frigidaire Gallery FGTR2037TF	78	\$920	↑	↓	↑	↑	↑	↓	↓		70	30	33	16.7	55		Opt.	●	
✓ Samsung RT18M6215SG	76	\$800	↑	↓	↑	↑	↑	↑	↓		67	29	29	13.6	58	●	●	●	
Ⓢ Insignia NS-RTM18BK8Q	75	\$550	—	—	↑	↑	↑	↓	↓		67	30	31	15.5	51		Opt.	●	
✓ Frigidaire Gallery FGTR1837TF	71	\$695	↑	↓	↑	↑	↑	↓	↓		66	30	31	15.2	47	●	Opt.	●	
✓ Frigidaire FFTR2021TS	71	\$900	↑	↓	↑	↑	↑	↓	↓		69	30	33	16.7	55		Opt.	●	
Frigidaire FFHT1821TS	66	\$850	↑	↓	↑	↑	↑	↓	↓		64	30	30	14.2	47	●	Opt.	●	
GE GTS17GSNRSS	64	\$710	↑	↓	↑	↑	↑	↓	↓		65	28	31	12.9	51		Opt.	●	
Maytag MRT118FFFZ	56	\$830	↑	↓	↓	↓	↑	↓	↓		66	30	32	15.3	53		Opt.	●	
Amana ART104TFDW	55	\$600	↑	↓	↓	↓	↑	↓	↓		63	28	30	12.4	48		Opt.	●	
<b>TOP-FREEZERS, 28-INCH AND NARROWER WIDTHS</b>																			
✓ Blomberg BRFT1522SS	75	\$900	—	—	↑	↑	↑	↑	↓		68	28	26	12	52	●	●	●	
✓ Hotpoint HPS16BTNRWW	71	\$580	↑	↓	↑	↑	↑	↓	↓		62	28	30	12.4	50		Opt.	●	
Ⓢ Whirlpool WRT518SZFM	69	\$745	↑	↓	↑	↑	↑	↓	↓		68	28	31	14.9	52		Opt.	●	
Hotpoint HPE15BTHWW	56	\$625	↑	↓	↓	↓	↑	↓	↓		62	28	30	11.6	43	●	Opt.	●	
Hotpoint HPS15BTHLWW	54	\$605	↑	↓	↓	↓	↑	↓	↓		62	28	30	11.6	48		Opt.	●	
<b>BOTTOM-FREEZERS, 31- TO 33-INCH WIDTHS</b>																			
✓ LG LDSC24223S	92	\$1,600	↑	↑	↑	↑	↑	↑	↓		69	33	33	17.1	61	●	●	●	
✓ LG LRDCS2603S	81	\$1,200	↑	↑	↑	↑	↑	↓	↓		70	33	33	17.4	72	●	●	●	
✓ GE GDE25ESKSS	80	\$1,900	↑	↓	↑	↑	↑	↑	↓		69	33	35	17.1	79	●	●	●	
✓ Amana ABB2224BRM	80	\$1,430	↑	↓	↑	↑	↑	↓	↓		69	33	31	15.3	59	●	●	●	
KitchenAid KRBR102ESS	74	\$1,930	↑	↓	↑	↑	↓	↓	↓		69	33	31	14.9	75	●	●	●	
Whirlpool WRB322DMBM	73	\$1,440	↓	↓	↑	↑	↓	↓	↓		69	33	31	14.9	75	●	●	●	
Fisher & Paykel Active-Smart RF170WDRUX5	72	\$2,600	↑	↑	↑	↑	↓	↑	↓	●	68	32	28	13	69	●	●	Ext.	●

Brand + Model	Overall Score	Price	Survey Results		Test Results					Features & Specs							
			Predicted reliability	Owner satisfaction	Thermostat control	Temperature uniformity	Energy efficiency	Noise	Ease of use	Cabinet-depth model	Exterior height (in.)	Exterior width (in.)	Exterior depth (in.)	Total usable capacity (cu. ft.)	Energy cost/yr. (\$)	Energy Star	Icemaker

**BOTTOM-FREEZERS, 30-INCH AND NARROWER WIDTHS**

GE GDE21ESKSS	77	\$1,615									70	30	35	14.6	74				
Amana ABB1924BRM	77	\$1,495									66	30	31	12.5	58				
Bosch B11CB50SSS	70	\$2,395									79	24	26	8.4	46				
Haier HRB15N3BGS	70	\$1,095									68	28	24	11.9	55				
Blomberg BRFB1822SSN	67	\$1,600									60	30	31	13.7	68				

**FRENCH-DOORS, 34-INCH AND WIDER WIDTHS**

LG LRFXC2406S	84	\$3,400									71	36	29	15.7	88			Ext.	
LG LRFDS3006S	83	\$3,800									71	36	34	20.5	94			Ext.	
LG LRFDS3016S	81	\$3,200									70	36	33	20.4	97			Ext.	
LG LNXS30866D	81	\$4,100									69	36	37	21.7	99			Ext.	
GE Profile PYE22PSKSS	80	\$2,660									70	36	30	15.1	86			Ext.	
GE GYE22HSKSS	80	\$3,130									70	36	30	15.1	86			Ext.	
Dacor DRF36C100SR	80	\$4,000									69	36	31	14.3	71			Ext.	
Café CYE22TSHSS	80	\$3,200									70	36	30	15.1	86			Ext.	
LG LRFVS3006S	79	\$4,000									70	36	33	19.6	99			Ext.	
LG LFXS28968S	77	\$2,430									70	36	34	19.4	94			Ext.	
LG LFCS27596S	77	\$1,600									70	36	33	19.8	82				
LG LMXS28626S	77	\$2,610									70	36	34	18.1	93			Ext.	
Whirlpool WRF954CIHM	76	\$3,505									70	36	29	15.4	87			Ext.	
LG LFXS24663S	76	\$3,200									70	36	32	16.7	89			Ext.	
KitchenAid KRFC704FBS	76	\$4,140									71	36	29	15.3	95			Ext.	
LG LFXS28566S	76	\$3,000									70	36	34	19.2	93			Ext.	
Kenmore 73035	75	\$1,400									71	36	34	18.6	88			Ext.	
LG LMXC23746S	75	\$3,515									71	36	29	14.7	86			Ext.	
LG Signature LUPXC2386N	75	\$6,300									70	36	30	15.5	92			Ext.	
Café CFE28TSHSS	74	\$3,430									70	36	35	15.1	94			Ext.	
KitchenAid KRFC302ESS	74	\$3,265									73	36	28	14.3	82			Int.	
LG LMXC23796D	74	\$2,430									69	36	30	14.8	76			Ext.	
GE Profile PYD22KSLSS	74	\$3,100									70	36	28	19.4	94			Ext.	
Samsung RF23M8070SR	74	\$2,600									70	36	29	14.5	82			Ext.	
LG LMXS27626S	73	\$1,980									69	36	33	17.6	92			Ext.	
GE Profile PVD28BYNFS	73	\$3,520									70	36	35	17.8	100			Ext.	
GE GFE28GYNFS	73	\$2,725									70	36	32	19.9	94			Ext.	
Samsung RF22K9381SR	73	\$3,000									72	36	29	15.8	91			Ext.	

# KITCHEN

## Ratings > Refrigerators

Brand + Model	Overall Score	Price	Survey Results		Test Results					Features & Specs									
			Predicted reliability	Owner satisfaction	Thermostat control	Temperature uniformity	Energy efficiency	Noise	Ease of use	Cabinet-depth model	Exterior height (in.)	Exterior width (in.)	Exterior depth (in.)	Total usable capacity (cu. ft.)	Energy cost/yr. (\$)	Energy Star	Icemaker	Water dispenser	Stainless/SS-look option
<b>FRENCH-DOORS, 34-INCH AND WIDER WIDTHS</b> <i>Continued</i>																			
Samsung RF23M8570SG	73	\$3,600	↓	↓	↑	↑	↓	↑	↑	•	70	36	29	14.3	85	•	•	Ext.	•
Daewoo RFS-26ABT	72	\$1,310	–	–	↑	↑	↑	↑	↓		70	36	34	18.9	88		•		•
KitchenAid KRMF706EBS	72	\$3,820	↓	↓	↑	↑	↓	↑	↑		70	36	34	17.1	99		•	Ext.	•
Samsung RF28K9070SR	72	\$2,600	↓	↓	↑	↑	↑	↑	↑		71	36	35	20.4	101	•	•	Ext.	•
Kenmore 72595	72	\$2,200	↓	↓	↑	↑	↓	↑	↑		70	36	34	13.4	102		•	Ext.	•
Whirlpool WRF555SDFZ	72	\$1,980	↓	↓	↑	↑	↓	↑	↓		70	36	33	15.9	88	•	•	Ext.	•
Samsung RF28N9780SR	72	\$2,895	↓	↓	↑	↑	↑	↑	↑		72	36	34	22.4	100	•	•	Ext.	•
Insignia NS-RFD26SS9	72	\$1,200	–	–	↑	↑	↑	↑	↓		70	36	34	20.2	81	•	•	Int.	•
Samsung RF28R6201SR	72	\$2,100	↓	↓	↑	↑	↑	↑	↑		70	36	34	18.8	94	•	•	Ext.	•
<b>FRENCH-DOORS, 31- TO 33-INCH WIDTHS</b>																			
✓ Whirlpool WRF532SMHZ	75	\$2,060	↓	↓	↑	↑	↑	↑	↓		69	33	32	15.2	59	•	•		•
✓ GE GNE25JSKSS	75	\$1,710	↓	↓	↑	↑	↑	↑	↓		69	33	35	16.4	79	•	•	Int.	•
✓ GE GFE24JSKSS	74	\$2,500	↓	↓	↑	↑	↓	↑	↓		70	33	36	15.2	88	•	•	Ext.	•
Samsung RF20HFENBSR	72	\$1,370	↓	↓	↑	↑	↓	↑	↑		71	33	31	14.8	80	•	•		•
Samsung RF25HMEDBSR	70	\$2,100	↓	↓	↑	↑	↓	↑	↑		69	33	34	16.6	89	•	•	Ext.	•
Samsung RF18HFENBSR	69	\$1,250	↓	↓	↑	↑	↓	↑	↑	•	70	32	27	13.9	77		•		•
<b>FRENCH-DOORS, 30-INCH AND NARROWER WIDTHS</b>																			
✓ LG LFC22770ST	81	\$1,635	↓	↑	↑	↑	↑	↑	↓		68	30	33	15.4	76	•	•		•
Ⓢ LG LFCS22520S	78	\$1,100	↓	↑	↑	↑	↓	↑	↓		68	30	33	14.8	76	•	•		•
✓ GE GNE21FSKSS	75	\$1,585	↓	↓	↑	↑	↓	↑	↓		70	30	35	13.7	74	•	•		•
KitchenAid KRFF300ESS	74	\$1,915	↓	↓	↑	↑	↓	↑	↓	•	73	36	28	14.3	82		•	Int.	•
Samsung RF220NCTASR	66	\$1,500	↓	↓	↑	↑	↓	↑	↓		67	30	34	16	81		•		•
<b>SIDE-BY-SIDES, 34-INCH AND WIDER WIDTHS</b>																			
✓ GE Profile PSS28KSHSS	79	\$2,160	↓	↓	↑	↑	↑	↑	↑		70	36	33	17	95		•	Ext.	•
Ⓢ LG LSXS26366S	77	\$1,620	↓	↓	↑	↑	↑	↑	↑		70	36	33	20.9	92	•	•	Ext.	•
✓ GE Profile PSE25KSHSS	75	\$1,980	↓	↓	↑	↑	↑	↓	↑		70	36	33	16.1	83	•	•	Ext.	•
Ⓢ LG LSXS26326S	74	\$1,350	↓	↓	↑	↑	↑	↑	↑		69	36	34	20.6	92		•	Ext.	•
✓ KitchenAid KRSC503ESS	74	\$3,100	↓	↓	↑	↑	↓	↑	↑	•	71	36	28	16.2	88		•		•
✓ Samsung RH25H5611SR	73	\$1,700	↓	↓	↑	↓	↑	↑	↑		70	36	35	19	83	•	•	Ext.	•
✓ Samsung RS25J500DSR	73	\$1,220	↓	↓	↑	↑	↑	↑	↑		69	36	34	18.5	90		•	Ext.	•
✓ Kenmore Elite 51863	72	\$2,000	↓	↓	↑	↑	↑	↑	↑	•	70	36	30	16.2	78	•	•	Ext.	•
Ⓢ Kenmore 51783	71	\$1,500	↓	↓	↑	↑	↓	↓	↑	•	69	36	29	14.6	84		•	Ext.	•
✓ Daewoo FRS-Y22D2T	70	\$1,280	–	–	↑	↑	↑	↑	↓		70	36	28	14.9	83		•	Ext.	•

Brand + Model	Overall Score	Price	Survey Results		Test Results					Features & Specs							
			Predicted reliability	Owner satisfaction	Thermostat control	Temperature uniformity	Energy efficiency	Noise	Ease of use	Cabinet-depth model	Exterior height (in.)	Exterior width (in.)	Exterior depth (in.)	Total usable capacity (cu. ft.)	Energy cost/yr. (\$)	Energy Star	Icemaker

**SIDE-BY-SIDES, 34-INCH AND WIDER WIDTHS** *Continued*

✓ Samsung RS27T5561SR	70	\$1,980	↓	↓	↑	↑	↑	↑	↓		70	36	33	20.1	89			Ext.	
✓ GE Profile PZS22MSKSS	70	\$2,790	↓	↓	↑	↓	↓	↑	↑		70	36	29	13.8	86			Ext.	
Samsung RS22HDHPNSR	69	\$1,500	↓	↓	↑	↑	↓	↑	↑		69	36	28	19.5	83			Ext.	
LG LRSES2706V	69	\$1,530	↓	↓	↑	↓	↑	↑	↑		70	36	34	20.6	87				
Whirlpool WRS586FIEM	69	\$1,690	↓	↓	↑	↓	↑	↑	↑		69	36	33	18.9	83			Ext.	
Frigidaire FFSS2625TS	68	\$1,255	↓	↓	↑	↑	↑	↓	↓		70	36	32	17.4	91			Ext.	
Whirlpool WRS588FIHZ	68	\$1,600	↓	↓	↑	↓	↑	↑	↑		69	36	33	20.5	96			Ext.	
GE GZS22IYNFS	68	\$1,900	↓	↓	↑	↑	↓	↓	↑		70	36	28	14.5	86			Ext.	
Frigidaire FGSS2635TF	67	\$1,405	↓	↓	↑	↑	↑	↓	↑		70	36	34	18.5	91			Ext.	
Kenmore Elite 51773	67	\$2,000	↓	↓	↑	↓	↑	↑	↑		69	36	34	21.8	95			Ext.	
GE GSS25GSHSS	67	\$1,440	↓	↓	↑	↓	↑	↓	↑		70	36	33	16.3	91			Ext.	
GE GSS25LSLSS	66	\$1,440	↓	↓	↑	↓	↑	↓	↑		70	36	34	17.3	91				
Samsung RS22T5561SR	66	\$2,070	↓	↓	↑	↑	↓	↑	↓		70	36	28	16.1	82			Ext.	
Samsung RH22H9010SR	65	\$2,130	↓	↓	↑	↓	↑	↑	↑		69	36	28	15.3	82			Ext.	
KitchenAid KRSC703HPS	65	\$3,100	↓	↓	↑	↑	↓	↑	↑		72	35	27	14	88			Ext.	
Frigidaire FGSC2335TF	64	\$1,700	↓	↓	↑	↓	↑	↓	↑		70	36	29	16	87			Ext.	
Kenmore 51335	64	\$1,400	↓	↓	↑	↑	↑	↓	↓		70	36	32	10.8	90			Ext.	
Whirlpool WRS325SDHZ	63	\$1,350	↓	↓	↓	↑	↑	↓	↓		69	36	33	15.1	90			Ext.	
Whirlpool WRS325FDAM	63	\$1,050	↓	↓	↓	↑	↑	↓	↓		69	36	33	15.1	90			Ext.	
Bosch 300 Series B20CS30SNS	62	\$2,025	↓	↓	↑	↑	↑	↑	↓		70	36	28	14.5	76			Ext.	
Samsung RS22T5201SR	62	\$1,350	↓	↓	↑	↓	↑	↑	↑		70	36	29	17.1	83			Ext.	

**SIDE-BY-SIDES, 31- TO 33-INCH WIDTHS**

✓ GE GSS23HSHSS	71	\$1,695	↓	↓	↑	↑	↑	↓	↑		70	33	33	15.2	87			Ext.	
✓ Whirlpool WRS321SDHZ	63	\$1,260	↓	↓	↑	↑	↓	↓	↓		67	33	32	12.7	85			Ext.	
✓ Amana ASI2175GRS	63	\$1,090	↓	↓	↑	↑	↓	↓	↓		67	33	32	12.7	85			Ext.	

> Digital and All Access members can find the latest, complete ratings at [CR.org/refrigerators](https://www.crisp.org/refrigerators).

**HOW WE TEST:** Overall Score combines test results with survey data for predicted reliability and owner satisfaction. Predicted reliability estimates the likelihood that newly purchased models from a given brand will develop problems or break within the first five years. Owner satisfaction reflects

the proportion of CR members who are extremely likely to recommend the refrigerator they bought. In cases where we have insufficient survey data to provide a brand-level rating, indicated by a gray dash (—), we give the model average reliability and satisfaction scores. Thermostat control assesses

the ability to reach and maintain a set temperature despite changes in room temperature. Temperature uniformity is the ability to mitigate warm and cold spots in the fridge and freezer compartments. Energy efficiency indicates energy consumption based on usable storage space and the

national average electricity cost. Noise reflects quietness of operation based on noise meter readings and a panel of listeners. Ease of use assesses layout and features. Price is approximate retail.

## Top-Notch Energy-Efficient Dishwashers

Yes, you can save energy and have clean plates, too

**WASHING MORE DISHES** than ever these days? Good news—you don't have to get soaked by high energy and water bills. Today's dishwashers use about half the water and energy that dishwashers used 20 years ago. Thanks to tougher federal efficiency standards, water usage is

down to about 4 to 6 gallons per load—and less water means less energy required to heat it.

That explains why many dishwashers in CR's ratings earn an Excellent rating for energy efficiency. But the improvements didn't come without some compromise.

"When manufacturers reduced the water use to meet the standard, they had to extend wash times and recirculate the water so that dishes would still get clean," says Larry Ciufo, an engineer who oversees CR's dishwasher tests. The ones in our ratings take anywhere from 90 minutes to more than 3 hours to do a full load using the normal cycle or its equivalent.

To help fine-tune the cleaning process, manufacturers added soil sensors—which detect how messy plates are—to most machines. "Soil sensors adjust the amount of water and cycle time needed to get plates clean," Ciufo says. "That improves water and energy efficiency."

You'll find 24 dishwashers in our ratings on page 22, and though most of them earn an Excellent rating for energy efficiency, only a handful also ace our washing and drying tests.



### TO DO

## HOW TO CLEAN YOUR DISHWASHER

## THE RIGHT WAY TO LOAD A DISHWASHER

Doing it right helps your dishes come out squeaky clean every time

Even the best dishwasher won't get the job done if it's loaded improperly. Overfilling the machine and placing platters and cutlery in the wrong spots are common mistakes that can leave grime on your place settings at the end of a wash. It's a good idea to check the owner's manual for any special loading instructions, but the following tips should help most dishwashers deliver optimum results.

### TOP RACK

Cups, glasses, and small bowls should be placed in the top rack. Avoid overcrowding, which increases the risk of breakage and obstructs the flow of water and detergent. Dishwasher-safe plastics also belong on the top rack, away from any heating element, which can cause warping.

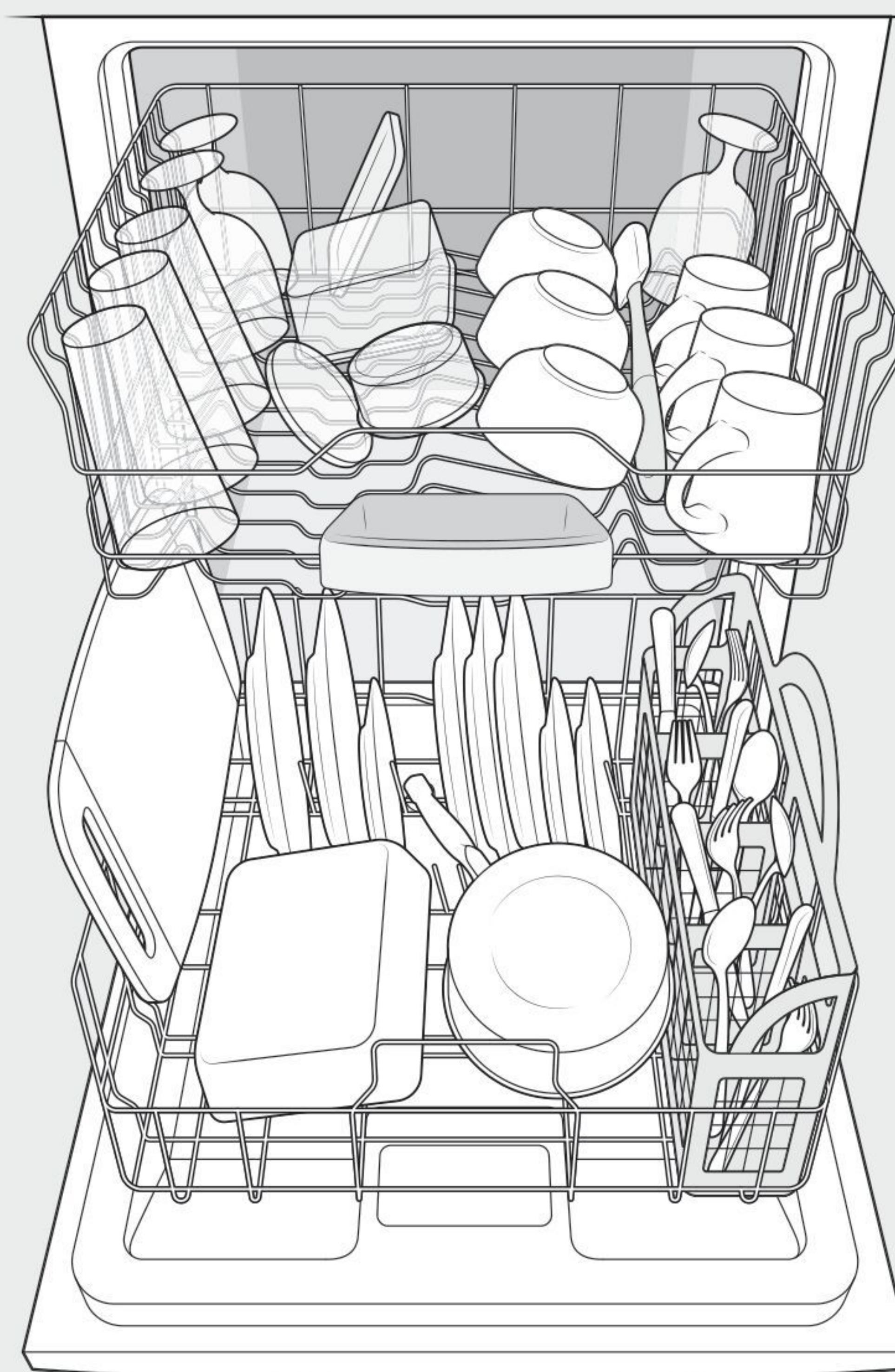
### BOTTOM RACK

Plates, serving bowls, and other large items belong on the bottom rack. Scrape

big chunks of leftover food into the trash, but prerinsing isn't necessary with modern dishwashers because they have sensors that adjust the wash cycle based on how dirty the dishes are. Platters, dishwasher-safe cutting boards, and other oversized pieces should be placed toward the sides and back so that they don't block water spray. Place items with baked-on food facedown and toward the lower spray arm. Aluminum and stainless steel can usually go in the dishwasher, but brass, bronze, wood, and china with gold leaf should all be handwashed to avoid discoloration or damage.

### SILVERWARE

Place forks and spoons in the basket with handles facing down. Knife handles go up so that you don't need to grab a sharp blade to remove them. Mix spoons, forks, and knives to keep them from nesting.



### UNLOADING

Empty the bottom rack first. Otherwise, water that collects on the concave

surfaces of mugs and glasses in the top rack will spill onto the plates, pots, and dishes below.

### STEP 1

#### Clean the Exterior

Wipe the front with a sponge and hot, soapy water (use glass cleaner to remove smudges and fingerprints on stainless steel). Never spray cleanser directly onto the control panel, because the moisture could damage the electronics. Avoid bleach-based

wipes, harsh chemicals, scouring pads, and anything abrasive on a stainless door and tub.

Wipe down the seal between the dishwasher door and the tub.

### STEP 2

#### Clear the Filter

If you have a manual-clean filter, pull out the bottom rack and

remove the filter system once each week. Clean any interlocking parts individually at the sink, using the spray on your faucet or a sponge; a small brush is handy to dislodge coffee grounds and other grainy soil that can clog the mesh filter material.

Check the spray arm for trapped food scraps.

It usually lifts off its base with a gentle tug. Rinse the arm under the faucet, inspecting for clogged holes, which can be cleared with a toothpick or skewer.

### STEP 3

#### Sanitize and Deodorize

Use a citric-acid-based dishwasher cleaner, such as Affresh or Finish,

to remove built-up deposits monthly.

If discoloration persists, because of severe mineral deposits from your home's hard water, you'll need to switch to a tougher dishwasher cleaner. Of the three we tested, Lemi Shine Original worked well and offered the best value.

Ratings > Dishwashers

Brand + Model	Overall Score	Price	Survey Results		Test Results				Features						
			Predicted reliability	Owner satisfaction	Washing	Drying	Energy use	Noise	Cycle time (min.)	Ample flatware slots	Adjustable upper rack	Adjustable tines	Displays remaining time	Interior material	WiFi
<b>24-INCH</b>															
<b>Bosch</b> Ascenta SHX3AR75UC	89	\$700							95					stainless steel and plastic	
<b>Bosch</b> 300 DLX Series SHS863WD5N	85	\$775							150					stainless steel	
<b>Bosch</b> 100 Series SHXM4AY55N	84	\$750							150					stainless steel and plastic	
<b>Thermador</b> DWHD660WFP	84	\$1,800							155					stainless steel	
<b>Bosch</b> Benchmark SHX89PW55N	84	\$1,615							155					stainless steel	
<b>Thermador</b> DWHD770WFM	83	\$2,300							150					stainless steel	
<b>Ikea</b> Renlig IUD7070DS [288921]	83	\$550							115					plastic	
<b>Bosch</b> 800 Series SHXM88Z75N	82	\$1,090							150					stainless steel	
<b>Bosch</b> 800 Series SHPM78Z55N	82	\$1,040							150					stainless steel	
<b>Bosch</b> Benchmark SHX88PZ55N	82	\$1,600							150					stainless steel	
<b>Miele</b> Classic Plus G4977SCVISF	82	\$1,200							150					stainless steel	
<b>Bosch</b> 300 Series SHEM63W55N	82	\$770							155					stainless steel	
<b>Bosch</b> 800 Series SHPM78W55N	79	\$900							160					stainless steel	
<b>Miele</b> Futura Crystal G6665SCVISF	79	\$1,800							140					stainless steel	
<b>Kenmore</b> 14573	79	\$600							145					stainless steel	
<b>Bosch</b> 800 Series SHXM98W75N	78	\$1,150							160					stainless steel	
<b>Kenmore</b> 14523	77	\$630							150					stainless steel	
<b>Miele</b> Dimension G6785SCVISF	76	\$1,900							145					stainless steel	
<b>Bosch</b> 500 Series SHPM65W55N	76	\$815							160					stainless steel	
<b>GE</b> Profile PDF820SSJSS	76	\$1,010							150					stainless steel	
<b>Bertazzoni</b> DW24XT	76	\$1,105	—	—					135					stainless steel	
<b>Kenmore</b> Elite 14793	76	\$900							145					stainless steel	
<b>Whirlpool</b> WDF520PADM	75	\$520							115					plastic	
<b>GE</b> Profile PDT855SSJSS	75	\$1,370							155					stainless steel	

> Digital and All Access members can find the latest, complete ratings at [CR.org/dishwashers](https://www.cro.org/dishwashers).

**HOW WE TEST: Overall Score** combines test results with survey data for predicted reliability and owner satisfaction. **Predicted reliability** estimates the likelihood that newly purchased models from a given brand will develop problems or break within the first five years. **Owner satisfaction**

reflects the proportion of CR members who are extremely likely to recommend the dishwasher they bought. In cases where we have insufficient survey data to provide a brand-level rating, indicated by a gray dash (—), we assume the model has average reliability and satisfaction.

**Washing** is assessed by running the Normal or equivalent cycle to clean a full load of dishes with baked-on food. **Drying** performance is our assessment of how thoroughly a model dries plastic cups, the most stubborn in any load. **Energy use** is energy and water use for our test cycle. A panel

of testers judge **Noise** levels by listening to each machine through its entire cycle. **Cycle time (min.)**, rounded to the nearest 5 minutes, is based on running the Normal or equivalent cycle to clean a full load.





## Cooktop + Wall Oven or Range?

If you're updating your whole kitchen—and not just replacing a single cooking appliance—you have options. Here's how to decide.

**FOR CONVENIENCE AND** flexibility in the kitchen, you can't beat the combination of a cooktop and wall oven.

Adding a cooktop to an island lets you cook as you chat with guests, and placing a wall oven higher makes it easier to move pans in and out. But cooktop/wall oven combos typically cost more than a range.

For starters, ditching a range in favor of a built-in cooktop and wall oven will mean buying new cabinetry to accommodate the appliances, and you'll have to run new gas or electric lines and install ventilation.

Switching to a range? You'll

have to replace the countertop where your cooktop once was, and you'll likely need to retrofit the wall-oven cabinets.

Here are three additional considerations to help you make your decision.

### WEIGHING THE DIFFERENCES

#### ■ COST

**Range.** You can buy a top-performing gas or electric range (see our ratings on page 24) for under \$1,000. The sweet spot for performance and helpful features, however, is usually \$1,500 to \$2,000.

**Cooktop/wall oven.** Plan on

spending at least \$700 to \$900 for a good gas cooktop or \$500 to \$1,000 on electric models (see our ratings on page 25). For a single wall oven, you'll want to budget up to \$1,500 more than the cost of a range, and a double oven can be \$2,000 to \$3,000 more. But the real expense is the cost of additional cabinets. In addition to a wall-oven cabinet, you'll need 30 to 36 inches of additional base cabinets for the cooktop. All-access and Digital members can see our wall oven ratings at [CR.org/wall-ovens](http://CR.org/wall-ovens).

#### ■ DESIGN

**Range.** You can tailor a range to your needs, though there are limits. Gas ranges offer five burners—including oval burners for a griddle—and double oven electric or gas models offer increased oven capacity. But for six burners in a wider, 36-inch footprint (more accommodating to pots), a cooktop is the best choice.

**Cooktop/wall oven.** Get the combination of cooktop and oven that fits your lifestyle best. Consider a six-burner cooktop and a modest single oven if you cook most of your meals on your stove-top, or a four-burner cooktop and roomy double ovens if you love to bake.

#### ■ PERFORMANCE

**Range.** If having matching appliances is important to you, you might be better off with a range. It's generally easier to find a single range that offers solid performance from burners and oven alike than it is to find matching cooktops and ovens that are both strong performers.

**Cooktop/wall oven.** You can mix appliance brands—and within the different design lines of a single manufacturer—to find an outstanding duo.



**Ditching a range in favor of a built-in cooktop and wall oven will mean buying new cabinetry.**

# KITCHEN

## Ratings > Ranges

Brand + Model	Overall Score	Price	Survey Results		Test Results						Features					
			Predicted reliability	Owner satisfaction	Cooktop high	Cooktop low	Baking	Broiling	Oven capacity	Self-cleaning	High-power elements	Medium-power elements	Low-power elements	Convection mode	Slide-in	Stainless steel available
<b>SMOOTHTOP, SINGLE OVEN (30-INCH)</b>																
LG LRE3061ST	88	\$720	↑	↓	↑	↑	↑	↑	↑	↑	NA	2	0	2	•	•
LG LSE4613ST	85	\$1,400	↑	↓	↑	↑	↑	↑	↑	↑	↓	2	0	2	•	•
LG LREL6325D	84	\$1,199	↑	↓	↑	↑	↑	↑	↑	↑	↑	2	0	2	•	•
GE JS760SLSS	81	\$1,910	↑	↓	↑	↑	↑	↑	↑	↑	↑	2	0	2	•	•
LG LRE3194BD	81	\$1,100	↑	↓	↑	↑	↑	↑	↑	↑	↓	2	0	2	•	•
<b>SMOOTHTOP, DOUBLE OVEN (30-INCH)</b>																
LG LTE4815ST	82	\$2,250	↑	↓	↑	↑	↓	↑	↑	↑	↑	2	0	2	•	•
<b>ELECTRIC INDUCTION</b>																
GE Profile PHS930SLSS	87	\$2,440	↑	↓	↑	↑	↑	↑	↑	↑	↑	3	1	0	•	•
LG LSE4617ST	84	\$2,700	↑	↓	↑	↑	↑	↑	↑	↑	↓	2	2	0	•	•
Frigidaire Gallery FGIF3036TF	84	\$900	↑	↓	↑	↑	↑	↑	↑	↑	↑	4	0	0	•	•
Frigidaire FFIF3054TS	81	\$800	↑	↓	↑	↑	↑	↓	↑	↑	↑	4	0	0	•	•
<b>GAS AND DUAL-FUEL, SINGLE OVEN (30-INCH)</b>																
Samsung NX58H9500WS	81	\$2,500	↑	↑	↑	↑	↑	↑	↑	↑	↑	2	2	1	•	•
Samsung NX58R5601SS	79	\$650	↑	↑	↑	↑	↑	↑	↑	↑	↓	2	2	1	•	•
Samsung NX58K3310SS	77	\$755	↑	↑	↓	↑	↑	↓	↑	↑	NA	2	2	1	•	•
LG LSD4913ST Dual-fuel	77	\$2,000	↑	↑	↑	↑	↑	↑	↑	↓	↓	2	2	1	•	•
Samsung NX58M9420SS	76	\$1,800	↑	↑	↓	↑	↑	↑	↑	↑	↓	2	2	1	•	•
LG LRG4113ST	76	\$1,115	↑	↑	↑	↑	↑	↓	↑	↓	↓	2	2	1	•	•
Samsung NX58M6630SS	76	\$750	↑	↑	↓	↑	↑	↓	↑	↑	↑	2	2	1	•	•
GE JGS760SELSS	76	\$1,840	↑	↓	↑	↑	↑	↓	↑	↓	↓	2	2	1	•	•
<b>GAS AND DUAL-FUEL, DOUBLE OVEN (30-INCH)</b>																
LG Signature LUTD4919SN Dual-fuel	85	\$3,000	↑	↑	↑	↑	↑	↑	↑	↑	↑	2	2	1	•	•
Samsung NY58J9850WS Dual-fuel	82	\$2,775	↑	↑	↑	↑	↑	↑	↑	↓	↓	2	2	1	•	•
Café C2S950P2MS1 Dual-fuel	77	\$3,240	↑	↑	↑	↑	↑	↓	↑	↑	↑	3	2	1	•	•
LG LDG4315ST	77	\$1,615	↑	↑	↑	↑	↑	↓	↑	↑	↑	2	2	1	•	•
GE Profile PGS960SELSS	74	\$2,880	↑	↓	↑	↑	↓	↑	↑	↓	↓	2	2	1	•	•

> Digital and All Access members can find the latest, complete ratings at [CR.org/ranges](https://www.crisp.com/ranges).

**HOW WE TEST: Overall Score** combines test results with survey data for predicted reliability and owner satisfaction. **Predicted reliability** estimates the likelihood that newly purchased models from a given brand will develop problems or break within the first five years. **Owner satisfaction** reflects the

proportion of CR members who are extremely likely to recommend the range they bought. In cases where we have insufficient survey data to provide a brand-level rating, indicated by a gray dash (—), we give the model weighted average reliability and satisfaction scores. **Cooktop high** reflects how quickly the most powerful burner

heated a large pot of water to a near-boil. **Cooktop low** is how well the lowest-powered burner held a low heat, as for melting chocolate, and how well the most powerful burner, set on low, held tomato sauce below a boil. **Baking** reflects even browning of cakes and cookies in multirack baking tests. **Broiling** is even browning of a pan of

burgers and high-heat searing. **Oven capacity** is our evaluation of usable space. **Self-cleaning** is that cycle's effectiveness after the oven is coated with a mixture of eggs, lard, cheese, cherry pie filling, tomato purée, and tapioca. **Price** is approximate retail.

Ratings > Cooktops

Brand + Model	Overall Score	Price	Survey Results		Test Results		Features						
			Predicted reliability	Owner satisfaction	High heat	Low heat	High-power elements/burners	Medium-power elements/burners	Low-power elements/burners	Expandable elements	Touch controls	Stainless steel	Continuous grates
<b>30-INCH SMOOTHTOPS</b>													
✓ Bosch 800 Series NET8068SUC	92	\$1,149	↑↑	↑↑	↑	↑↑	1	2	1		•	NA	NA
✓ GE JP5030SJSS	92	\$1,085	↑↑	↓	↑↑	↑↑	1	0	3	•	•	NA	NA
✓ GE Profile PP9030SJSS	92	\$1,499	↑↑	↓	↑↑	↑↑	2	2	1	•	•	NA	NA
✓ Samsung NZ30K7570RG	90	\$1,299	↑	↓	↑↑	↑↑	1	3	1	•	•	NA	NA
✓ KitchenAid KCED600GSS	89	\$1,665	↑	↓	↑↑	↑↑	2	0	2	•		NA	NA
✓ KitchenAid KCES550HBL	87	\$1,080	↑	↓	↑	↑↑	2	1	2	•		NA	NA
✓ Frigidaire Gallery FGEC3068UB	87	\$850	↑	↓	↑↑	↑↑	1	2	2	•		NA	NA
<b>36-INCH SMOOTHTOPS</b>													
✓ Café CEP90361NBB	91	\$1,529	↑↑	↓	↑↑	↑↑	2	2	1	•	•	NA	NA
✓ LG LCE3610SB	91	\$910	↑↑	↓	↑↑	↑↑	2	1	1	•	•	NA	NA
✓ Samsung NZ36K7570RG	90	\$1,399	↑	↓	↑↑	↑↑	2	2	1	•	•	NA	NA
✓ KitchenAid KCED606GBL	89	\$1,620	↑	↓	↑↑	↑↑	2	1	2	•		NA	NA
✓ Bosch Benchmark Series NETP668SUC	87	\$1,400	↑↑	↑↑	↑	↑↑	1	3	1	•	•	NA	NA
<b>30-INCH INDUCTION COOKTOPS</b>													
✓ Bosch 800 series NIT8069UC	100	\$2,049	↑↑	↑↑	↑↑	↑↑	4	0	0		•	NA	NA
✓ GE Profile PHP9030DJBB	97	\$1,599	↑↑	↓	↑↑	↑↑	3	1	0		•	NA	NA
✓ Monogram ZHU30RSJSS	97	\$2,730	↑↑	↓	↑↑	↑↑	3	1	0		•	NA	NA
<b>36-INCH INDUCTION COOKTOPS</b>													
✓ Bosch Benchmark NITP669SUC	99	\$2,999	↑↑	↑↑	↑↑	↑↑	5	0	0		•	NA	NA
✓ KitchenAid KICU569XBL	95	\$1,890	↑	↓	↑↑	↑↑	5	0	0		•	NA	NA
✓ Samsung NZ36K7880UG	94	\$2,135	↑	↓	↑↑	↑↑	4	1	0	•	•	NA	NA
✓ Frigidaire FPIC3677RF	93	\$1,865	↑	↓	↑↑	↑↑	4	1	0			NA	NA
<b>30-INCH GAS COOKTOPS</b>													
✓ Samsung NA30N7755TS	92	\$1,360	↑↑	↑↑	↑	↑↑	2	2	1	NA	NA	•	•
Ⓢ Samsung NA30N6555TS	91	\$999	↑↑	↑↑	↑	↑↑	2	2	1	NA	NA	•	•
✓ Monogram ZGU30RSLSS	84	\$1,730	↓	↓	↑	↑↑	2	3	0	NA	NA	•	•
<b>36-INCH GAS COOKTOPS</b>													
✓ Samsung NA36N7755TS	92	\$1,420	↑↑	↑↑	↑	↑↑	2	2	1	NA	NA	•	•
✓ Thermador Masterpiece Star SGSX365TS	83	\$1,999	↑	↑↑	↑	↑↑	3	2	0	NA	NA	•	•

> Digital and All Access members can find the latest, complete ratings at [CR.org/cooktops](https://www.cro.org/cooktops).

**HOW WE TEST:** Overall Score combines test results with survey data for predicted reliability and owner satisfaction. Predicted reliability estimates the likelihood that newly purchased models from a given

brand will develop problems or break within the first five years. Owner satisfaction reflects the proportion of CR members who are extremely likely to recommend the cooktop they bought. In cases where we have insufficient

survey data to provide a brand-level rating, indicated by a gray dash (—), we give the model weighted average reliability and satisfaction scores. High heat reflects how quickly the highest-powered burner or element

heats a large pot of water to a near-boiling. Low heat reflects how well the lowest-powered burner or element holds a low heat, and how the most powerful element, set to low, holds tomato sauce below a boil. Price is approximate retail.



## The Best Meal-Prep Helpers

The right small appliances can make cooking delicious meals hassle-free. Here's how.

**PREPARING THREE MEALS** a day at home can get tedious—even if you love to cook. These multitaskers can simplify some jobs, leaving you more time to focus on the kitchen tasks you actually like—or to spend enjoying yourself outside the kitchen. Plus, they're perfect for side dishes, freeing up your oven so that your main course can roast on its own. "Small-appliance technology

has become so advanced over the past decade that some of them can do most everything an oven can do, just on a smaller scale," says Emilio Gonzalez, associate director of lab operations at Consumer Reports.

For instance, in the past, only ovens could convection-roast a whole chicken, and cook stews low and slow. But these functions, among others,

can now be found in toaster ovens, air fryers, and multi-cookers. You will have to find storage space for these small appliances (unless you want a lineup on your counter)—another reason to appreciate their multitasking abilities.

Here, we offer suggestions for the best ways to use these tools. Use the ratings at the end of this article to choose the best models for you.

### TOP-RATED PICKS



**Ninja Foodi Cold & Hot HB152 blender**  
\$130

**76** OVERALL SCORE



**GoWise USA GW22731 air fryer**  
\$80

**73** OVERALL SCORE



**Zavor Lux LCD ZSELL02 multi-cooker**  
\$160

**82** OVERALL SCORE



**Black+Decker 8-Slice Digital Extra Wide TO3290XSD toaster oven**  
\$100

**68** OVERALL SCORE

# SIX SMALL APPLIANCE SUPERSTARS

Get the details on the countertop tools you need to power through dinnertime and more. Then, check our ratings on page 28 for the top models from our tests.



## BLENDER

Sure, blenders are great for smoothies, but you can also use them to make a velvety purée or sauce, and more.

**Common mistakes to avoid:** Hot ingredients can cause certain blenders to malfunction. Check the manual to see whether hot ingredients can be used. If the blender lid doesn't have a vent hole, heat will build up pressure, which can cause the lid to pop off.

**What's new:** A growing number of models can heat ingredients while blending, so you can prepare soup without using the stovetop.

**Best for:** Blenders make quick work of preparing sauces and soups. Or whip up healthy smoothies or other frozen drinks (margaritas, anyone?). Blenders are also great for DIY plant-based milks. For small batches of foods such as fresh salsas and salad dressings, a blender works better than a food processor.



## AIR FRYER

Air fryers circulate hot air around food to cook it quickly and create a deliciously crisp texture using less fat than deep-frying. You can even use an air fryer to bake.

**Common mistakes to avoid:** Food can cook unevenly or turn out soggy if a batch is too large. Don't overfill the basket, and shake it every 5 minutes or so for even browning.

**What's new:** Some toaster ovens, microwaves, and multi-cookers now have air-frying capability. We tested the function in models that feature it in our tests, and all of them made delicious, crispy foods.

**Best for:** Reheating crispy foods like pizza and fried chicken. Fish and veggies, including kale chips, come out delicious in an air fryer: They were even a hit with the kids who tried them in the taste tests we ran.



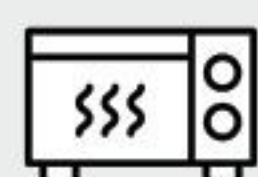
## MULTI-COOKER

One-pot meals that would typically require hours to cook take half the time using a multi-cooker's pressure-cook mode. It can steam, sauté, and slow-cook, too (though our tests show that slow cookers do that better).

**Common mistakes to avoid:** The pressure-cooking mode requires liquid to work properly. But the liquid will not evaporate, so use less than you usually would or your dishes could turn out watery and bland.

**What's new:** Certain models have separate broiling lids that crisp up your foods. We're also seeing models that can dehydrate and sous vide.

**Best for:** Stews, beans, and tough cuts of meat. It makes fast and flavorful chuck roast, pork shoulder, and ribs. If you're new to the multi-cooker, start with recipes designed for it because there is a learning curve.



## TOASTER OVEN

A toaster oven is up to most any task your full-sized oven can accomplish—on a smaller scale. That makes it a smart standby when the oven is occupied or when you're cooking for one or two.

**Common mistakes to avoid:** A dark-colored pan accelerates the transfer of heat, possibly causing roasted vegetables or cookie bottoms to burn. So use a light-colored pan instead, or lower the temperature by 25° F.

**What's new:** In the past five years, certain toaster ovens have added features such as air frying, convection, dehydrating, and slow cooking.

**Best for:** Baking and broiling are a given. Toaster ovens make great toast, too—but more slowly than a standard toaster. (Based on our tests, toaster ovens take anywhere from 3 to 9 minutes on the medium setting; toasters take 2 to 4 minutes.)



## WAFFLE IRON

The best waffle makers in our tests make it almost foolproof to churn out evenly browned waffles. Certain models come with portioned batter cups that take the guesswork out of how much batter to use, and indicators that tell you when a waffle is done.

**Common mistakes to avoid:** Most waffle makers have a nonstick coating, which can be damaged by non-stick cooking sprays. Use a pastry brush dipped in oil or melted butter to grease the iron instead.

**What's new:** We're seeing more and more vertical waffle makers that cook waffles sideways, which saves counter space, but we haven't tested any of these models yet.

**Best for:** Waffles, of course. We've also seen recipes for cooking omelets, hash browns, brownies, and many other foods in a waffle maker.



## SLOW COOKER

A slow cooker is the ultimate hands-off helper. Just place the ingredients in the cooker in the morning, set it to high or low, and come home to a hot, ready-to-serve dinner.

**Common mistakes to avoid:** Because cooking temperatures are low, the Department of Agriculture warns against using frozen meats: They might not reach a safe bacteria-killing temperature.

**What's new:** Inserts that can go on the stovetop so that you can brown foods before slow cooking without dirtying a separate pan.

**Best for:** Soups, stews, beans, and tough cuts of meat, such as brisket, that you want to turn out fork-tender. Slow cookers do a great job with custard-based desserts, such as flan, and recipes that call for a water bath—cheesecake, for example.

# KITCHEN

## Ratings > Small Appliances

Brand + Model	Overall Score	Price	Test Results			Features + Specs				
			Convenience	Cooking		Size (qt.)	Total weight (lb.)	Exterior dimensions (HxWxD, in.)	Dishwasher-safe insert	Dishwasher-safe lid
				High	Low					

### PROGRAMMABLE SLOW COOKERS

✓ <b>Hamilton Beach</b> Temp Tracker 33866 6 Quart	87	\$70	↑	↑↑	↑↑	6	11	12x17x12	●	●
✓ <b>Crock-Pot</b> Cook & Carry SCCPVS600ECP-S	84	\$100	↑	↑	↑↑	6	12	11x17x13	●	●
✓ <b>Kalorik</b> SC 41175SS	82	\$75	↑	↑↑	↑↑	8	15	12x20x12	●	●
✓ <b>Crock-Pot</b> Thermoshield SCCPCT600-B	78	\$70	↑	↑	↑	6	13	10x19x14	●	●
✓ <b>Calphalon</b> Digital Sauté SCCLD1	78	\$120	↑	↑	↑	5.3	7	10x15x13	●	●

Brand + Model	Overall Score	Price	Survey Results		Test Results								Features + Specs				
			Predicted reliability	Owner satisfaction	Reheat	Baking	Toasting				Ease of cleaning	Ease of use	Convection oven	Temperature range (°F)	Dimensions (HxWxD, in.)	Interior dimensions (HxWxD, in.)	Number of slices
							Color range	Time	Full batch	One slice							

### TOASTER OVENS

✓ <b>Breville</b> BOV650XL Oven	77	\$180	↑↑	↑↑	↑	↑	↑↑	↑↑	↑	↑↑	↑	↑	●	120-450	9x17x15	4x13x10	4
✓ <b>Breville</b> Smart Oven Pro BOV845BSS	74	\$270	↑↑	↑↑	↓	↑	↑↑	↑	↑	↑↑	↑	↑	●	120-500	11x19x16	5x14x13	6
✓ <b>Breville</b> Smart Oven BOV800XL	72	\$270	↑↑	↑↑	↓	↑	↑↑	↑	↑	↑↑	↑	↑	●	120-450	11x19x16	5x14x12	6
✓ <b>Black+Decker</b> 8-Slice Digital Extra Wide TO3290XSD	68	\$100	↓	↓	↑	↑	↑↑	↓	↑	↑↑	↑	↓	●	150-450	11x22x15	6x16x12	8
✓ <b>Cuisinart</b> Chefs Convection TOB-260N1	67	\$280	↑	↑	↓	↑	↑↑	↑	↑	↑	↑	↑	●	150-500	11x21x17	6x14x13	9
✓ <b>Cuisinart</b> Deluxe Convection TOB-135N	67	\$160	↑	↑	↓	↑	↑↑	↑	↑	↑	↓	↑	●	150-500	10x18x16	5x12x11	4

Brand + Model	Overall Score	Price	Test Results			Features + Specs					
			Controls	Noise	Ease of cleaning	Capacity		Recorded temperature when set to 350° F	Dimensions (HxWxD, in.)	Weight (lb.)	Dishwasher-safe
						Measured	Claimed				

### AIR FRYERS

✓ <b>NuWave</b> 6-Qt 37001	75	\$130	↑↑	↓	↑	5.8 qt.	6.0 qt.	320	14x11x16	15	●
Ⓢ <b>GoWise USA</b> GW22731	73	\$80	↑↑	↑↑	↓	4.9 qt.	5.8 qt.	334	14x12x15	12	●
✓ <b>NuWave</b> Brio Air Fryer 36011	73	\$100	↑↑	↑	↓	2.6 qt.	3.0 qt.	345	13x10x14	12	●
✓ <b>Ninja</b> AF100	71	\$100	↑↑	↓	↑	3.0 qt.	4.0 qt.	340	13x11x14	10	●
Ⓢ <b>Farberware</b> HF-919B	71	\$70	↑	↑↑	↓	3.2 qt.	3.2 qt.	360	14x12x15	10	●
✓ <b>Elite Platinum</b> EAF-1506D 3.5Qt. Digital	71	\$95	↑	↑	↑	3.4 qt.	3.5 qt.	350	11x12x16	12	●

Brand + Model	Overall Score	Price	Survey Results		Test Results						Features + Specs					
			Predicted reliability	Owner satisfaction	Icy drinks (smoothies)	Convenience	Purée	Ice crushing	Noise	Durability	Type of jar (glass or plastic)	Capacity (c.)	Speeds	Pulse	Height (in.)	Base dimensions (WxD, in.)

### BLENDERS

<b>Ninja</b> Smart Screen Duo with FreshVac CT661V	81	\$170									P	9	8		18	7x9
<b>Ninja</b> With Duo Auto-iQ BL642	80	\$170									P	9	5		18	7x10
<b>Ninja</b> Foodi Cold & Hot HB152	76	\$130									G	8	16		18	8x9

Brand + Model	Overall Score	Price	Test Results						Features + Specs					
			Pressure cooking	Slow cooking	Rice cooking	Steaming	Sautéing	Convenience	Size (qt.)	Total weight (lb.)	Exterior dimensions (HxWxD, in.)	Nonstick pot	Dishwasher-safe insert	Dishwasher-safe lid

### MULTI-COOKERS WITH PRESSURE-COOKING MODE

<b>Zavor</b> Lux LCD ZSELL02	82	\$160							6.0	12	14x14x12			
<b>Breville</b> Fast Slow Pro 6 Qt. BPR700BSS	81	\$250							6.0	12	14x14x14			
<b>Instant Pot</b> Max 6 Quart	80	\$150							6.0	13	13x14x14			

Brand + Model	Overall Score	Price	Test Results			Features + Specs								
			Even browning	Color range	Ease of use	Waffle style (claimed)	Weight (lb.)	Grid	Dimensions (HxWxD, in.)	Nonstick grid	Waffle cooked indicator	Countdown timer	Sound alert	Vertical storage

### WAFFLE MAKERS

<b>Breville</b> Smart 4-Slicer BWM640XL	89	\$250				Belgian	15	Square, with 4 waffle sections	6x12x16					
<b>Calphalon</b> CKCLWF1	82	\$100				Belgian	7	Rectangular, with 2 waffle sections	6x10x12					
<b>Chefman</b> Anti-Overflow Belgian Waffle Maker	76	\$30				Belgian	3	Round	5x8x11					

**HOW WE TEST:** The **Overall Score** for slow cookers takes Convenience into account, as well as our tests on the High and Low settings, in which we cook beef stew for 5 and 8 hours, respectively. For toaster ovens, we bake muffins and cookies, see how well the appliances **Reheat**, evaluate them for **Ease of use** and **Ease of cleaning**, and put them through four separate **Toasting** tests. The **Overall Score** for multi-cookers

combines results from our tests of the **Pressure cooking**, **Slow cooking**, **Rice cooking**, **Steaming**, and **Sautéing** modes. We evaluate ease of controls, cleaning, and more to rate **Convenience**. For blenders, we test for **Icy drinks**, **Puréeing**, and **Ice crushing** to gauge how well a model mixes ingredients, and measure Noise in decibels. **Convenience** looks at ease of use, and for **Durability**, we run the ice crushing test 45 times.

For waffle makers, we assess for **Even browning** in cooked waffles and measure the **Color range** for brownness on the lightest and darkest settings. **Ease of use** factors in the clarity of the controls, how hot the handle gets, and how easy the model is to clean. For air fryers, we assess how easy it is to use the **Controls**, we measure **Noise** during operation, and we judge **Ease of cleaning**. Blenders and toaster ovens

are also rated for **Predicted reliability**, the likelihood that a brand's models will experience problems within the first four years, and **Owner satisfaction**, the likelihood that CR members would recommend their brand. In cases where we have insufficient survey data to provide a brand-level rating, indicated by a gray dash (-), we give the model weighted average reliability and satisfaction scores.

# BED & BATH





**RATINGS:**

MATTRESS  
COOLING PADS  
P. 33

MATTRESSES  
P. 35

PILLOWS  
P. 39

SHEETS  
P. 41

TOILETS  
P. 43

BIDETS  
P. 45

Amount of water the U.S. would save annually if inefficient toilets were replaced with water-saving models.



**520**  
billion  
gallons

Source: Environmental Protection Agency.



# The Sleep-Better Bedroom

Here's what to do to ensure that you slumber soundly through the night



PHOTO, PREVIOUS SPREAD: TY COLE/OTTO (DESIGNED BY JAMES WAGMAN ARCHITECTURE); PHOTO, LEFT: BRKATI KROKODIL/STOCKSY

## A COOL IDEA FOR HOT SLEEPERS

**IF YOU FEEL** like you just don't get as much sleep as you used to, you're not alone.

The coronavirus pandemic is clearly not helping any of us sleep more soundly. But other factors may also be messing with your slumber. Aging may increase the likelihood of developing conditions that can affect sleep, such as obstructive sleep apnea, arthritis, and reflux disease, says Jeanne Duffy, PhD, a neuroscientist in the division of sleep and circadian disorders at Brigham and Women's Hospital in Boston.

Here are some strategies to help you get optimal sleep—plus tips on shopping for sleep supplies from Chris Regan, who oversees mattress and pillow testing at Consumer Reports. For CR's top mattresses, pillows, and sheets, see page 34.

### 1. PICK THE RIGHT MATTRESS

A comfortable mattress is crucial for a good night's sleep. There's no particular material or firmness level that's right for everyone, Duffy says. Instead, look for a mattress that feels good to you. To do that, CR recommends spending some time testing out mattresses before you buy. Try lying on both sides and your back for 10 to 15 minutes each. (If you're buying online, make sure you can return the mattress without charge if you don't like it.) If you sleep with a partner, you should both lie down on the mattress at the same time and move around to figure out whether your partner's shifting is likely to wake you at night. See our mattress ratings on page 35 to help guide your choice.

### 2. BE PILLOW-SAVVY

CR's tests evaluate how well pillows support the head and neck. We've found that many cheaper products don't do as well as pricier ones. Get a pillow

Think you've tried everything to get a good night's sleep? Maybe it's time to consider getting a mattress cooling pad. They typically go under your fitted sheet, and chill water before sending it through tubes in the pad to maintain the temperature you set. Some use a fan to blow air in your bed to cool you off, and some can also heat up your bed for those cold winter nights.

#### Why would you want to chill your mattress?

Science says that many people sleep better in a

cool environment. The National Sleep Foundation recommends keeping your room temperature at around 65° F. But the ideal temperature for any given person varies.

To see which mattress cooling pads keep you most comfortable at night, we put five popular models to the test. (See the top two, at right.) In general, the pricier the pad, the more features it has and, we found, the more comfortable it is.

"Most of the models in our tests had sufficient padding

and were quite comfortable to sleep on," says Bernie Deitrick, a project leader at Consumer Reports who tested the pads.

One perk to using a mattress cooling pad: You don't have to crank up the A/C. "They can reduce air conditioning costs during hot summer weather because you don't have to cool your entire room to be comfortable, plus bed coolers use less power than a typical A/C unit," Deitrick says. The same goes for reducing your heating costs during the winter.

that matches your sleep style—meaning whether you sleep on your side or back. Our ratings are on page 39.

### 3. KEEP THINGS DARK AND QUIET

You might sleep less deeply with age and be more easily awakened by disturbances in the middle of the night, such as light and noise. So keep your bedroom as dim and noise-free as you can, and try not to fall asleep with the TV or radio on. Use curtains to block any light from outside, and keep lights off in your bedroom. But be sure to place a lamp within easy reach of your bed in case

you need to use the bathroom during the night. Turn it on when you get up so that you won't trip or fall in the dark.

### 4. FIND YOUR PREFERRED TEMPERATURE

There's no temperature that's optimal for everyone. The National Sleep Foundation advises aiming for about 65° F. Find a temperature that feels comfortable, neither too hot nor too cold.

### 5. BAN BLUE LIGHT BEFORE BED

The so-called blue light emitted by electronic devices can trick your brain into staying awake.

Try to refrain from using cell phones, tablets, and computers for an hour before bedtime. If you like to watch movies or programs before you go to sleep, use your TV but position it across the room from you, if possible, so that it won't fill your field of vision. That way, the blue light won't affect you as much.

### 6. GET OUT DURING THE DAY

Staying indoors all day may affect your sleep cycle and make it more difficult for you to nod off at night. Getting out in daylight can help, especially if you combine outdoor time with exercise.

#### TOP-RATED PICKS



**Chili Ooler**  
\$699-\$1,499

OVERALL SCORE

5/5



**ChiliPad**  
\$499-\$599

OVERALL SCORE

4/5



## Find the Best Mattress for Your Size and Sleep Style

We tested over 170 innerspring, foam, and adjustable air mattresses to help you find a match

WITH SO MANY options on the market today, it can be difficult to find a mattress that meets your needs—and those of your partner's, if you don't sleep alone.

In our support tests, we use human subjects of small and large stature. For side sleepers, we observe several points along each subject's spine and measure how much they diverge from a straight line. For a test model to score well, the points must remain

fairly parallel to the surface of the mattress.

For our back-sleeping score, we graph 36 points along the subject's spine using displacement sensors to measure the change in the position of the mattress surface, so we can map out the impression in the mattress and compare it with the curve of the tester's spine.

We average the results of the small and large test subjects to produce a score

for average-sized sleepers. A mattress that has great back support for a petite back sleeper may not work for a back sleeper who's substantially larger.

You'll find two new scores included in our most recent update, for comfort and owner satisfaction. They're based on data from our surveys of CR members' experiences with more than 74,000 mattresses.

We asked them to rate the comfort of their mattress, and used the data to generate ratings by brand and type. Owner satisfaction is based on a member's overall judgment of such factors as firmness/softness, value, quality of sleep, and more.

You can see three top picks, right, plus a selection of the top mattresses in our ratings on the pages that follow.

### TOP-RATED PICKS FOR ALL SIZES



INNERSPRING

✓ **Avocado Green Mattress**  
\$1,400

**85** OVERALL SCORE



FOAM

✓ **Essentia Stratami Mattress**  
\$3,000

**82** OVERALL SCORE



ADJUSTABLE AIR

✓ **Sleep Number 360 p6 Smart Bed**  
\$2,400

**80** OVERALL SCORE

Ratings > Mattresses

Brand + Model	Overall Score	Price	Survey Results		Test Results								Features								
			Comfort	Owner satisfaction	Petite side sleeper	Average side sleeper	Large/tall side sleeper	Petite back sleeper	Average back sleeper	Large/tall back sleeper	Durability	Stabilization	Firmness rating	Dimensions (LxWxH)	Latex foam	Gel-infused foam	Resists bounce	Retains warmth	Mattress-in-a-box		
<b>INNERSPRING</b>																					
✓ Avocado Green	85	\$1,400	↑↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	7	79 x 59 x 12	•	•	•	
✓ Casper The Casper Hybrid 2019	83	\$1,295	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	3	80 x 59 x 12		•	•	
✓ Ethan Allen EA Signature Platinum Plush	81	\$2,250	↑	↓	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	5	80 x 61 x 15	•	•	•	
✓ Charles P. Rogers Powercore Estate 5000	80	\$1,500	↑↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	6	81 x 61 x 14	•	•	•	
✓ Avocado Green Mattress Pillowtop	79	\$1,800	↑↑	↑	↑	↑	↑	↑	↑	↑	↑	↓	↑	↓	5	80 x 59 x 14	•	•	•	•	
✓ Sealy Response Performance Briar Rose 11.5" Cushion Firm	78	\$900	↓	↓	↓	↑	↑	↑	↑	↑	↑	↑	↑	↑	5	80 x 60 x 11		•	•	•	
Ⓢ Beautyrest BR-800 12" Medium Firm	77	\$770	↓	↓	↑	↑	↓	↑	↑	↑	↑	↑	↑	↑	6	80 x 59 x 12		•	•	•	
✓ Charles P. Rogers Real Bed	77	\$950	↑↑	↑	↑	↑	↓	↑	↑	↑	↑	↑	↑	↑	3	79 x 60 x 12	•	•	•	•	
Ⓢ Tuft & Needle Nod Hybrid MAT-NODH-01-Q	76	\$675	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	4	80 x 61 x 10				•	
✓ Hotel Collection by Aireloom Coppertech 12" Firm Tight top	76	\$1,800	↑	↓	↓	↓	↑	↑	↑	↑	↑	↑	↑	↑	6	79 x 60 x 13		•	•	•	
✓ Charles P. Rogers St. Regis Pillowtop	76	\$1,160	↑↑	↑	↑	↓	↓	↑	↑	↑	↑	↑	↑	↑	6	81 x 61 x 13		•	•	•	
✓ Sealy Posturepedic Performance Copper II	76	\$1,580	↓	↓	↑	↑	↑	↑	↑	↑	↑	↑	↑	↓	4	80 x 60 x 13		•	•	•	
Ⓢ Beautyrest Silver BRS900-TSS Medium Firm Tight Top	75	\$790	↓	↓	↑	↑	↓	↑	↑	↑	↑	↑	↑	↑	4	79 x 59 x 12		•	•	•	
✓ Sealy Posturepedic Premium Silver Chill	75	\$2,000	↓	↓	↑	↑	↓	↑	↑	↑	↑	↑	↑	↓	3	80 x 60 x 14		•	•	•	
Ⓢ Sealy Posturepedic Lawson LTD Cushion Firm	75	\$710	↓	↓	↑	↓	↓	↑	↑	↑	↑	↑	↑	↑	5	80 x 60 x 11		•	•	•	
✓ King Koil Luxury Almond 13" Plush	75	\$920	↓	↓	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	5	80 x 59 x 12		•	•	•	
✓ Diamond Intention Hybrid	75	\$1,200	–	–	↓	↓	↓	↑	↑	↓	↑	↑	↑	↑	2	81 x 60 x 15		•	•	•	
✓ Tuft & Needle Hybrid with Pillow top	74	\$1,345	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↓	4	79 x 60 x 12				•	•
✓ Nest Bedding Alexander Signature Hybrid Copper Infused Thermic Phase Change Cooling Fabric	74	\$1,300	↑	↑	↑	↑	↓	↑	↓	↓	↑	↑	↑	↑	2	81 x 60 x 14		•	•	•	
Ⓢ Denver Mattress Doctor's Choice Plush	74	\$580	↓	↓	↑	↑	↑	↑	↑	↑	↑	↑	↑	↓	3	80 x 60 x 11		•	•	NA	
Ⓢ Allswell Luxe Hybrid	74	\$585	–	–	↑	↑	↓	↑	↑	↑	↑	↑	↑	↑	7	80 x 60 x 13		•	•	•	
✓ Beautyrest Black L-Class	73	\$2,100	↓	↓	↓	↑	↑	↑	↑	↑	↑	↑	↑	↑	6	80 x 61 x 14		•	•	•	
✓ Bedgear M3 1.0 Medium Firm	73	\$1,650	–	–	↑	↑	↓	↑	↑	↑	↑	↑	↑	↑	5	80 x 60 x 13		•	•	•	
✓ Saatva Flagship Luxury Firm Eurotop	73	\$1,100	↑	↑	↓	↑	↑	↑	↑	↑	↓	↑	↓	3	80 x 60 x 16		•	•	•		
✓ Purple 3	73	\$2,200	↑	↑	↑	↑	↑	↑	↑	↑	↓	↑	↑	↑	3	81 x 60 x 13		•	•	•	
✓ Purple 2 Hybrid Firm	73	\$1,600	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	3	81 x 60 x 11		•	•	•	
✓ Sealy Posturepedic Performance Lawson Euro Pillowtop	73	\$1,670	↓	↓	↓	↓	↓	↑	↑	↑	↑	↑	↑	↑	6	79 x 60 x 14		•	•	NA	

**BED & BATH**

**Ratings** > **Mattresses**

Brand + Model	Overall Score	Price	Survey Results		Test Results								Features					
			Comfort	Owner satisfaction	Petite side sleeper	Average side sleeper	Large/tall side sleeper	Petite back sleeper	Average back sleeper	Large/tall back sleeper	Durability	Stabilization	Firmness rating	Dimensions (LxWxH)	Latex foam	Gel-infused foam	Resists bounce	Retains warmth
<b>INNERSPRING</b> <i>Continued</i>																		
Classic Brands Sleep Trends Davy	73	\$780	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	4	81 x 60 x 10				
Serta Perfect Sleeper Elite Trelleburg II 11.5" Firm Mattress	73	\$800	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	5	79 x 60 x 12				
Denver Mattress Doctor's Choice Euro Top	72	\$750	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	3	80 x 59 x 13				
Ethan Allen EA Signature Firm	72	\$2,250	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	7	80 x 60 x 12				
Duxiana DUX 1001	72	\$4,950	—	—	↑	↑	↑	↑	↑	↑	↑	↑	4	81 x 60 x 14				
Sealy Response Performance Elm Avenue Firm 11	72	\$600	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	6	80 x 60 x 11				
Kingsdown Crown Imperial Empire	72	\$1,800	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	3	80 x 59 x 13				NA
Sealy Response Performance Beech Street Eurotop Cushion Firm	72	\$800	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	5	79 x 60 x 13				
Sealy Posturepedic Essentials Trust II	72	\$1,100	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	4	80 x 59 x 12				
Ikea Hidrasund	72	\$650	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	7	79 x 59 x 13				
Helix Sleep Midnight Luxe	72	\$1,745	—	—	↑	↑	↑	↑	↑	↑	↑	↑	4	81 x 60 x 14				
Stearns & Foster Estate Hurston 14" Cushion firm tight top	72	\$1,500	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	4	80 x 60 x 13				
Stearns & Foster Estate Rockwell Luxury Ultra Firm 13.5 Inch	71	\$1,800	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	5	80 x 61 x 13				
Leesa Hybrid Mattress	71	\$1,595	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	3	80 x 60 x 11				
Stearns & Foster Lux Estate Cassatt	71	\$2,300	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	4	80 x 61 x 14				
Brentwood Home Oceano 14" Gel Memory Foam Medium Eurotop Hybrid	71	\$980	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	3	81 x 61 x 16				
MLily Fusion Luxe	70	\$1,200	—	—	↑	↑	↑	↑	↑	↑	↑	↑	4	80 x 60 x 12				
Modern Sleep Palmetto Hybrid Foam and Innerspring 12-Inch	70	\$315	—	—	↑	↑	↑	↑	↑	↑	↑	↑	5	80 x 61 x 12				
Sealy Posturepedic Performance Kelburn II	70	\$1,300	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	5	80 x 59 x 13				
The Original Mattress Factory Orthopedic Luxury Firm	70	\$630	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	4	79 x 60 x 14				NA
Serta Perfect Sleeper Hybrid Standale II Luxury	70	\$1,020	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	6	79 x 60 x 14				
Restonic Biltmore Ornate Super Pillowtop	70	\$1,220	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	2	80 x 60 x 15				
OrganicPedic by OMI Stella	70	\$2,000	—	—	↑	↑	↑	↑	↑	↑	↑	↑	4	80 x 60 x 12				
Beautyrest BRX1000-IP	70	\$1,200	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	4	80 x 60 x 14				
Sealy Posturepedic Plus Warrenville V 13 Inch Medium	70	\$1,050	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	4	80 x 60 x 13				
MacyBed by Serta Elite 13" Luxury Firm	70	\$900	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	3	79 x 59 x 14				
Amore Beds Hybrid	70	\$950	—	—	↑	↑	↑	↑	↑	↑	↑	↑	6	79 x 59 x 12				

Brand + Model	Overall Score	Price	Survey Results		Test Results								Features						
			Comfort	Owner satisfaction	Petite side sleeper	Average side sleeper	Large/tall side sleeper	Petite back sleeper	Average back sleeper	Large/tall back sleeper	Durability	Stabilization	Firmness rating	Dimensions (LxWxH)	Latex foam	Gel-infused foam	Resists bounce	Retains warmth	Mattress-in-a-box
<b>INNERSPRING</b> <i>Continued</i>																			
<b>Sealy Posturepedic Plus</b> Warrenville V 12 Inch Ultra Firm	69	\$1,050	↓	↓	↓	↓	↓	↑	↑	↑	↑	↑	↑	3	80 x 60 x 12				
<b>Serta Hotel Beds Concierge Suite II</b>	69	\$1,100	↓	↓	↑	↑	↑	↑	↓	↓	↑	↓	3	80 x 60 x 12					
<b>Serta Sleeptruer Alverson II Firm Euro Top</b>	69	\$1,200	↓	↓	↓	↓	↓	↑	↑	↑	↑	↑	6	80 x 60 x 14					
<b>Sealy Response Performance Chestnut Street Cushion Firm</b>	69	\$800	↓	↓	↑	↓	↓	↑	↑	↑	↑	↑	4	79 x 60 x 12					
<b>FOAM</b>																			
<b>Essentia Stratami</b>	82	\$3,000	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	6	79 x 60 x 8					
<b>Sleep on Latex Pure Green Firm</b>	81	\$795	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	7	81 x 61 x 9					
<b>Casper The Casper Original All-Foam 2019</b>	81	\$1,095	↑	↑	↑	↑	↑	↑	↑	↑	↑	↓	5	79 x 59 x 11					
<b>Reverie Dream Supreme II Hybrid Sleep System Firm</b>	80	\$3,600	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	4	79 x 59 x 12					
<b>Tuft &amp; Needle Mint</b>	78	\$995	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	4	81 x 61 x 12					
<b>BedInABox Tranquillum</b>	78	\$1,200	↑	↑	↑	↑	↓	↑	↑	↑	↑	↑	6	81 x 61 x 11					
<b>Lull The Lull</b>	77	\$800	↑	↑	↑	↑	↓	↑	↑	↑	↑	↑	6	80 x 60 x 10					
<b>GhostBed The GhostBed</b>	76	\$895	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	7	80 x 60 x 11					
<b>Nest Bedding Love &amp; Sleep</b>	76	\$700	↑	↑	↑	↓	↓	↑	↑	↑	↑	↑	4	80 x 60 x 11					
<b>Novaform 10" SoFresh Responsive Foam</b>	76	\$500	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	5	80 x 60 x 10					
<b>Purple The Purple Mattress</b>	76	\$1,000	↑	↑	↑	↑	↓	↑	↑	↓	↑	↑	3	78 x 60 x 9					
<b>GhostBed Luxe</b>	76	\$1,180	↑	↑	↑	↑	↓	↑	↑	↓	↑	↑	4	80 x 59 x 13					
<b>Sealy Essentials 12"</b>	75	\$800	↓	↓	↑	↑	↑	↑	↑	↓	↑	↓	2	80 x 59 x 12					
<b>Signature Sleep Gold Inspire</b>	74	\$305	—	—	↑	↑	↓	↑	↑	↑	↑	↓	6	80 x 61 x 12					
<b>Tuft &amp; Needle T&amp;N Original Mattress</b>	74	\$535	↑	↑	↑	↑	↑	↑	↓	↓	↑	↑	5	80 x 60 x 10					
<b>Saatva Zenhaven Latex</b>	74	\$1,900	↑	↑	↑	↓	↓	↑	↑	↑	↑	↓	3	80 x 60 x 10					
<b>Sleepy's 10" Medium Quilted Foam Mattress mfi130999</b>	74	\$640	—	—	↑	↑	↓	↑	↑	↑	↑	↑	6	80 x 60 x 10					
<b>Sleepy's Curve 12" Plush Memory Foam mfi133560</b>	74	\$900	—	—	↑	↑	↓	↑	↑	↑	↑	↓	4	80 x 59 x 12					
<b>Serta SleepToGo</b>	74	\$500	↓	↓	↑	↑	↑	↑	↑	↑	↑	↓	5	80 x 59 x 12					
<b>Spa Sensations by Zinus 12" Theratouch M-FMS-1200Q</b>	74	\$330	↑	↑	↑	↓	↓	↑	↑	↑	↑	↑	5	80 x 59 x 12					
<b>Serta iComfort CF3000</b>	74	\$1,650	↓	↓	↑	↓	↓	↑	↑	↑	↑	↓	4	78 x 59 x 12					
<b>Tempur-Pedic Tempur-ProAdapt Firm</b>	73	\$3,000	↑	↑	↑	↓	↓	↑	↑	↑	↑	↓	7	80 x 60 x 12					
<b>My Pillow 10" Mattress</b>	73	\$900	—	—	↑	↓	↓	↑	↑	↑	↑	↑	6	80 x 60 x 10					

Brand + Model	Overall Score	Price	Survey Results		Test Results								Features							
			Comfort	Owner satisfaction	Petite side sleeper	Average side sleeper	Large/tall side sleeper	Petite back sleeper	Average back sleeper	Large/tall back sleeper	Durability	Stabilization	Firmness rating	Dimensions (LxWxH)	Latex foam	Gel-infused foam	Resists bounce	Retains warmth	Mattress-in-a-box	
<b>FOAM</b> <i>Continued</i>																				
✓ Rivet M-MAT-10000-QN-WHT	73	\$510	—	—	↑	↓	↓	↑	↑	↑	↑	↑	↓	4	81 x 61 x 10			•	•	•
✓ Reverie Dream Supreme II Hybrid Sleep System Medium	73	\$3,600	↑	↑	↑	↑	↑	↑	↑	↓	↓	↑	↑	3	79 x 59 x 12	•		•		
✓ Serta iComfort Blue 100CT Gentle Firm	73	\$1,200	↓	↓	↑	↑	↓	↑	↑	↑	↑	↑	↓	5	79 x 60 x 10		•	•		
✓ Tulo Medium	73	\$400	—	—	↑	↑	↓	↑	↓	↓	↑	↑	↑	3	79 x 58 x 10			•	•	•
✓ Nectar The Nectar	73	\$795	↑	↑	↑	↑	↓	↑	↑	↓	↑	↓	↓	6	80 x 60 x 11			•		•
Sleep Science Black Diamond 11" Memory Foam Queen Firm	72	\$900	↑	↑	↑	↓	↓	↑	↑	↑	↑	↑	↓	6	80 x 61 x 11	•		•		•
Bear Queen	71	\$650	—	—	↑	↑	↓	↑	↑	↓	↑	↑	↑	6	79 x 60 x 10		•	•	•	•
Renue 12-inch Memory Foam	71	\$650	—	—	↑	↓	↓	↑	↑	↑	↑	↑	↓	4	80 x 59 x 12			•	•	•
Serta Perfect Sleeper Express 12" Luxury Medium Firm	71	\$700	↓	↓	↑	↓	↓	↑	↑	↑	↑	↑	↓	7	80 x 60 x 12		•	•	•	•
Serta iComfort CF2000	71	\$1,400	↓	↓	↓	↓	↓	↑	↑	↑	↑	↑	↓	5	80 x 60 x 12		•	•	•	•
Serta Perfect Sleeper 10"	71	\$640	↓	↓	↑	↓	↓	↑	↑	↑	↑	↑	↑	6	80 x 59 x 10			•		•
OrganicPedic by OMI Flora Nouveau	70	\$2,300	—	—	↓	↓	↓	↑	↓	↓	↑	↑	↑	4	80 x 60 x 9	•		•		
Classic Brands Cool Gel 1.0 Ultimate Gel Memory Foam	70	\$420	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↓	4	80 x 60 x 14		•	•	•	•
<b>ADJUSTABLE AIR</b>																				
✓ Sleep Number 360 p6 Smart Bed	80	\$2,400	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	4	81 x 60 x 11			•		
Ⓢ Sleep Number 360 c2 Smart Bed	80	\$1,000	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	7	80 x 59 x 8		•	•		
✓ Personal Comfort H10 Bed	78	\$2,200	—	—	↑	↑	↑	↑	↑	↑	↑	↑	↑	6	81 x 60 x 11			•		
✓ Saatva Solaire	78	\$2,700	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	4	81 x 60 x 14	•	•	•		
Personal Comfort A8 Bed	70	\$2,200	—	—	↑	↑	↓	↑	↑	↓	↑	↓	↓	4	81 x 61 x 13		•	•		
Sleep Number 360 i8 Smart Bed	67	\$3,000	↑	↑	↓	↓	↓	↓	↓	↓	↓	↑	↑	4	80 x 60 x 12			•		

> Digital and All Access members can find the latest, complete ratings at [CR.org/mattresses](https://CR.org/mattresses).

**HOW WE TEST:** Overall Score is based on the performance of the product in all of our tests and member response. The Survey Results section includes two ratings based on a decade's worth of our members' survey feedback on nearly 75,000 mattresses. Comfort score is based on our mattress survey data in which our members rate their mattress purchases using a

5-point rating system from Very Poor to Excellent. Owner satisfaction is based on a 5-point rating system from completely dissatisfied to completely satisfied with their purchase. Side sleeper is the ability to keep a side sleeper's spine relatively horizontal. Back sleeper is the ability to maintain the natural curve of a back sleeper's spine. In our support tests we use a

woman 4 feet 11½ inches to 5 feet 1½ inches, and 110 to 127.5 pounds for the petite sleeper scores, and a man 6 feet 2 inches to 6 feet 4 inches and 220 to 242 pounds for the large/tall sleeper scores. The average sleeper is an average of the other two. Durability gauges a mattress' ability to keep its original shape, height, firmness, and support after a simulated eight to 10

years of use, including our passing a nearly 310-pound roller over each mattress 30,000 times. A high score for stabilization indicates little or no bouncing or vibration transferred. We rate firmness on a scale of 1 to 10, with 10 being the firmest. Price is approximate retail for a queen-size mattress without a box spring.





## 5 Things to Know Before Buying Sheets

Our experts share what they discovered when testing sheets—and how you can apply these rules when shopping.

IT'S EASY TO find a set of good-looking sheets, but it's difficult to judge the quality of a new set by its price or package. We tested sheet sets ranging from \$44 to \$725 and found an extremely wide range of performance unrelated to price.

"We could not find any correlation between manufacturer claims of materials or thread count and sheet performance," says Enrique de Paz, the CR engineer who tests sheets. "And from sheet set to sheet set, things like corner seam distance or the elastic bands on the underside of the sheet can vary widely, making it difficult to tell what's useful or not when shopping."

### HOW CR TESTS SHEETS

We test the most popular size of sheets: queen. And we consider fit to be the most important standard. If a fitted sheet (no

matter how soft) shrinks so much that you can't get it over your mattress, all other attributes are moot.

In our tests, we wash fitted sheets according to the manufacturers' directions 25 times, equivalent to about a year's worth of washing if you launder your linens every two weeks. After each washing, our testers stretch each fitted sheet over an 8-, 10-, 14-, and 18-inch-deep mattress to see whether the corners and sides still fit and tuck underneath. (A 14-inch mattress is standard.)

After drying, we look at how much they wrinkle by comparing the sheets with a separate set of industry standard sheets from the American Association of Textile Chemists. Our engineers also assess the strength of the fibers with a machine that clamps both ends of the sheet sample and pulls it with

increasing force until it tears. We measure shrinkage, and a panel of sensory testers compares each sheet with reference samples for softness. To see the results, check our ratings on the facing.

Below, we outline some of the key findings that came out of our lab—and how you can use them to help you shop.

### 1. SHEETS CAN SHRINK SIGNIFICANTLY

Cotton sheets we tested shrank up to 6 percent, and some no longer fit on even the thinnest mattress—an 8-inch-tall foam model—after just 15 washes.

Our testers noted that initially, all cotton sheets could fit the depth of the queen-size mattress as marked on their packaging (though not all packages carry such an indication). But after 25 wash cycles, only a few could fit a 14-inch mattress, and only the Matouk Sierra set could fit an 18-inch mattress (even though it shrank a fair amount). That's something to keep in mind if you have a particularly thick pillow-top.

### 2. MATERIALS MAKE A BIG DIFFERENCE

The most common materials used for sheets, such as cotton, cotton blends, rayon, and polyester, have different properties. While we've only rated cotton sheets so far, our engineers have evaluated other common materials in the lab.

The sheets made of bamboo viscose that we tested were highly absorbent (so expect long drying times) and shrank by more than 15 percent after our fit test. One fitted bamboo sheet couldn't even fit an 8-inch mattress after a mere 10 washes.

Cotton sheets, on the other hand, shrank less, but still, only the top sheets in our ratings could fit a 14-inch mattress

### TOP-RATED PICKS



**L.L. Bean Pima Cotton Percale (280TC) Sheet**  
\$149

**74** OVERALL SCORE



**Brooklinen Luxe Core Sheet**  
\$149

**61** OVERALL SCORE

Ratings > Sheets

after a year's worth of washing. The polyester sheet we tested hardly shrank at all, and fit an 18-inch mattress after a year's worth of washing—though some might find sweating on a polyester sheet to be uncomfortable because the material doesn't absorb water.

**3. THREAD COUNT DOESN'T INDICATE PERFORMANCE**

One of our top-rated sheet sets, the Matouk Sierra, has a claimed thread count (the number of vertical and horizontal threads that are woven into each

square inch of material) of 350.

Compare that with the Wamsutta Dream Zone 1000TC, with its claimed thread count of, yep, 1,000. The Wamsutta sits near the bottom of our ratings. The package for these sheets claims that it could fit up to a 20-inch-deep mattress, but in our testing, de Paz and crew found that the Wamsutta didn't even fit an 18-inch mattress after less than 20 washes.

**4. PRICE DOESN'T INDICATE PERFORMANCE**

At \$725, the Frette Porto sheet

set is the most expensive in our ratings, but they aren't the best performers. Sheets from L.L.Bean performed better than the Frette sheets in our ratings, and they cost about \$150.

Toward the bottom? Casper's Cool Supima sheets, which cost about \$140 a set and don't even fit an 8-inch mattress after a year's worth of washing.

All three brands' sheets are made from the same material, but the difference in performance suggests a lot of variation in how sheets are manufactured.

**5. THE FEEL OF COTTON REMAINS CONSISTENT**

We handled sheets before and after washing for our sensory perception test. A panel of staffers compared each sheet set with three reference fabrics, then rated each set on a scale of soft, softer, and softest.

Our panelists didn't notice a significant difference in softness before and after a year's worth of wash cycles. That means that if you're feeling sheets in a store, you can expect them to feel the same even after laundering them for about a year.

Brand + Model	Overall Score	Price	Test Results				Features				
			Fit	Wrinkling	Strength	Shrinkage	Softness	Fits 10-inch mattress	Fits 14-inch mattress	Fits 18-inch mattress	Indicates Installation Direction
<b>SHEETS</b>											
✓ Matouk Sierra	79	\$258	↑	↓	↑	↓	Soft	●	●	●	
💰 L.L. Bean Pima Cotton Percale (280TC)	74	\$149	↑	↓	↑	↑	Soft	●	●		●
✓ Frette Porto	65	\$725	↑	↓	↓	↑	Softer	●	●		
✓ Brooklinen Luxe Core	61	\$149	↑	↓	↓	↑	Softer	●	●		●
✓ Boll & Branch Percale Solid Sheet Set	61	\$240	↑	↓	↓	↓	Softer	●	●		●
Wamsutta Dream Zone 1000TC Pima Cotton	40	\$200	↓	↓	↑	↓	Soft		●		●
Target Organic Cotton Printed Sheet Set 300 TC	30	\$44	↓	↓	↑	↓	Softer				●
Casper Cool Supima	28	\$140	↓	↓	↑	↓	Softer				●
Pinzon by Amazon Pinzon 400 TC Egyptian Cotton Sateen	25	\$44	↓	↓	↓	↑	Soft				

**HOW WE TEST:** We calculate the **Overall Score** by evaluating sheet sets for fit, shrinkage, strength, and wrinkling. **Fit** denotes how well a fitted sheet can cover a mattress after a maximum of 25 wash-dry cycles without popping off from under the mattress or at the corners. A Poor rating in our Fit

test means the sheet could not reach all four corners of the mattress. **Shrinkage** is scored by measuring a section of each sheet before and after 10 washes. **Strength** is a combination of how well the fibers in the sheet stand up to tearing and the strength of the seam, and is evaluated by clamping

the sheet or the seam between two jaws and pulling with increasing force until the sample tears. **Wrinkling** is a comparison of dried sheets against wrinkle references from the American Association of Textile Chemists and Colorists. To assess **Softness**, a panel of 11 staffers compared sheets with

three reference softness cloths and placed each sheet into one of three categories (soft, softer, and softest). **Price** is for a queen-size sheet set that has one fitted sheet, one flat sheet, and two pillowcases.

# Royal Flushes

Choosing the right toilet is essential to getting a bathroom you love

AS MANY TIMES as we rely on toilets throughout the day, we mostly take them for granted. Our testers have found that two mistakes people make when picking a new toilet are shopping by brand and assuming that there's a link between price and performance. "The same brands make models that are excellent and models that are only fair, and some of the least expensive models in our tests outperform some of the priciest," says John Banta, the engineer who oversees CR's toilet testing program.

Here's what to consider when it's time to replace your current commode.

**1. FOCUS ON THE FLUSH**  
Conventional toilets operate with gravity flush. Toilets with pressure-assist flushing use water pressure to compress air in the tank that forces water into the bowl at high velocity, making a loud, telltale "whoosh" sound—and making them less likely to clog. Your home must have adequate water pressure (at least 25 pounds per square inch) for this type. Dual-flush toilets have two buttons: one to flush with a reduced amount of water (typically 1.1 gallons) to eliminate liquid waste; the other with more water (usually 1.6 gallons) for bigger jobs.

**2. SELECT THE STYLE**  
Round bowls, just under 17 inches front to back, are a space-saving option. Elongated bowls, measuring about 19 inches front to back, make for a more commodious commode. Compact elongated models offer the extra room of elongated bowls but fit into the footprint of a round bowl.

"Comfort height" toilets have bowls that are closer to 17 to 19 inches high than the standard 14 to 15 inches, and can be easier to sit on and rise from (but can more difficult for small children to use).

**3. CONSIDER CLEANING**  
Models with a skirted trapway (the bendy path that waste travels through to reach the piping in your house) and one-piece designs are easiest to clean, but they may be more expensive than standard two-piece models.



## TOP-RATED PICKS



✓ Kohler  
Cimarron K-3589  
\$320

84 OVERALL SCORE



✓ Kohler Kelston  
K-3754 Toilet  
\$275

79 OVERALL SCORE



✓ American Standard  
Champion  
4 Max  
2586.128ST.020  
Toilet  
\$240

78 OVERALL SCORE

Ratings > Toilets

Brand + Model	Overall Score	Price	Test Results			Features				
			Solid waste removal	Noise	Bowl cleaning	Type	Gallons per flush	Resists soil and odor	Resists drainline clogs	Comfort height
<b>SINGLE FLUSH TOILETS</b>										
✓ Kohler Cimarron K-3589	84	\$320	↑↑	↑↑	↑	Gravity	1.6	●	●	●
✓ Kohler Kelston K-3754	79	\$275	↑↑	↑	↑↑	Gravity	1.6	●	●	●
✓ American Standard Champion 4 Max 2586.128ST.020	78	\$240	↑↑	↑↑	↑↑	Gravity	1.28	●	●	●
✓ American Standard Optum VorMax 707AA.101.020	77	\$270	↑↑	↑↑	↑↑	Gravity	1.28	●		●
✓ American Standard Esteem VorMax 717AA101S.020 (Lowe's)	76	\$270	↑↑	↑↑	↑	Gravity	1.28	●	●	●
✓ St. Thomas by Icera Richmond (6123.218, 6125.028)	75	\$350	↑	↑	↑↑	Gravity	1.28	●	●	●
✓ Kohler Transpose 45385-0 (Lowe's)	75	\$290	↑	↑	↑↑	Gravity	1.28	●		●
✓ Zurn Z5551-K	75	\$250	↑	↑↑	↑↑	Gravity	1.6	●	●	●
✓ Kohler Wellworth K-3575	74	\$250	↑↑	↑	↑↑	Gravity	1.28	●		
✓ Gerber Avalanche Elite WS-20-828	73	\$425	↑↑	↑	↑↑	Gravity	1.28	●		●
✓ Kohler Highline Classic K-3493	71	\$425	↑↑	↓	↑↑	Pressure	1.6	●		●
✓ Gerber Ultra Flush UL-20-318	71	\$520	↑↑	↓	↑↑	Pressure	1	●		●
💰 Aquasource Henshaw T802D (Lowe's)	71	\$100	↑	↑↑	↑↑	Gravity	1.28			●
✓ American Standard Acticlean 714AA151.020	71	\$400	↑	↑↑	↑↑	Gravity	1.28	●		●
✓ Kohler Cimarron The Complete Solution K-11451	70	\$250	↑↑	↑	↑	Gravity	1.28	●		●
💰 Delta Turner C43908-WH	70	\$170	↑	↑↑	↑↑	Gravity	1.28			●
✓ Gerber Avalanche WS-21-818	70	\$360	↑	↑	↑↑	Gravity	1.28	●		●
✓ Kohler Santa Rosa K-3810	69	\$330	↑	↑	↑↑	Gravity	1.28	●		●
✓ American Standard Clean 2514101S.020 (Lowe's)	69	\$240	↑	↑	↑↑	Gravity	1.28	●		●
<b>DUAL FLUSH TOILETS</b>										
✓ Glacier Bay N2420 (Home Depot)	77	\$180	↑↑	↑	↑↑	Gravity	1.6/1.1	●	●	●
✓ American Standard Edgemere 204AA200.020	76	\$265	↑↑	↑↑	↑	Gravity	1.6/1.1	●	●	●
✓ Toto Drake Close Coupled MS746124CEMFG	74	\$470	↑↑	↑↑	↑↑	Gravity	1.28/8			●
<b>WALL-MOUNTED TOILETS</b>										
✓ Duravit Starck 3 2226090092 with GEBERIT 111.335.00.5 UP3 20 tank	75	\$700	↑	↑↑	↑↑	Gravity	1.6/8		●	●
✓ Kohler Veil K-6299 with KOHLER K-6284-NA In-Wall Tank and Carrier System	73	\$1,050	↑	↑	↑↑	Gravity	1.6/8		●	●

> Digital and All Access members can find the latest, complete ratings at [CR.org/toilets](https://www.consumerreports.org/toilets).

**HOW WE TEST:** The Overall Score is based on solid-waste removal, bowl cleaning at 35 pounds per square inch of water pressure, and noise.

**Solid-waste removal** is the ability to move simulated waste through the bowl and trap. **Noise** is flush quietness without the seat. **Bowl cleaning** is

how well flushing cleaned the bowl's front and sides. **Type** is gravity-feed or pressure-assist. **Resists soil and odor** indicates a large water surface, which

helps minimize soil and odor. **Gallons per flush** is the amount of water used per flush. **Price** is approximate retail.

## The Basics on Bidets

What you need to know about these toilet upgrades, plus results from CR's recent user survey



**IF YOU GOT** caught unprepared by the toilet paper shortage last year, you may have looked into alternatives for a staple most of us take for granted. It's a short list. At the top is the bidet, an accessory that employs a spray wand (or two) to deliver a cleansing stream of water to your undercarriage so you can wash instead of wipe after using the loo. (But always pat dry with a clean towel or small amount of paper after using one to guard against problems associated with excessive moisture, says Allen P. Chudzinski, MD, a fellow of the American Society of Colon and Rectal Surgeons.)

Aftermarket bidets come in two configurations: bidet seats and attachments. Unlike the free-standing porcelain fixtures you might

expect to find in Europe, with these DIY devices you attach a T-valve to the toilet's water supply to split it between the bidet and the toilet tank.

A bidet seat needs to be plugged into an electrical outlet and typically features a heated seat, a warm-water spray, an adjustable nozzle, and a heated air dryer. The power cords are usually about 4 feet long, and you'll need to make sure that the outlet is a ground-fault circuit interrupter, or GFCI, which protects against shock or electrocution. (It will have a "test" and a "reset" button.)

A bidet attachment is simpler: It mounts between your existing toilet seat and the bowl. Bidet attachments are less expensive, but no electricity usually

means no heat (though some connect to your faucet's hot-water supply).

Expect to pay around \$60 to \$120 for an attachment and up to \$1,200 for a seat, though many seats are in the \$200 to \$500 range. Besides Brondell, Toto, and Tushy, top brands include BioBidet and Luxe.

With such a range of prices and features, how do you decide which bidet seat or bidet attachment is right for you? On the facing page, see what respondents to a recent user study CR conducted think of the models they're using in their homes, and see how each model ranks on these key factors: installation, usability, adjusting water pressure, angle of the water stream, and—for the seats—water temperature.

### TO DO

## HOW TO KEEP A BIDET CLEAN

**DAILY:** Use the nozzle wash feature daily; it runs water over the nozzle to clean it. Use a soft, damp cloth to wipe the seat and crevices that you can reach without removing the bidet. You can also use a mild cleanser, like the ammonia-free version of Windex or Simple Green. For heavier dirt, wipe with a soft, damp cloth that has been soaked in dish detergent diluted with a neutral pH. (Dawn, Joy Ultra Concentrated, and Seventh Generation Dish Liquid fit the bill.) If you have a bidet with a control panel or remote, lightly dampen a cloth with a mild spray cleaner (like Windex or Simple Green) and wipe. Don't submerge the remote or controls in water or soak them with cleaner.

**MONTHLY:** Remove the bidet and the toilet lid, and wipe them with a soft, damp cloth and neutral kitchen dish soap. Let them dry or wipe them with a dry soft cloth. If your bidet seat has a deodorizing filter, remove it and clean with a toothbrush and water, then rinse and let it dry. When dry, reinstall everything, then clean the water nozzle following the manufacturer's instructions. **SEMIANNUALLY:** If your model has a filter, shut off the water supply to the bidet, remove the filter, and rinse it to get rid of any sediment, grime, or rust. If your bidet seat has a connection hose with a water shutoff valve, clean the inside of the valve with a toothbrush to clear any sediment. (Make sure to turn off the water first.)

# TOPS FOR BOTTOMS

## BIDET SEATS

### Brondell Swash 1000

\$600



INSTALLATION	5/5
WATER-PRESSURE ADJUSTMENT	5/5
STREAM-ANGLE ADJUSTMENT	5/5
USABILITY	5/5
WATER-TEMPERATURE ADJUSTMENT	5/5

The Swash 1000 lets you control water pressure and water temperature, seat temperature, the air dryer, and other features with a remote control. It provides a continuous supply of warm water. All of the owners of this model said it reduced their toilet paper use. Many commented that they felt very clean after using this seat.

### Bio Bidet BB-600 Ultimate

\$400



INSTALLATION	4/5
WATER-PRESSURE ADJUSTMENT	5/5
STREAM-ANGLE ADJUSTMENT	5/5
USABILITY	4/5
WATER-TEMPERATURE ADJUSTMENT	5/5

The spray on the Bio Bidet BB-600 Ultimate can be adjusted. It comes with a warm-water tank, which one owner said heats water quickly. Some owners raved about its seat-warming capabilities. They also said it's a good value. It has a side-mounted control panel, which one owner thought was set too far back and had buttons that were hard to see at night.

### Toto Washlet C200

\$715



INSTALLATION	4/5
WATER-PRESSURE ADJUSTMENT	5/5
STREAM-ANGLE ADJUSTMENT	5/5
USABILITY	5/5
WATER-TEMPERATURE ADJUSTMENT	5/5

The Washlet C200 comes with a remote to control all of the features. This model can also store two preference settings so that there's no need for users to adjust them each time they use the toilet. One owner said that the remote could be ideal for someone unable to see the buttons on a side control panel. Some said the warm water could be even warmer.

## BIDET ATTACHMENTS

### Tushy Classic

\$90



INSTALLATION	5/5
WATER-PRESSURE ADJUSTMENT	5/5
USABILITY	5/5
STREAM-ANGLE ADJUSTMENT	4/5

The Tushy Classic bidet attachment has a dial to adjust the water pressure as well as three nozzle-position settings. A few users said it was easier to reposition themselves rather than adjust the nozzle. Some users found that it shifted a bit under the toilet seat. One said the water pressure could be quite strong. Most users found the Classic easy to install and operate.

### Brondell SimpleSpa Thinline

\$50



INSTALLATION	4/5
WATER-PRESSURE ADJUSTMENT	5/5
USABILITY	5/5
STREAM-ANGLE ADJUSTMENT	4/5

This bidet attachment is one of the slimmest on the market, at just 0.2-inch thick. It has a single nozzle for rear cleansing (a two-nozzle version for front and rear cleansing is available for \$70) and just one knob, which controls the water pressure. While most users were happy with the adjustable water pressure, the stream was too strong for some.

### Luxe Bidet Neo 120

\$60



INSTALLATION	4/5
WATER-PRESSURE ADJUSTMENT	5/5
USABILITY	5/5
STREAM-ANGLE ADJUSTMENT	3/5

The Luxe Neo 120 bidet attachment provides a posterior wash with adjustable water pressure. One user disliked the pressure, noting that it was "too powerful." Some users said the clasp on the attachment that secures it to the toilet seat created a space between the two that was difficult to clean. Most users said it helped them conserve toilet paper.

# TECH & HOME OFFICE





## RATINGS:

ROBOTIC VACUUMS  
P. 51

VIDEO DOORBELLS  
P. 53

WIRELESS  
SECURITY  
CAMERAS  
P. 53

SMART LOCKS  
P. 54

SMART  
THERMOSTATS  
P. 54

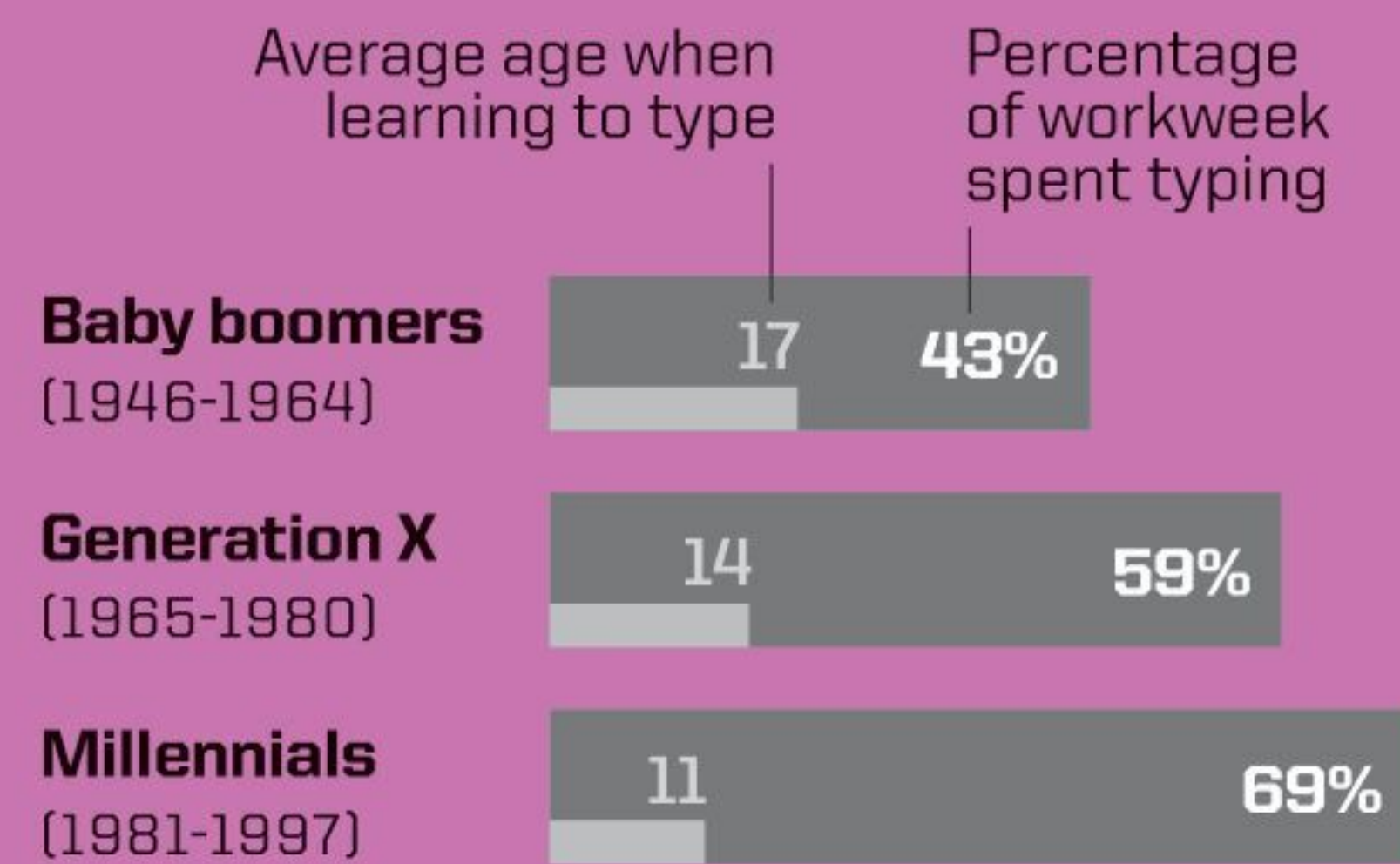
SMART SPEAKERS  
P. 55

ERGONOMIC  
KEYBOARDS  
P. 57

ELLIPTICAL  
EXERCISERS  
P. 60

TREADMILLS  
P. 61

## Who types the most per week

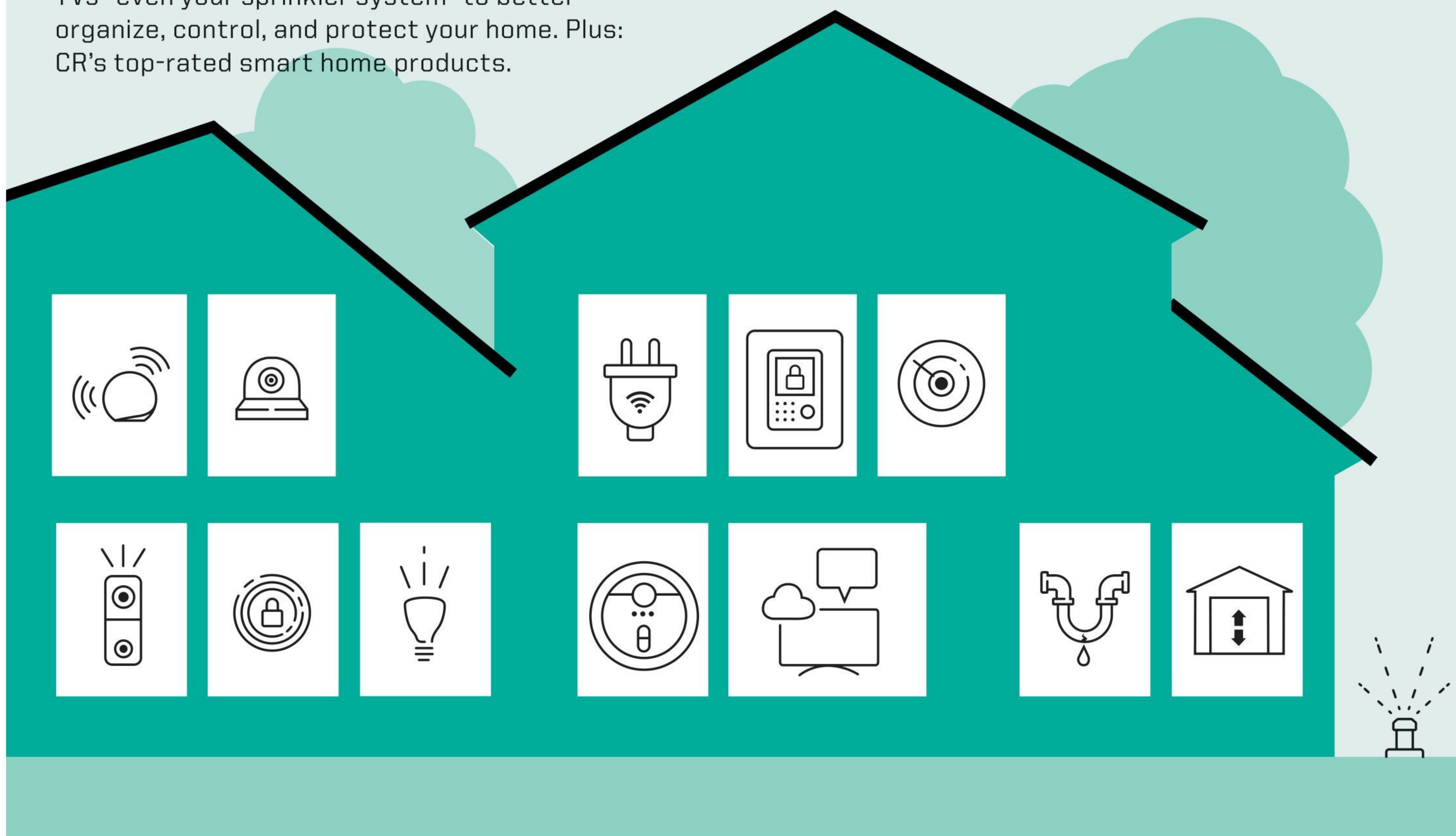


Source: Typing.com survey of 980 full-time employees.



# Your Ultimate Smart Home Toolkit

How to connect smart speakers, doorbells, vacuums, TVs—even your sprinkler system—to better organize, control, and protect your home. Plus: CR's top-rated smart home products.



**OUR HOMES HAVE** been pulling double—or triple or quadruple—duty for almost a year, serving also as schools, offices, gyms, and more. But your home can work even harder: With connected devices you can automate tasks and chores so that your home actually anticipates your needs.

While smart home products can seem intimidating, they're becoming more mainstream, easier to use, and more prolific. "Over the past few years, we've been evaluating more smart devices, from speakers to video doorbells to water leak detectors," says Maria Rerecich, CR's senior director of product

testing. And prices are falling, too—Philips now sells a \$13 color-changing smart bulb, and Wyze has introduced a \$30 video doorbell.

Maybe you're getting your feet wet with a basic smart speaker or looking to integrate a handful of devices. We have plenty of tips that will make it easier. To get started, here's a rundown of the 13 types of devices covered on the following pages.

- **Smart speakers (\$40 to \$500)** A smart speaker's digital assistant (Amazon's Alexa, Google's Assistant, and Apple's Siri) can serve as the brains of a smart home,



**Smart home products are becoming more mainstream, easier to use, and more prolific.**

controlling other devices with voice commands or automating them.

- **Wireless Security Cameras (\$25 to \$400)** You can view recorded and live footage on your phone, and receive alerts when the cam detects people, packages, and more.
- **Video Doorbells (\$30 to \$250)** A video doorbell lets you view footage, receive alerts, and speak to visitors. Most need to be hardwired, but some are battery-powered.
- **Smart Locks (\$100 to \$400)** Smart locks give you keyless entry to your home and let you monitor who comes and goes from your smartphone.



**ENLIST A SOUS CHEF**

Alexa- and Google-enabled smart speakers can help out in the kitchen.

- Need inspiration? Say "Find recipes for [blank]," then scan the ideas. This requires a speaker with a touch screen; see our picks on page 49.
- When whipping up an elaborate meal or cooking separate dishes for picky eaters, set multiple kitchen timers with commands like "Set a pasta timer for 10 minutes; set a broccoli timer for 7 minutes."
- When you run out of a staple during meal prep, tell your smart speaker "Add [blank] to the shopping list."
- Ended up burning dinner? Ask your speaker to call your favorite restaurant so that you can order delivery.

**KEEP TABS ON AN ELDERLY FAMILY MEMBER**

If you have a loved one who lives alone, Amazon's free elder care feature for its smart speakers, called Alexa Care Hub, monitors their interactions

with the speaker and sends you alerts if it notices no activity for an extended period. The feature allows you to call or video chat your family member to check in, or they can ask Alexa to call you for help, if needed. It could be a light-touch way to keep an eye on a relative who wants to maintain a degree of independence, says Justin Brookman, director of privacy and technology policy for CR. "As with any surveillance technology, I can see potential for abuse, too. People might not understand they're being tracked, especially if they're not the ones setting up Alexa."

**USE IT AS A SECURITY SYSTEM**

Thanks to its microphones and sound-detection algorithms, your Amazon or Google speaker can stand in for a basic security system. Amazon's free service, called Alexa Guard, can alert you when you're away if your speaker detects the sounds of smoke/CO alarms or glass breaking. (Or pay \$5/month for an upgraded

version with an emergency helpline.) With Google's Nest Aware service, \$6/month, your speaker will alert you if it hears a smoke alarm or glass breaking. You'll also be able to call your home's 911 dispatcher from the Google Home app (handy if you're out), though not from the speaker itself. Enable these services from the Alexa and Google Home apps.

**ADD MORE DEVICES—AND CONTROL THEM WITH SIMPLE COMMANDS**

**Your smart speaker** can interact with many other devices. With each new addition, you'll get increased functionality. The setup doesn't need to be complex.

To connect devices to your speaker, you'll have to add them in your assistant's app (the

Alexa app, Google Home app, or Apple Home app). Know that not as many products work with Apple HomeKit/Siri compared with Alexa and Google. Some products use the separate Apple Shortcuts or Google Assistant app to connect to their assistants. To get you started, here are six devices that can work with your speaker.

- **Smart bulb/plug/switch:** Give the lights a name in your assistant's app, then say, for instance, "Turn on the hall lights."
- **Video doorbell:** "[Assistant], show me the front door." For step-by-step guides on connecting a doorbell to Alexa or Google, see our guides at [CR.org/echo](https://www.consumerreports.org/echo) and [CR.org/nest](https://www.consumerreports.org/nest).
- **Robotic vacuum:** "Start the robot vacuum." (You'll need a connected model; see three top picks from our tests, opposite.)
- **Smart thermostat:** "Turn up the heat" when you're cold.
- **Wireless printer, with Alexa:** "Print out the grocery list."
- **Smart garage door:** "Close the garage door."

**HOW TO LOCK IT ALL DOWN**

This simple truth bears repeating: Anything you connect to the internet runs the risk of getting hacked or controlled remotely by someone else. To help mitigate such risks, follow these privacy and security guidelines.

- **Use strong, unique passwords** for each device, and store them in an online password manager like LastPass, 1Password, or Keeper so that you don't forget them.
- **Use two-factor authentication**, if available, on all your devices. This feature sends a second, temporary passcode to you via text, email, phone call, or an

authentication app to verify that it's you trying to log in to the devices' app or site.

- **Enable automatic updates** on all devices that support it (including your WiFi router). "There is no perfect smart device that is secure forever," says Cody Feng, CR's test engineer for privacy and security. "Automatic updates can shorten the amount of

time that devices remain vulnerable to unpatched security flaws."

- **Be thoughtful** about the rooms you place smart speakers in, due to their always-on microphones. Or mute them when you don't require their assistance.
- **Periodically review** and delete your smart speaker's audio recordings. Amazon,

Apple, and Google let you do this in the settings for their assistants.

- **It might sound obvious**, but aim security cameras where you need them, not where you don't. Avoid putting them in private areas, such as bedrooms.
- **Think twice** about whether to give devices access to the location data from

**TOP-RATED ROBOTIC VACUUMS**



✓ **iROBOT ROOMBA S9+**  
\$1,300

**81** OVERALL SCORE



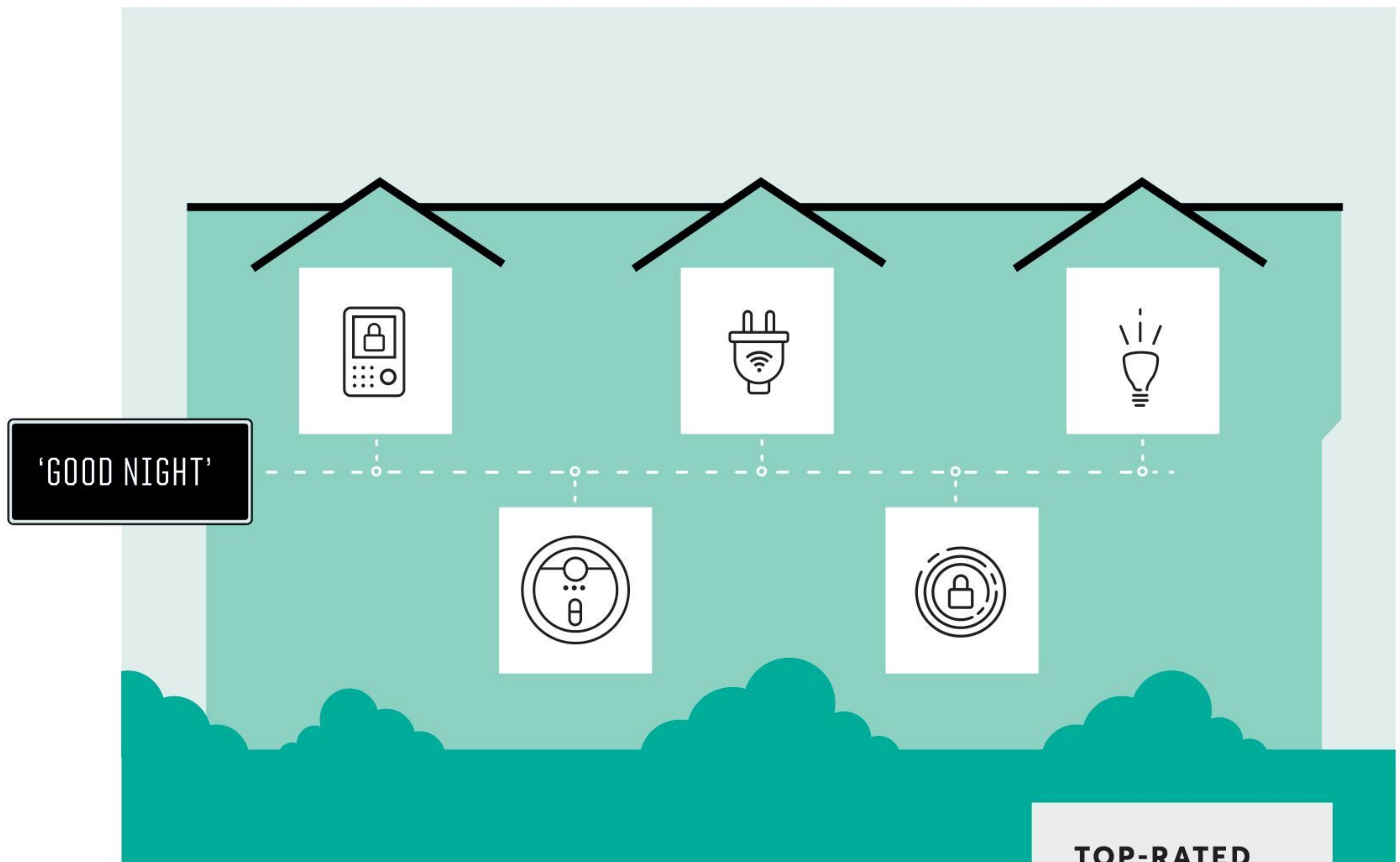
✶ **EUFY 30C**  
\$300

**71** OVERALL SCORE



✓ **iROBOT ROOMBA I3+**  
\$600

**70** OVERALL SCORE



your smartphone. It might be helpful for your smart thermostat to know when you're on your way home, but it's not that beneficial for your video doorbell. The trade-off? You might miss out on certain features, such as the ability to share your video doorbell footage with your neighbors.

**AUTOMATE EVEN MORE BY SYNCING MULTIPLE DEVICES**

**To make your smart home truly run itself,** you can create routines via your speaker's digital assistant. These simple programs, usually made up of "if, then" lists that you create (as in, IF you arm the security system, THEN turn off the lights). Once they're set up, certain conditions will automatically trigger the routines, or you can activate them with voice commands you choose. Both Amazon and Google use the term "routines," but Apple differentiates

between scenes and automations: Scenes are activated with your voice (or a button press in the Home app); automations run on their own.

**CONTROL A FEW DEVICES WITH A SINGLE VOICE COMMAND**

Use the Amazon Alexa, Google Home, Apple Home, and/or Apple Shortcuts apps to create your own routines. The interface in each app is slightly different, but the process is essentially the same: You type in the command you want to give (such as "Alexa, good night"), then choose the devices you want to automate, along with the changes you want those devices to make. When you're done crafting your routine, enable it

**TOP-RATED DIY WIRELESS SECURITY SYSTEMS**



✓ **ABODE ESSENTIALS STARTER KIT**  
\$250

**86** OVERALL SCORE



✓ **SIMPLISAFE THE ESSENTIALS SS3-01**  
\$270

**83** OVERALL SCORE

so that you can use the voice command. Here are a few basics to get you started:

- "Good night"—lock the door, turn off the lights, and fire up the robotic vacuum to clean while you sleep.
- "Good morning"—turn on the lights and play the news.
- "It's movie night"—dim the lights, turn on the TV, and open Netflix.

For step-by-step instructions on how to use Alexa, Google Assistant, and Siri/Apple HomeKit, go to [CR.org/alexa](https://www.consumerreports.org/alexa), [CR.org/google](https://www.consumerreports.org/google), and [CR.org/siri](https://www.consumerreports.org/siri).

#### LET YOUR SMART HOME ANTICIPATE CERTAIN NEEDS

The following routines happen automatically when certain conditions are met, but they're possible only with Alexa and Siri. Outside of voice commands, the Google Assistant can trigger routines only at a specific time or when you leave/arrive at home. Google users aren't completely out of luck, though. There are third-party services, such as IFTTT or Yonomi, that can be used to automate all sorts of devices. (Yonomi is free; IFTTT charges a monthly fee



#### Anticipate needs by setting routines to happen automatically when certain conditions are met.

of \$4 after three free custom automations.)

- When your security camera detects motion outside at night, have your speaker's digital assistant turn on outdoor lights. This is a great deterrent at night without blaring an alarm. Simply create a routine that activates when your outdoor security camera detects motion at night and have it turn on outdoor lights.
- When you arm your security system when you're leaving home, have your digital assistant adjust the thermostat to turn down the heat.

## 3 POTENTIAL PITFALLS TO AVOID

The functionality of connected devices can be pretty slick, but some aspects of smart home gear can still cause headaches.



### 1. NOT ALL DEVICES WORK WELL TOGETHER

For example, you can't view live video feeds from Ring cameras and doorbells (owned by Amazon) on Google Nest smart displays. However, Amazon, Apple, Google, LG, Samsung, and more than 100 other companies are working on a new standard called Project Connected Home Over IP (CHIP) that could finally end the compatibility problems that have

plagued the smart home industry since its early days. CHIP-compatible products will enter the market in late 2021, but until then, your best bet to ensure compatibility is to choose one ecosystem and stick to it.

### 2. MANUFACTURERS CAN (EVENTUALLY) DISABLE YOUR DEVICE

Say you buy a product from a startup and the company is acquired or goes under. Your device could get "bricked,"

or stop working. We've seen this happen to folks who purchased, for example, Guardzilla security cameras and Revolv smart home hubs. It tends to be safer to buy smart devices from more established brands. The trade-off: privacy concerns, due to the vast amounts of data these companies collect. "And big companies may piece together data from different devices and services you use, and make a more detailed digital profile

about you," says Cody Feng, CR's test engineer for privacy and security.

### 3. SMART APPLIANCES AREN'T THAT SMART

Though connected speakers, thermostats, and the like are growing exponentially more popular, the same can't be said for their cousins in the large appliance aisle. CR's consumer experience & usability research team conducted a qualitative study last March and found that the connected features of these appliances often don't work well or aren't very useful. In our study, consumers found it difficult to connect smart appliances, such as dishwashers and ovens, to WiFi. They also found the

smartphone apps to be glitchy and unreliable. "Connected appliances should help people get back to their lives, rather than adding additional mental burden," says Charu Ahuja, CR's director of consumer experience & usability research.

Smart features that consumers want, such as remote start to preheat the oven and internal cameras to check food from afar, aren't yet widely available. If you're shopping and into the idea, make sure the connected features you want are available on the model you're considering. One study participant was disappointed to learn that some features in her appliance's app weren't available on her lower-end model.

Ratings > Smart Home Devices

Brand + Model	Overall Score	Price	Test Results					Features							
			Video quality	Data security	Data privacy	Response time	Smart IQ	Claimed resolution	Rechargeable battery-powered	Hardwired for power	Geofencing	Monitoring zones	HDR	Works with Amazon Alexa (A) and/or Google Assistant (G)	Two-factor authentication
<b>VIDEO DOORBELLS</b>															
✓ Nest Hello Video Doorbell	83	\$230	↑	↑↑	↓	↑↑	↓	1080p		•	•	1	•	A, G	•
✓ Wisenet SmartCam D1	80	\$230	↑↑	↑	↓	↓	↑	1600x1200		•				A, G	
✓ SimpliSafe Doorbell Pro SS3	76	\$170	↑↑	↑	↑	↓	↓	1080p		•					•
✓ Ring Video Doorbell 3 Plus	74	\$230	↑↑	↑	↓	↓	↓	1080p	•	Opt.				A	•
✓ Ring Video Doorbell 3	74	\$200	↑↑	↑	↓	↓	↓	1080p	•	Opt.				A	•
✓ Eufy T8200	66	\$160	↑	↓	↓	↑	↑	2K HD		•	•	•	•	A, G	
✓ Blue by ADT Video Doorbell	66	\$200	↑	↑	↓	↓	↓	1080p		•				A	

Brand + Model	Overall Score	Price	Test Results					Features									
			Video quality	Data security	Data privacy	Response time	Smart IQ	Claimed resolution	Field of view (angle)	Person alerts	Monitoring zones	Indoor/outdoor	Rechargeable batteries	Two-factor authentication	Works with Amazon Alexa	Works with Google Assistant	Works with Apple HomeKit
<b>WIRELESS SECURITY CAMERAS</b>																	
✓ Nest Cam IQ Outdoor NC4100US	86	\$400	↑↑	↑	↓	↑↑	↑	4K sensor, 1080p	130°	1	1	•		•	•	•	
✓ Arlo Pro 2 Smart Camera VMC4030P	81	\$180	↑↑	↑	↓	↑↑	↑↑	1080p	130°	1	1	•	•	•	•	•	
✓ Nest Cam IQ Indoor NC3100US	80	\$300	↑↑	↑	↓	↑↑	↑	4K sensor, 1080p	130°	•	1			•	•	•	
✓ Nest Cam Indoor NC1102ES	78	\$130	↑↑	↑	↓	↑	↑	1080p	130°	1	1			•	•	•	
✓ Arlo Ultra VMS5140-100NAS	76	\$325	↑↑	↑	↓	↑↑	↑↑	4K sensor, 1080p	180°	1	1	•	•	•	•	•	
✓ Arlo Pro 3 VMC4040P	76	\$200	↑↑	↑	↓	↑↑	↑↑	2K sensor, 1080p	160°	1	1	•	•	•	•	•	
✓ Ring Stick Up Cam (Battery) 3rd gen	73	\$100	↑↑	↑	↓	↑↑	↓	1080p	110°	1		•	•	•	•		
✓ TP-Link Kasa Cam KC120	73	\$50	↑↑	↑	↓	↑↑	↓	1080p	130°			•			•	•	
✓ Blue by ADT Indoor Camera	73	\$200	↑	↑	↓	↑↑	↓	1080p	130°			•		•	•		
✓ D-Link DCS-8525LH	71	\$100	↑	↑	↓	↑↑	↓	1080p	98°—pans and tilts			•			•	•	
✓ Logitech Circle 2	71	\$105	↑	↑	↓	↑↑	↑	1080p	180°	1	1	•		•	•	•	
✓ D-Link DCS-8300LH	71	\$85	↑	↑	↓	↑↑	↓	1080p	137°			•			•	•	
✓ TP-Link Kasa Cam KC200	71	\$80	↑↑	↑	↓	↑↑	↓	1080p	130°			•	•		•	•	

1 Requires a monthly fee. 2 Requires additional hardware. 3 Exceptions exist depending on HVAC system; might require power extender kit or two-wire relay module. 4 Because these models use your existing lock, resistance to kicking, picking, and drilling depends on your current deadbolt.

Ratings > Smart Home Devices

Brand + Model	Overall Score	Price	Test Results									Features					
			Kick-in as sold	Kick-in reinforced	Drilling	Picking	Ease of remote access	Convenience	Security add-ons	Connectivity	Keyless lock	Voice control	Electronic keys	Access log	WiFi connection	Auto lock	Auto unlock

WIFI-CAPABLE SMART LOCKS (USES WIFI OR WIRELESS ADAPTER TO CONNECT TO THE INTERNET)

✓ Yale Assure YRD256-CBA-619	87	\$250	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	•	•	•	•	•	•
✓ Kwikset Premis 919TRL 15 SMT	79	\$200	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	•	•	•	2	•	•
✓ Schlage Encode WiFi BE489WB-CAM-619	76	\$250	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	•	•	•	•	•	•
✓ Kwikset Halo 939WiFiTSCR	76	\$230	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	•	•	•	•	•	•
✓ Kwikset SmartCode 888 ZW500	75	\$120	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	•	•	•	2	•	•
✓ Schlage Connect BE469NXCAM619	73	\$200	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	•	•	•	2	•	•
✓ Schlage Sense Smart BE479CEN619	72	\$230	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	•	•	•	2	•	•
✓ Nest x Yale Lock RB-YRD540-WV	71	\$280	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	•	•	•	•	•	•

RETROFIT SMART LOCKS (USES YOUR EXISTING LOCK; CONNECTS TO INTERNET VIA WIFI OR WIRELESS ADAPTER)<sup>4</sup>

✓ August WiFi Smart Lock AUG-SL05-M01-G01	86	\$250	NA	NA	NA	NA	⬆️	⬆️	⬆️	⬆️	NA	•	•	•	•	•	•
✓ August Smart Lock Pro AUG-SL-CON	82	\$230	NA	NA	NA	NA	⬆️	⬆️	⬆️	⬆️	NA	•	•	•	•	•	•
✓ Wyze Lock WLCKG1	82	\$110	NA	NA	NA	NA	⬆️	⬆️	⬆️	⬆️	NA	•	•	•	•	•	•
✓ Friday Home Friday Labs FLSS	75	\$185	NA	NA	NA	NA	⬆️	⬆️	⬆️	⬆️	NA	•	•	•	•	•	•
✓ August Smart Lock AUG-SL04-M01-S04	74	\$130	NA	NA	NA	NA	⬆️	⬆️	⬆️	⬆️	NA	•	•	•	2	•	•

Brand + Model	Overall Score	Price	Test Results			Features							
			Smart IQ	Manual operation	Automation	C wire required	Two-wire compatible	Has geofencing	Occupancy sensor	Vacation schedule setup	Remote sensor included	Learns behavior	Voice command

SMART THERMOSTATS

✓ Nest Learning Thermostat	83	\$250	⬆️	⬆️	⬆️	•	•	•	None	•	•
💰 Nest Thermostat E	83	\$170	⬆️	⬆️	⬆️	•	•	•	None	•	•
✓ Honeywell Home T9 RCHT9510WF	73	\$170	⬆️	⬆️	⬆️	3	•	Averages room temps.	App only	•	•
✓ Ecobee Smart with Voice Control EB-STATe5-01	73	\$250	⬆️	⬆️	⬆️	3	•	Adjusts setpoint	App and thermostat	•	•
✓ Johnson Controls Glas smart thermostat	70	\$220	⬆️	⬆️	⬆️	3	•	Adjusts setpoint	App and thermostat	•	•
✓ Schneider Electric WiserAir 10BLKUS	69	\$240	⬆️	⬆️	⬆️	3	•	•	None	•	•
✓ Honeywell Home T5+ RCHT8612WF	66	\$150	⬆️	⬆️	⬆️	3	•	•	App only	•	•

<sup>1</sup> Requires a monthly fee. <sup>2</sup> Requires additional hardware. <sup>3</sup> Exceptions exist depending on HVAC system; might require power extender kit or two-wire relay module. <sup>4</sup> Because these models use your existing lock, resistance to kicking, picking, and drilling depends on your current deadbolt.



Brand + Model	Overall Score	Price	Test Results			Features								
			Sound quality	Versatility	Ease of use	Supported digital assistant(s)	Audio format	Supports voice identity	Optional multi-room sharing	Adjustable tone settings	Speaker phone w/built-in mic	Calling	Messaging	Warranty (mo.); parts/labor
Amazon Echo Show (2nd Generation)	69	\$230				Alexa	Stereo							12/12
Amazon Echo Studio	68	\$200				Alexa	Stereo							12/12
Sonos Move	68	\$400				Alexa, Google	Mono							12/12
Bose Home Speaker 500	65	\$300				Alexa	Stereo							12/12
Amazon Echo (4th Generation)	65	\$100				Alexa	Mono							12/12
Amazon Echo Show 8	65	\$105				Alexa	Stereo							12/12
Bose Home Speaker 300	65	\$200				Alexa, Google	Stereo							12/12
Bose Portable Home	65	\$350				Alexa, Google	Stereo							12/12
Sonos One (Gen 2)	64	\$200				Alexa	Mono							12/12
Google Nest Hub Max	63	\$230				Google	Stereo							12/12
Google Nest Audio	63	\$100				Google	Mono							12/12
Marshall Uxbridge Voice	62	\$200				Alexa	Mono							NS/NS
Amazon Echo Plus (2nd Generation)	62	\$150				Alexa	Mono							12/12
Amazon Echo (3rd Generation)	61	\$100				Alexa	Mono							12/12
JBL Link View	61	\$300				Google	Stereo							12/12
Riva Concert	61	\$190				Alexa	Stereo							36/36
Marshall Stanmore II Voice	60	\$350				Alexa	Stereo							12/12
JBL Link Music	60	\$60				Google	Mono							12/12
Belkin Soundform Elite	59	\$300				Google	Mono							24/24
JBL Link 20	59	\$90				Google	Stereo							12/12
Cavalier Audio The Maverick	59	\$250				Alexa	Stereo							12/12
Apple HomePod	59	\$300				Siri	Mono							12/12

**HOW WE TEST:** We assess all products except smart locks and smart speakers for **Smart IQ**, our unique comparative measure of each product's smart features. For **security cameras** and **video doorbells**, we also test **Video quality** and **Response time** and evaluate **Data privacy**, reviewing privacy policies,

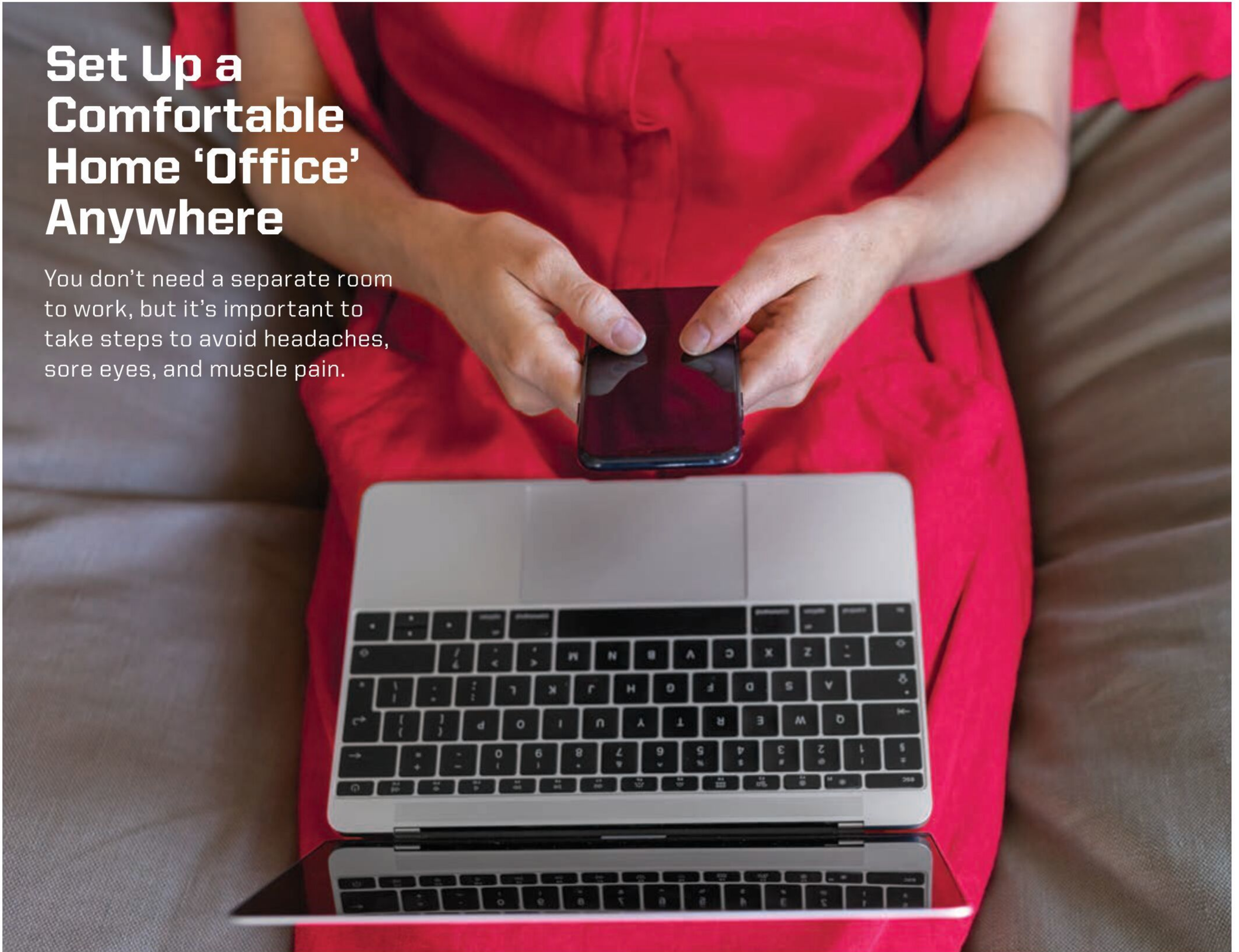
terms of service, and more to determine whether manufacturers collect, use, or sell your data. To look at **Data security**, we use specialized tools to determine what security measures the product employs to keep your data safe. **Smart thermostats** undergo tests for **Manual operation**, to make sure it's easy to

adjust settings and programs, and **Automation**, to see how well each model learns your routines and makes changes on its own. For **smart locks**, we evaluate features for **Ease of remote access**, **Convenience**, and **Security add-ons**. Locks also undergo **Connectivity** tests to assess ease of setup and connecting

to other smart devices. **WiFi-capable smart locks** receive additional testing for **Kick-ins as sold**, **Kick-ins reinforced** with a box strike plate, **Drilling**, and **Picking**. For **smart speakers**, we test **Sound quality** and evaluate **Versatility** (the presence or absence of useful features) and **Ease of use**.

## Set Up a Comfortable Home 'Office' Anywhere

You don't need a separate room to work, but it's important to take steps to avoid headaches, sore eyes, and muscle pain.



**CHANCES ARE GOOD** that you're working from home more often these days. Whether you have access to a full-fledged home office or have to work from your bed, you can use these tips from ergonomic experts to minimize strain on your body while you're working at home.

"As long as you understand some basic ergonomic concepts, you can translate those to multiple work areas," says Todd Baker, principal of Empowerment Ergonomics, a consulting firm in Ithaca, N.Y., and the lead ergonomics consultant for the Cornell University Musculoskeletal Injury Prevention Program.

"You may even have a bit more flexibility at home than you would at the office to change your position regularly and keep moving, which will benefit your muscles and circulation."

### **WHEN AT A DESK OR TABLE**

Start with your chair. But don't worry: You don't need an expensive, adjustable task chair to get a healthy posture. "What I would do first is try to achieve a relatively comfortable seated position, and from there, make the rest of the workstation fit," Baker says.

An ideal seated position is one that allows your feet to

rest on the floor while your pelvis and lower back fit snugly against the back of the chair. In this position, the chair supports you and you avoid putting undue pressure on your spine.

If your feet don't reach the floor, rest your feet on a stable footrest or low stool. If your pelvis and lower back don't reach the back of your chair comfortably, place a pillow or a contoured cushion behind you and lean on that for support. "The goal is to be slightly reclined," Baker says, "which takes a little pressure off the lower back and allows the musculature of the upper back and neck to be more relaxed."



**An ideal seated position is one that allows your feet to rest on the floor while your pelvis and lower back fit snugly against the back of the chair.**

## ERGONOMIC KEYBOARDS

The right keyboard, like one of these from CR's tests, can help ease wrist strain



**Kinesis Freestyle2**  
\$89 to \$126

LEARNING CURVE

4/5

ERGONOMIC

4/5

ADJUSTABILITY

4/5



**Logitech Ergo K860**  
\$130

LEARNING CURVE

4/5

ERGONOMIC

4/5

ADJUSTABILITY

3/5



**Microsoft Sculpt**  
\$120 to \$130

LEARNING CURVE

4/5

ERGONOMIC

4/5

ADJUSTABILITY

3/5



**Kinesis Advantage2 Quiet LF**  
\$336 to \$369

LEARNING CURVE

2/5

ERGONOMIC

5/5

ADJUSTABILITY

2/5

Next, evaluate your chair in relation to your desk or table. When working with a keyboard, you want your elbows to be bent at an angle that's between 90 and 115 degrees, with your wrists in a neutral position and not resting on the keyboard. (See the four top ergonomic keyboards from CR's tests, at right.) You also want your shoulders relaxed, with your elbows near your sides or on the armrests. "The majority of standard desks and tables are too high," Baker says, "so you may find you need to raise yourself up or lower your work tools to improve your posture." If your chair isn't adjustable, you could raise it up by sitting on a pillow or cushion.

### WHEN POSITIONING YOUR SCREEN

The top of the computer monitor should be at eye level so that you're gazing slightly down toward the center of the screen. This will keep your neck from straining, and also helps prevent dry eyes, headaches, and blurred vision. "We focus better and our eyes work better when we read text slightly lower than eye level because our eyes open less—and we're less likely to get dry eye," says Jeffrey Anshel, an optometrist and author of "Visual Ergonomics in the Workplace" (CRC Press, 1998).

If you have a laptop, you can create this position by using a separate monitor (while using your laptop keyboard) or by using a separate keyboard (while placing your laptop monitor on top of books or a desk stand).

Also, remember not to sit too close to the screen. Your eyes should be at least 24 inches or your arm's length away from the computer, whichever is further. And give your eyes regular breaks from the monitor. "I call it the 20/20/20 rule," Anshel

says. "Every 20 minutes, take a 20-second break and look 20 feet away."

### WHEN ON A BED OR COUCH

It's common for people to slump or hunch forward when using a laptop in bed, which can lead to neck pain and backaches. But there are ways to make even a bed workstation more ergonomically sound.

First, sit with your back to the wall or headboard, with one pillow placed horizontally behind your lower back for support and one vertically along the length of your spine for cushioning.

Next, put a pillow underneath your thighs, to reduce pressure on your lower back. Then make a desk of sorts by using either a lap tray or traylike surface placed on top of a pillow. As with a real desk, your elbows should be bent at 90 to 115 degrees, with your wrists in a neutral position on the keyboard. And the top of the computer screen should be at eye level. "Your work tools should be at the correct height compared to your body, wherever you are," Baker says.

If you are working on a couch, the same principles apply. Your lower back should be supported by a pillow as you lean slightly back, and instead of placing a pillow underneath your thighs, make sure your feet reach the floor or a footrest.

### WHEN WORKING AT A COUNTER

If you don't have a standing desk option, you can use your kitchen countertop for a standing stint. Again, aim to have your elbows bent between 90 and 115 degrees for typing, and if you can, place the top of your computer monitor at eye level. But even if you don't have a peripheral monitor that is separate from your laptop in

this scenario, "it's okay to stand at your breakfast bar or the kitchen island for 10 or 15 minutes as a way to change positions," Baker says. For tips on shopping for a standing desk, go to [CR.org/standing-desk](http://CR.org/standing-desk).

### WHEN WORKING AND TALKING

One of the quickest ways to tighten up your neck, back, and shoulders is to cradle your cell phone between your shoulder and ear. So if you have to type and talk at the same time, use earphones, earbuds, or a headset, or put your phone on speaker mode. This will free up your hands and your muscles.

### WHEN WORKING FOR LONG STRETCHES

Be sure to change positions frequently and take breaks to move around. One good strategy is 20 minutes of sitting, 8 minutes of standing, and 2 minutes of moving around.

"The good news is that at home you may not have the same corporate cultural constraints that make you feel you shouldn't be up and walking around every 30 minutes," Baker says. "So it may be a little easier for you to change positions to go to the kitchen counter for a while or sit in the recliner for a bit and be a little more flexible at home."

## Outfitting Your Home Gym

Whatever your budget, you can get the exercise you need without worrying about the risks of a crowded gym

AS THE CORONAVIRUS crisis continues, you may be questioning whether you want to risk entering a crowded indoor space full of shared surfaces, where everyone is breathing heavily. Exercising outdoors is always a free and easy option (and also a boon for mental health), but cold or inclement weather can put a damper on the best intentions. So perhaps it's no surprise that sales of fitness equipment have been surging—for everything from dumbbells to high-end cardio equipment.

The U.S. Physical Activity Guidelines (available at [health.gov](https://www.health.gov)) recommend doing a minimum of 150 minutes of moderate-intensity aerobic exercise (half that amount if

it's vigorous) and at least two whole-body strength training sessions each week. That's achievable at home, even with a very basic setup.

"There's a misconception that you need all sorts of snazzy equipment at home, like what you see at the gym, but that's just not the case," says Michael Piercy, MS, an American Council on Exercise master trainer (he teaches other trainers) and owner of The LAB in Fairfield, N.J. "You can get a great workout with just a couple of pieces of equipment."

### YOUR GOALS AND YOUR SPACE

Before you start thinking about your budget, there are two key factors that will be different

for everyone considering setting up a home gym: your goals and the physical space you have available.

"Start at your fitness goals," says John Galeotafiore, associate director of product testing at Consumer Reports. "You want whatever equipment you're purchasing to be able to support those goals."

While a well-rounded program is important, some people may be more focused on strength or cardio. Or perhaps you just need variety to keep from getting bored. Pete McCall, CSCS, a master trainer in San Diego and author of "Smarter Work-outs: The Science of Exercise Made Simple" (Human Kinetics, 2019), suggests trying to re-create what you were

doing at the gym, at least as much as possible.

The next thing to think about is space. You can get a lot done in a 6x6-foot area, including strength moves, some general calisthenics, and stretching or yoga.

For most cardio machines, you'll need about 6 to 8 feet by 4 feet for the machine itself. With a treadmill, you'll want a couple of feet around the perimeter and 6 feet behind it for safety, Galeotafiore says. A treadmill also needs sturdy floor support to handle the vibration and pounding.

Once you know what you'd like to achieve and where you can make a little room to move, you can set yourself up for success at any budget.

## GETTING THE MOST FOR YOUR MONEY

Here's how to allocate your home-gym budget

### IF YOU CAN SPEND \$15 TO \$1,000

At a minimum, invest in a yoga mat (about \$15, but more for a thicker or larger style),

which you can use for yoga, stretching, and other floor exercises. For strength training, add two sets of dumbbells (\$30 and up, depending on the weights), one

lighter and one heavier, says Pete McCall, a master trainer. For a little more versatility, he also recommends adding a two-arm resistance band that you can attach

to a door frame (from \$20). "It acts like a cable machine at the gym," he says. Cardio machines are hard to afford with a limited budget, but you can find indoor stationary bikes for less than \$500 and rowing machines for less than \$800. Quality varies, and CR doesn't currently test those machines.

If you already have an outdoor bike, mounting it on a bike trainer (\$100 and up) lets you easily convert it into an indoor

cardio machine.

A jump rope (from \$10) is another versatile option with a small price. It can provide an excellent cardio workout (and is good for circuit training) as long as you have high ceilings or outdoor space.

Quality treadmills for less than \$1,000 are hard to come by. If you must have a treadmill, be prepared to spend most of your budget on it. CR recommends several right around this price.



**TOP-RATED PICKS**



✓ **Nautilus T616 Budget Folding Treadmill**  
 \$1,000

**84** OVERALL SCORE



💰 **Schwinn 470 Elliptical (Has Heart-Rate Programs)**  
 \$900

**74** OVERALL SCORE

PHOTO, LEFT: RUSLAN DASHINSKY/GETTY IMAGES

**IF YOU CAN SPEND**

**\$1,000 TO \$3,000**

Keep the mat, weights, bands, and rope, and add a stability ball or a ball-bench hybrid. (You can lift it, use it as a weight bench, or stand on it.) McCall also suggests a suspension trainer (less than \$200), such as the TRX, which anchors in a door frame and makes body weight work more challenging.

For cardio, you have a few more treadmill

options, with more horsepower, more features, and larger and thicker decks.

An elliptical can also be a smart addition for low-impact cardio. You can get a relatively heavy-duty machine with options for resistance, a variety of programs, and nicer displays than you'll find with the least expensive models, says John Galeotafiore, associate director of product testing at CR.

**IF YOU CAN SPEND**

**\$3,000 TO \$8,000+**

Plan for all of the resistance training equipment above, but expand your weight collection. If space is a concern, look into adjustable dumbbells that range from 3 to 50 pounds in a compact set.

You don't need a multi-gym, a large piece of equipment that allows you to do different strength moves with a range of weight. "I think

even at high budgets, functional equipment options [dumbbells and a suspension trainer] add more value, versatility, and bang for your buck than a multi-gym," says Michael Piercy, a master trainer. If you do want to go the multi-gym route, he recommends a cable-based machine, which is more versatile and challenging.

Looking for more instruction for your weight workouts? Interactive home gyms such

as Mirror and Tonal (\$1,500 and up) offer virtual trainers (via a large display) who walk you through a variety of workouts, including Pilates, boxing, and yoga.

Add a fitness tracker or smartwatch if you want to monitor your stats and progress.

High-end treadmills offer larger displays and even access to live content, so you can take classes in real time with other people around the world.

Ratings > Ellipticals

Brand + Model	Overall Score	Price	Test Results						Features + Specs					
			Ergonomics	Exercise range	Ease of use	Construction	Heart-rate features	User safety	Chest strap included	Resistance levels	Incline levels	Magazine rack	Operational footprint (LxW, in.)	Shipping weight (lb.)
ELLIPTICALS WITHOUT HEART-RATE PROGRAMS														
✓ Octane Fitness Q35X	68	\$2,000	↑	↓	↑	↑	↓	↑	●	20	1	●	77x25	232
✓ ProForm Pro 16.9	68	\$1,500	↑	↑	↑	↑	↓	↑	●	26	41	●	80x28.75	NS <sup>1</sup>
ProForm Pro 12.9	67	\$1,300	↓	↑	↑	↑	↓	↑	●	24	21	●	80.25x25	NS <sup>1</sup>
NordicTrack SE9i	67	\$1,250	↑	↑	↑	↑	↓	↑	●	24	11	●	79x32	190
NordicTrack C12.9	65	\$1,300	↑	↓	↑	↑	↓	↑	●	24	41	●	70x28.75	NS <sup>1</sup>
Octane Fitness Q37x	65	\$2,600	↑	↓	↓	↑	↓	↑	●	20	1	●	77x24	282
ProForm Endurance 720E	64	\$1,200	↑	↑	↑	↑	↓	↑	●	20	41	●	69x25.5	228
Horizon Fitness EX 59	63	\$650	↑	↑	↑	↑	↓	↑	●	10	1	●	73x22.5	183
NordicTrack C9.5	47	\$1,000	↑	↑	↑	↓	↓	↑	●	24	21	●	71x35	NS <sup>1</sup>
ELLIPTICALS WITH HEART RATE PROGRAMS														
✓ Vision S7100	77	\$2,600	↑	↓	↑	↑	↑	↑	●	20	20	●	63.5x30	240
✓ Sole E95S	76	\$2,200	↑	↑	↑	↑	↑	↑	●	20	1	●	84x31	309
Ⓢ Schwinn 470	74	\$900	↑	↑	↑	↑	↑	↑	●	25	11	●	70x28	187
Ⓢ Nautilus E616	71	\$1,000	↓	↓	↑	↑	↑	↑	●	25	11	●	71.5x27	194
✓ BH S3Xi	71	\$1,800	↑	↓	↑	↑	↑	↑	●	24	1	●	63.5x45	270
LifeFitness E5 Go	71	\$4,300	↑	↓	↑	↑	↑	↑	●	20	1	●	85.5x34.25	293
Bowflex BXE116	68	\$1,500	↓	↓	↑	↑	↑	↑	●	25	15	●	77.5x31.25	263
True M30	64	\$2,050	↑	↓	↑	↑	↑	↑	●	25	1	●	70x30	304
Sole E55	61	\$1,500	↑	↓	↑	↑	↑	↑	●	20	20	●	74.5x30.5	240
Fitnex E70	60	\$2,000	↑	↓	↑	↑	↓	↑	●	16	1	●	87.25x30.25	220
Spirit Fitness XE395	60	\$1,800	↑	↓	↓	↑	↑	↑	●	20	41	●	75x24	235 <sup>2</sup>
BH S1Xi	59	\$1,000	↑	↓	↑	↑	↑	↑	●	23	1	●	71x27	166
Endurance E400	56	\$2,100	↓	↓	↑	↓	↑	↑	●	20	1	●	71x32	276

> Digital and All Access members can find the latest, complete ratings at [CR.org/ellipticals](https://www.crd.com/ellipticals).

**HOW WE TEST:** Overall Score is based on the performance of the product in all our tests. Ergonomics evaluates how well the machine accommodates the needs of users and aspects of the pedaling motion. Exercise range

considers exercise intensity and measures incline and the effort to pedal the machine through the resistance level settings. Ease of use includes the ease of using the controls, functions, and programs, and reading the display.

Construction notes indications of good construction methods, design choices, and our perception of quality based on noise, feel, and ride. Heart-rate features considers features such as heart-rate sensor type and

heart-rate programs but doesn't evaluate their performance. User safety assesses operational safety and security, including pinch points, nonslip materials, stability, and static loading strength. Price is approximate retail.

Ratings > Treadmills

Brand + Model	Overall Score	Price	Test Results					Features + Specs											
			Ergonomics	Construction	Ease of use	Exercise range	User safety	Motor (hp)	Belt (LxW, in.)	Maximum incline (%)	Maximum speed (mph)	Weight capacity (lb.)	Quick speed controls	Quick incline controls	Chest strap included	Heart-rate programs	Reading shelf	Cup holders	Shipping weight (lb.)
NON-FOLDING TREADMILLS																			
✓ Peloton Tread	90	\$4,300	↑	↑	↑	↑	↑	2.00	60x20	14.3	12.5	300			•		•	2	392
✓ Sole TT8	84	\$2,500	↑	↑	↑	↑	↑	4.00	60x22	13.5	12.0	400	•	•		•	•	4	355
✓ Precor TRM 243	84	\$3,200	↑	↑	↑	↑	↑	3.00	57x20	14.9	12.0	500				•	•	2	238 <sup>(2)</sup>
✓ SportsArt T615	81	\$3,200	↑	↑	↑	↑	↑	3.00	57x20	13.6	12.0	400	•			•	•	2	267
✓ True M30	81	\$1,700	↑	↑	↑	↑	↑	3.00	57x20	14.4	12.0	300	•	•	•	•	•	2	275
FOLDING TREADMILLS																			
Ⓢ Sole F80	86	\$1,500	↑	↑	↑	↑	↑	3.50	60x22	12.8	12.0	375	•	•	•	•	•	2	298
✓ Bowflex BXT116	86	\$1,600	↑	↑	↑	↑	↑	3.75	61x20	12.9	12.0	375	•	•	•	•	•	4	309
✓ NordicTrack Commercial 2450	84	\$2,000	↑	↑	↑	↑	↑	4.25	60x22	14.2	12.0	300	•	•	•		•	2	260 <sup>(2)</sup>
✓ Bowflex BXT216	84	\$1,800	↑	↑	↑	↑	↑	4.00	61x22	13.7	12.0	400	•	•	•	•	•	4	341
Ⓢ NordicTrack C1650	83	\$1,350	↑	↑	↑	↑	↑	3.60	60x19	14.6	12.0	350	•	•	•	•	•	2	300 <sup>(2)</sup>
Ⓢ ProForm Smart Pro 2000	83	\$1,400	↑	↑	↑	↑	↓	3.60	61x22	14.1	12.0	300	•	•			•	2	302
✓ Spirit Fitness XT485	82	\$2,000	↑	↑	↑	↑	↑	3.50	60x20	12.2	12.0	425	•	•	•	•	•	2	306
✓ 3G Cardio 80i	77	\$1,600	↑	↑	↑	↑	↑	3.00	56x19	9.0	11.0	350	•	•				1	222
Ⓢ LifeSpan TR2000e	76	\$1,200	↑	↑	↑	↑	↑	2.50	54x20	14.9	11.0	300	•	•		•	•	2	231
BUDGET FOLDING TREADMILLS																			
✓ Nautilus T616	84	\$1,000	↑	↑	↑	↑	↑	3.00	61x19	15.3	12.0	300	•	•	•	•	•	2	241
✓ Sole F63	81	\$900	↑	↑	↑	↑	↑	3.00	60x20	14.1	12.0	325	•	•	•	•	•	4	280
✓ Schwinn 830	79	\$900	↑	↑	↑	↑	↑	2.75	56x19	13.1	12.0	300	•	•		•	•	2	218
✓ NordicTrack C990	77	\$1,000	↑	↑	↑	↑	↑	3.00	58x20	11.8	12.0	325	•	•		•	•	2	NS <sup>(1)</sup>
✓ Xterra TRX4500	77	\$1,000	↑	↑	↑	↑	↑	3.25	60x20	10.1	12.0	300	•	•	•	•	•	2	236
✓ LifeSpan TR1200i	73	\$900	↑	↑	↑	↑	↓	2.50	53x20	9.6	11.0	300	•	•		•	•	2	224

> Digital and All Access members can find the latest, complete ratings at [CR.org/treadmills](https://www.cro.org/treadmills).

**HOW WE TEST:** Overall Score is based on the performance of the product in all our tests. Ergonomics evaluates how well the machine accommodates the needs of users and includes belt size, foot-rail design, and handgrip design.

**Construction** notes aspects that affect quality, such as the motor and related components, the running deck, and the results of our durability tests. **Ease of use** includes the ease of using the controls, functions, and programs,

and reading the display. **Exercise range** considers the aspects that provide an effective workout to users of various fitness levels, from beginners to very fit individuals. **User safety** assesses operational safety and security,

including stop-button size and location, safety-key operation, the possibility of striking the motor housing, and the security of the deck for folding models. **Price** is approximate retail.

# LAUNDRY & TLC





**RATINGS:**

INTERIOR PAINT  
P. 64

WASHING  
MACHINES  
P. 66

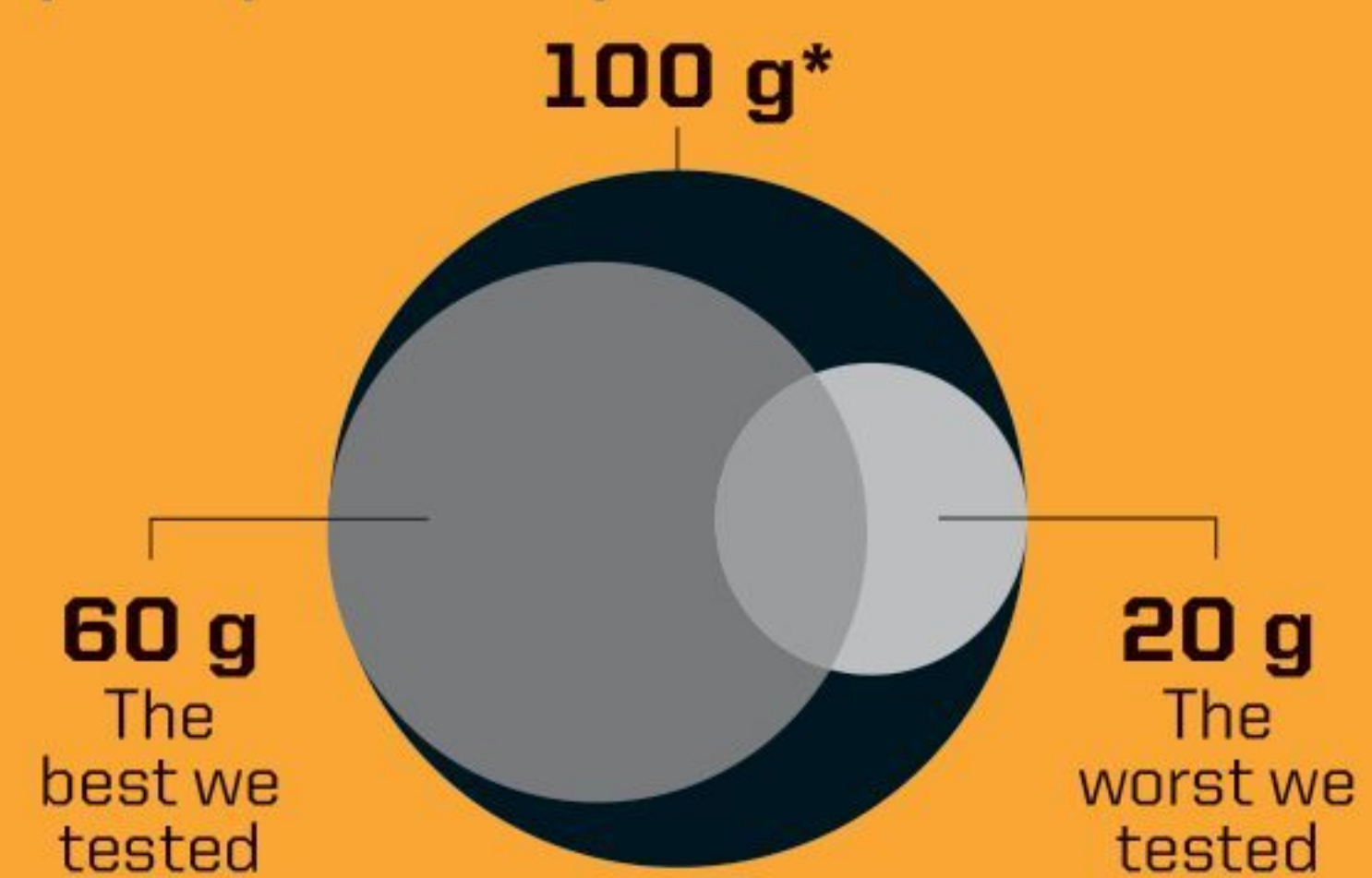
CLOTHES DRYERS  
P. 68

CARPET CLEANERS  
P. 70

STEAM MOPS  
P. 71

VACUUMS  
P. 72

How much dirt do uprights and canisters pick up from carpets?

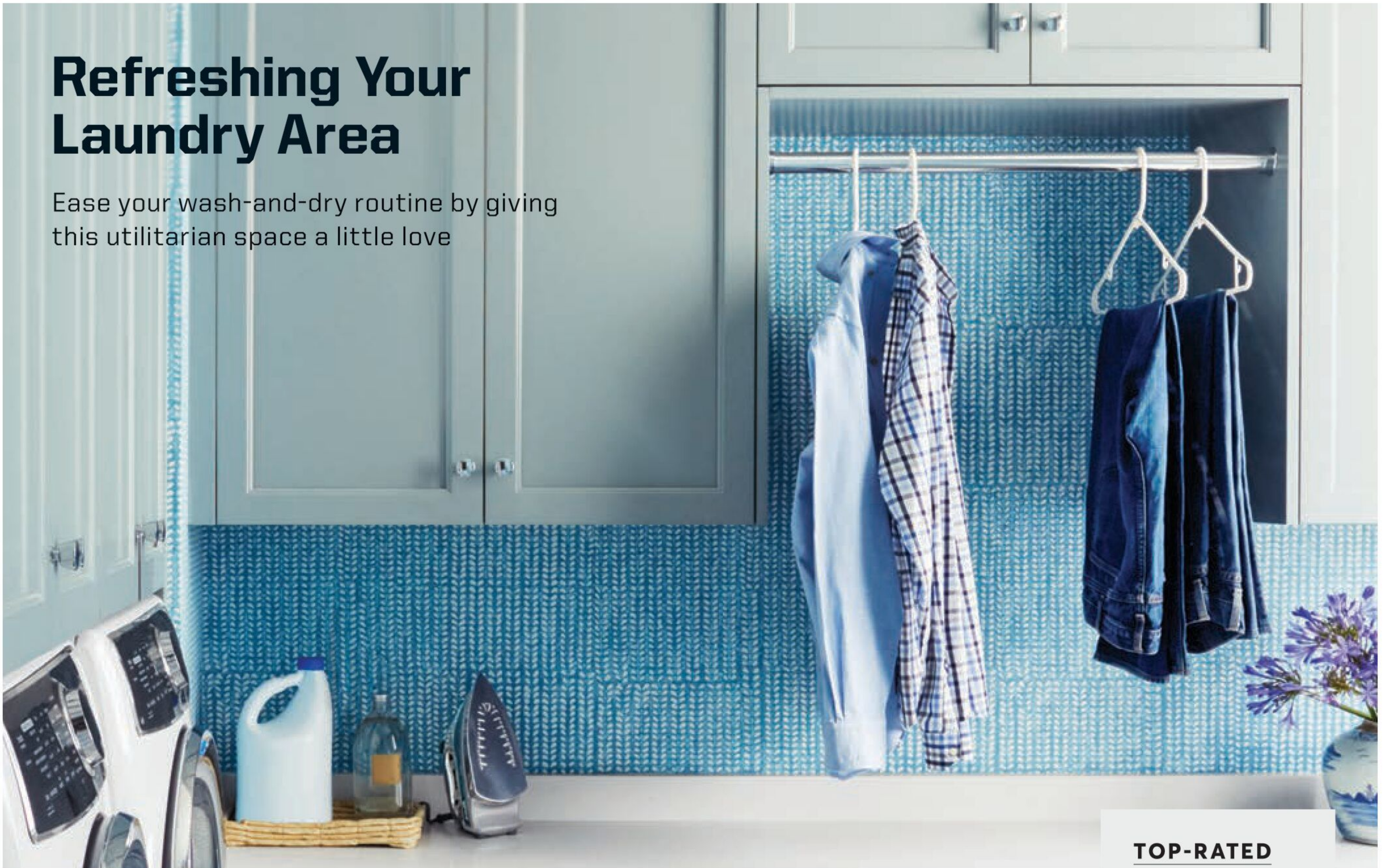


\*Amount of dirt, in grams, we apply to a carpet.



# Refreshing Your Laundry Area

Ease your wash-and-dry routine by giving this utilitarian space a little love



**TIRED OF TRUDGING** down to a basement room with a low ceiling, exposed pipes, and peeling linoleum to do your loads of laundry? Or wedging your way into a cramped utility closet to tussle with piles of dirty clothes? Updating your laundry room can make what can seem like a never-ending task less of a hassle—and could be a good investment for resale, too: First-time home buyers and repeat buyers rank a dedicated laundry room among the most essential home features, according to a recent poll from the National Association of Home Builders.

Whether you want to rework the space you have or move it to a new spot (a first-floor location for those with basements), we

have tips to make the room work better, all with the goal of making the task at hand easier.

### THE PERFECT SETUP

You can justify a bigger footprint for a laundry room because it's an ideal multitasking space. A laundry room can double as a mud room, a spot to store housekeeping supplies, or even a pet grooming station. The laundry appliances take center stage, of course. (See "How to Choose a Washer and Dryer," on the facing page.) White is the most common laundry appliance finish, but you'll also find red, dark blue, black stainless, and an option similar to stainless that looks sleek against white or gray walls.

As for flooring, the material you choose needs to be durable, easy to clean, and resistant to water and stains (including bleach), in case of spills, splashes, or leaks. According to Joan Muratore, the CR engineer who tests flooring, porcelain tile is the best choice, followed closely by vinyl tiles and planks.

For walls, choose a paint with built-in primer—as our top-rated paints (including those at right) do. Or, if you're concerned about mildew, go with an exterior paint (see our top picks on page 77). "You will not only get great mildew resistance, but they will also keep water splashes from soaking into the walls," says Rico de Paz, the paint pro at CR.

### TOP-RATED PICKS



**Behr Marquee (Home Depot) Paint**  
\$44 per gallon

**89** OVERALL SCORE



**Benjamin Moore Aura Paint**  
\$80 per gallon

**83** OVERALL SCORE

PHOTO, PREVIOUS SPREAD: DAVID HILLEGAS. PHOTOS, THIS SPREAD, CLOCKWISE FROM TOP LEFT: DAVID TSAY/OTTO; BRIAN FINKE

**EXPERT ADVICE:**

# HOW TO CHOOSE A WASHER AND DRYER

CR test engineer Richard Handel puts every machine we rate through a battery of tests in our laundry lab. He recommends focusing on these five factors when choosing your new appliances.

**STEP 1**

**Determine the Best Washer Type**

The washer is the room's workhorse and a much more complicated machine than a dryer, so zero in on it first. Front-loaders typically earn the highest scores in our cleaning tests, and they tend to use less water than top-loaders. In these, the tub's fast spinning extracts much of the water, which cuts down on drying time. But wash times are longer. Though mold can be a problem with any washer type, our surveys show that CR members continue to be more likely to report mold buildup in front-loaders.

Top-loaders overall tend to cost less, and of this type, "top-load agitator washers are usually your least expensive option," Handel says. They also offer the shortest cycle times, but many are tough on fabrics—without being as tough on heavy stains. Top-loaders with a center agitator also use the most water of all three types—and extract less of it, making the

dryer's job more difficult. High-efficiency (HE) top-loaders, the type without an agitator, generally clean better and have bigger capacities than agitator models. But HE models have longer cycle times and can also be rough on fabrics. When space is tight, you can consider a compact set, but there's a trade-off: "Compacts are expensive, and your options are limited, plus performance varies widely," Handel says.

**STEP 2**

**Pick the Right Partner**

"The dryer's moisture sensor feature detects the laundry's dampness and shuts off the machine when clothes are dry," says Handel. "That's easier on fabrics and saves energy." All of the full-sized dryers in our ratings, on page 68, have moisture sensors. To connect your new dryer to the exterior vent, use the shortest length possible of a heavy-gauge metal duct. "Unlike plastic and foil accordion-style ducts, metal won't sag and lint is less likely to accumulate, reducing the risk of a fire," Handel explains.

**STEP 3**

**Correctly Size Up Your Laundry Space**

Height and depth vary a lot from machine to machine, so measuring thoroughly is critical, Handel says. A machine

with bigger load capacity can grow the dimension 2 or 3 inches wider than the standard 27 inches. (Compacts, by contrast, are uniformly 24 inches wide.) Measure the area available for your washer and dryer, then check the machine dimensions in our ratings. Allow about an inch between the appliances, and at least 6 inches of clearance in back for water hookups and venting. To avoid an installation headache, also measure all the doors into your home and the laundry room to be sure new appliances will clear each threshold.

**STEP 4**

**Avoid Bad Vibrations**

A front-loader's tub spins at a high speed to extract water. That speed combined with the tub rotation—similar to a dryer's—can cause the washer to transmit vibrations to wood-framed floors. Most manufacturers have minimized the vibrations that full-sized front-loaders transmit, but all the compact front-loaders we tested shake—some more than others. So note the vibration scores in our ratings, and, to lessen any chance of vibration, make sure your washer is perfectly level when it's installed.

**STEP 5**

**Take Note of Noise**

Depending on where your laundry room is located—near your bedroom or the family room, for example—you may appreciate machines that are quiet, or at least on the quieter side. If so, consider a washer and dryer that scored Very Good or Excellent in our noise tests. You'll still know they're working, but they shouldn't disturb you or make it hard to hear over their sounds while they're running.



  
INSIDE  
CR'S LABS

We use a spectrophotometer (a machine that measures color intensity) to analyze equally stained fabric swatches, before laundering and after. The lighter the stain after washing, the higher the cleaning score.

Ratings > Washing Machines

Brand + Model	Overall Score	Price	Survey Results		Test Results						Features		
			Predicted reliability	Owner satisfaction	Washing performance	Energy efficiency	Water efficiency	Gentleness	Noise	Vibration	Claimed capacity (cu. ft.)	Cycle time (min.)	Dimensions (in.)
<b>FRONT-LOAD WASHERS</b>													
✓ LG WM3900HWA	86	\$1,100	↑	↑	↑	↑	↑	↓	↑	↑	4.5	85	39 x 27 x 31
Ⓢ LG WM3500CW	86	\$810	↑	↑	↑	↑	↑	↓	↑	↑	4.5	105	39 x 27 x 31
✓ LG WM9000HVA	85	\$1,200	↑	↑	↑	↑	↑	↑	↑	↑	5.2	105	41 x 29 x 35
✓ LG Signature WM9500HKA	84	\$1,800	↑	↑	↑	↑	↑	↑	↑	↑	5.8	120	41 x 30 x 34
Ⓢ LG WM3700HWA	84	\$850	↑	↑	↑	↑	↑	↓	↑	↑	4.5	95	39 x 27 x 31
✓ LG WM3997HWA	83	\$1,850	↑	↑	↑	↑	↑	↑	↑	↑	4.3	100	39 x 27 x 32
✓ Speed Queen FF7005WN	82	\$1,900	↑	↑	↑	↑	↑	↑	↓	↑	3.5	75	41 x 27 x 31
✓ Kenmore 41562	82	\$1,000	↑	↓	↑	↑	↑	↓	↑	↑	4.5	85	39 x 27 x 31
✓ Maytag MHW6630HW	82	\$900	↓	↑	↑	↑	↑	↓	↑	↑	4.8	95	39 x 27 x 33
✓ Maytag MHW8630HC	81	\$1,230	↓	↑	↑	↑	↑	↓	↑	↑	5.0	95	39 x 27 x 33
✓ Kenmore Elite 41982	81	\$1,100	↑	↓	↑	↑	↑	↑	↑	↑	5.2	105	41 x 29 x 35
Ⓢ Maytag MHW5630HW	81	\$810	↓	↑	↑	↑	↑	↓	↑	↑	4.5	100	39 x 27 x 32
✓ Samsung WF45R6300AW	81	\$900	↓	↓	↑	↑	↑	↑	↓	↓	4.5	80	39 x 27 x 32
✓ Electrolux EFLS627UTT	81	\$1,080	↑	↓	↑	↑	↑	↑	↑	↑	4.4	85	39 x 27 x 32
<b>TOP -LOAD AGITATOR WASHERS</b>													
✓ Maytag MVWB965HC	70	\$1,270	↓	↓	↑	↑	↑	↓	↑	↑	6	80	44 x 29 x 30
✓ Maytag MVW8230HC	65	\$1,085	↓	↓	↑	↑	↓	↓	↓	↑	5.2	55	44 x 27 x 28
✓ GE GTW465ASNWW	64	\$660	↓	↓	↓	↓	↑	↓	↓	↑	4.5	35	44 x 27 x 27
Maytag MVW7230HW	63	\$900	↓	↓	↓	↑	↓	↓	↓	↑	5.2	55	44 x 27 x 28
Speed Queen TR7000WN	63	\$1,100	↑	↑	↓	↑	↓	↑	↑	↑	3.2	60	43 x 26 x 28
Maytag MVW6230HW	62	\$800	↓	↓	↑	↓	↓	↓	↓	↑	4.7	65	42 x 27 x 28
Speed Queen TR7003WN	62	\$1,100	↑	↑	↑	↓	↓	↓	↑	↑	3.2	70	43 x 24 x 28
Kenmore 21652	62	\$900	↓	↓	↓	↑	↓	↓	↓	↑	5.2	55	44 x 27 x 28
Kenmore 22352	61	\$585	↓	↓	↓	↓	↑	↓	↓	↑	4.2	55	43 x 27 x 28
Whirlpool WTW5105HW	60	\$650	↓	↓	↑	↓	↓	↓	↓	↑	4.7	65	42 x 27 x 28
<b>TOP LOAD HE WASHERS</b>													
✓ LG WT7900HBA	81	\$1,170	↑	↑	↑	↑	↑	↓	↓	↑	5.5	70	45 x 27 x 30
Ⓢ LG WT7100CW	81	\$650	↑	↑	↑	↑	↑	↓	↓	↑	4.5	75	45 x 27 x 30

Brand + Model	Overall Score	Price	Survey Results		Test Results						Features		
			Predicted reliability	Owner satisfaction	Washing performance	Energy efficiency	Water efficiency	Gentleness	Noise	Vibration	Claimed capacity (cu. ft.)	Cycle time (min.)	Dimensions (in.)

**TOP LOAD HE WASHERS** *Continued*

Kenmore Elite 31552	74	\$875									5.2	75	45 x 27 x 29
LG WT7300CW	71	\$840									5	85	45 x 27 x 30
Kenmore Elite 31433	70	\$700									5	75	42 x 27 x 29
Kenmore 26132	69	\$550									4.8	60	41 x 27 x 28
Samsung WA50R5400AW	69	\$630									5	65	45 x 28 x 29
Samsung ActiveWash WA54M8750AV	68	\$1,145									5.4	75	43 x 27 x 29
Samsung ActiveWash WA52M7750AW	67	\$865									5.2	75	46 x 27 x 29
Samsung WA54R7600AW	67	\$990									5.4	85	45 x 28 x 29
Samsung WA50T5300AC	67	\$855									5	65	45 x 27 x 29
Kenmore Elite 31632	66	\$1,110									6.2	70	44 x 30 x 30
Samsung ActiveWash WA52M8650AW	66	\$815									5.2	70	43 x 27 x 29
Maytag MVW7232HW	65	\$730									5.3	55	44 x 27 x 28
GE GTW840CSNWS	65	\$855									5.2	75	46 x 27 x 27
GE GTW500ASNWS	63	\$700									4.6	55	44 x 27 x 27
Whirlpool WTW8120HC	63	\$1,140									5.3	55	43 x 27 x 28
Whirlpool WTW7120HW	62	\$900									5.3	55	44 x 27 x 28

**COMPACT WASHERS**

Samsung WW22N6850QX	84	\$1,235									02	60	34 x 24 x 27
Miele WWH860WCS	81	\$2,000									02	105	34 x 24 x 25
Samsung WW22K6800AW	79	\$800									02	100	34 x 24 x 27
Bosch 800 Series WAT28402UC	76	\$1,305									02	60	34 x 24 x 26
Electrolux EFLS210TIW	76	\$900									02	110	34 x 24 x 25

> Digital and All Access members can find the latest, complete ratings at [CR.org/washing-machines](https://www.crorg/washing-machines).

**HOW WE TEST:** Overall Score combines test results with survey data for predicted reliability and owner satisfaction. Predicted reliability estimates the likelihood that newly purchased models from a given brand, not under service contract, will develop problems or break within the first five years. Owner satisfaction reflects the proportion

of CR members who are extremely likely to recommend the washer they bought. Washing performance reflects the degree of color change in stained fabric swatches added to a load of mixed cottons, using the washer's normal cycle on the heaviest soil setting. Energy efficiency indicates the energy needed to heat the water,

run the washer, and remove the water left in the clothes after the spin cycle completes. Machines that require less water earn higher scores for Water efficiency. For our Gentleness test, we count frayed threads on fabric swatches after washing and air-drying. Our score for Noise reflects panelists' judgments during fill, wash, drain, and

spin phases. The vibrations a washer transmits to a suspended wood floor are captured in the Vibration score. Cycle time is for the normal cycle on the heaviest soil setting, rounded to the nearest 5 minutes. Claimed capacity is what the manufacturer states. Price is approximate retail.

Ratings > Clothes Dryers

Brand + Model	Overall Score	Price	Survey Results		Test Results			Features									
			Predicted reliability	Owner satisfaction	Drying performance	Convenience	Noise	Claimed capacity (cu. ft.)	Dimensions (in.)	Energy star	Stainless steel drum	Drying rack	Custom programs	Steam option	Moisture sensor	End-of-cycle signal	Extended tumble
<b>ELECTRIC DRYERS</b>																	
✓ LG DLEX9000V	91	\$1,620	↑↑	↑↑	↑	↑	↑↑	9	41 x 29 x 33		•		•	•	•	•	•
Ⓢ LG DLEX3700W	90	\$650	↑↑	↑↑	↑	↑	↑↑	7.4	39 x 27 x 30	•			•	•	•	•	•
✓ Maytag MEDB955FW	88	\$1,185	↑	↑	↑↑	↑	↑↑	9.2	44 x 29 x 33	•	•	•	•	•	•	•	•
✓ LG DLEX7900BE	88	\$1,170	↑↑	↑↑	↑	↑	↑	7.3	44 x 27 x 30	•	•			•	•	•	•
Ⓢ LG DLE7100W	88	\$650	↑↑	↑↑	↑↑	↑	↑	7.3	44 x 27 x 29	•				•	•	•	•
✓ LG DLEX3900W	87	\$750	↑↑	↑↑	↑	↑	↑	7.4	39 x 27 x 30	•	•			•	•	•	•
✓ Kenmore Elite 61632	87	\$1,150	↑	!	↑↑	↑	↑↑	9.2	44 x 29 x 33	•	•	•	•	•	•	•	•
<b>GAS DRYERS</b>																	
✓ LG DLGX9001V	91	\$1,710	↑↑	↑↑	↑	↑	↑↑	9	41 x 29 x 33		•		•	•	•	•	•
✓ LG DLGX3701W	90	\$750	↑↑	↑↑	↑	↑	↑↑	7.4	39 x 27 x 30	•			•	•	•	•	•
✓ LG DLGX4501B	89	\$1,500	↑↑	↑↑	↑↑	↑	↑	7.4	39 x 27 x 31	•	•			•	•	•	•
✓ LG DLGX7901BE	88	\$1,270	↑↑	↑↑	↑	↑	↑	7.3	44 x 27 x 30	•			•	•	•	•	•
Ⓢ LG DLG7101W	88	\$700	↑↑	↑↑	↑↑	↑	↑	7.3	44 x 27 x 29	•				•	•	•	•
✓ LG DLGX8101V	88	\$1,100	↑↑	↑↑	↑↑	↑	↑	9	41 x 29 x 32				•	•	•	•	•
✓ LG DLGX3901W	87	\$850	↑↑	↑↑	↑	↑	↑	7.4	39 x 27 x 30	•	•			•	•	•	•
✓ Maytag MGDB955FW	86	\$1,295	!	↑	↑↑	↑	↑↑	9.2	44 x 29 x 33	•	•	•	•	•	•	•	•
✓ Kenmore Elite 71552	84	\$1,000	!	!	↑↑	↑	↑↑	7.3	45 x 27 x 30	•	•			•	•	•	•
✓ LG Signature DLGX9501K	84	\$1,900	↑↑	↑↑	↑	↑	↑	9	41 x 29 x 33		•		•	•	•	•	•
<b>COMPACT DRYERS</b>																	
✓ Miele TWI180WP	88	\$1,900	↑↑	↑↑	↑	↑	↑↑	4.1	34 x 24 x 25	•				•	•	•	•
Ⓢ Samsung DV22K6800EW	76	\$800	!	!	↑	↑	↑	4	34 x 24 x 26		•		•		•	•	•
✓ Samsung DVE22N6850X	76	\$1,025	!	!	↑	↑	↑	4	34 x 24 x 26		•		•		•	•	•

> Digital and All Access members can find the latest, complete ratings at [CR.org/clothes-dryers](https://www.crisil.com/clothes-dryers).

**HOW WE TEST:** The **Overall Score** combines performance test results with survey data for predicted reliability and owner satisfaction, and is based on a 100-point scale. **Predicted reliability** estimates the likelihood that newly purchased models from a given brand, not under service contract, will

break within the first 5 years. **Owner satisfaction** reflects the proportion of CR members who are extremely likely to recommend the dryer they bought to friends and family. In cases where we have insufficient survey data to provide a brand level rating, as indicated by a gray dash (—), we give

the model weighted category average scores for reliability and satisfaction. **Drying performance** combines performance of three loads of various sizes and fabric mixes. To score **Convenience**, we evaluate controls and ergonomics, such as ease of loading and unloading, and cleaning the lint

filter. A panel of judges determines the **Noise** score by listening to each machine dry an 8-pound load (6-pound for compacts). **Claimed capacity** is what the manufacturer states. **Price** is approximate retail.



## VACUUM TYPES

### UPRIGHTS

(\$65 to \$1,600)

**Strengths:** With the full weight of the vacuum sitting over the brush roll, upright vacuums are the best at cleaning carpet because the brush pushes down into the pile, loosening and sucking up the dirt. All of our recommended uprights earn a rating of Excellent or Very Good in our carpet cleaning test. And because they stand upright, they're easy to store. Got a dog or cat? The best uprights in our ratings are great at picking up pet hair.

**Weaknesses:** They can weigh more than 20 pounds, so if you live in a multilevel house you may not want to lug it up and down stairs. Vacuuming the stairs themselves can be awkward because you have to balance the whole vacuum as you go. And in our tests, uprights tend to be noisier than canister models.

**How to Get the Most From It:** If you use your vacuum to clean curtains and upholstery, look for one with add-on attachments for fabric as well as suction control so you can vacuum more gently. And if you have a combination of bare floors and carpeting, you'll want a brush on/off switch to avoid scattering debris on bare floors. In our recent surveys of CR members who bought nearly 98,000 nonrobotic vacuums over the last 10 years, Sebo, Soniclean, and Shark were the most reliable. Bissell, Dirt Devil, and Eureka were the least reliable brands.

# The Best Way to Clean Your Floors

Here, the tools you need to master any mess

**SPENDING MORE TIME** at home—as many of us still are these days—means more crumbs, more dust, and more pet hair. A good vacuum is essential. After all, not just any

model can handle a golden retriever's shedding or is light enough to carry up stairs.

Which ones should be in your cleaning arsenal? At Consumer Reports, we test hundreds of

uprights, canisters, corded and cordless sticks, handhelds, and robotics. On the following pages we break down what need to know about each type. We've got guidance on carpet cleaners and steam mops, too. So choose the type of appliance that fits how you live and how you clean. Then check out the ratings on page 72 to find the top performers from our tests.

**CANISTERS**

(\$220 to \$1,100)

**Strengths:** If you live in a house with stairs, a canister is a good choice. They weigh about as much as uprights, but the vacuum hose and head are separate from the canister itself, so it's much easier to vacuum stairs. (You can leave the canister on the floor or a stair.) It's easier to vacuum under furniture, too, because the vacuum head is easier to maneuver than the head of an upright vacuum. Many of the top performers are great for picking up pet hair, too.

**Weaknesses:** Because you're dragging a canister behind you as you go, you have to be careful that it doesn't bump into your furniture or nick your walls. And they're trickier to store because the hose and body typically take up more space than an upright.

**How to Get the Most From It:** Most canisters come with attachments for cleaning curtains and upholstery, and reaching ceiling corners. For those jobs, you'll want a model that has variable hose suction, and most of the canisters in our tests score Very Good to Excellent in that test. Based on data from our member surveys, Miele gets our top marks for both predicted reliability and owner satisfaction.

**CORDED STICK VACS**

(\$30 to \$300)

**Strengths:** Stick vacuums are lightweight, so you can easily pull one out of the closet for a quick cleanup. Corded ones rate exceptionally well in CR's tests for performance and predicted reliability, although they still can't take the place of a full-sized vacuum, especially for cleaning carpet.

**Weaknesses:** Mainly one: the cord. The convenience of having a lightweight vacuum

may be offset by a cord you have to maneuver around. Also, you might not get as many attachments for cleaning things like curtains or upholstery.

**How to Get the Most From It:** Stick vacs don't come with many bells and whistles. Just keep it at the ready, say, in the front of a closet, to make it easy to grab. According to our reliability surveys, you can't go wrong by buying a corded Shark stick vac. Shark earns the top rating for predicted reliability and owner satisfaction. All of the other brands earn an Excellent or Very Good rating for predicted reliability.

**CORDLESS STICK VACS**

(\$70 to \$800)

**Strengths:** In our tests, the performance of cordless stick vacs keeps improving. They're capable of cleaning bare floors well, and getting rid of pet hair. Just like their corded cousins, these are great for small messes, but you don't have to worry about tripping over a cord. Plus, many cordless stick vacs can be used as hand vacs with a few quick adjustments.

**Weaknesses:** Batteries are a drawback with cordless stick vacuums. In our member survey, batteries losing power or dying was cited as a frequent problem. As a result, none of the cordless vacuums in our tests are eligible for a CR recommendation regardless of test performance. And they're not as good at cleaning carpet as a full-sized vacuum.

**How to Get the Most From It:** Try to find a model that comes with two batteries, so you can swap a fresh one in when the other runs low. For instance, the Shark ION F80 Cord-Free MultiFlex IF281 comes with two batteries, which doubles its cleaning time—24 minutes per battery. Of course, you can also get a one-battery model and

pay extra for a second battery.

But don't count on the batteries lasting. Of the nine brands of cordless stick vacuums in our reliability ratings, only four earn a middling score of Good for predicted reliability. The other five rate Fair or Poor.

**TOP-RATED CARPET CLEANERS**



✓ **Bissell ProHeat 2X Lift-Off Pet 15651**  
\$300

71 OVERALL SCORE



✗ **Hoover PowerDash Pet FH50700**  
\$100

69 OVERALL SCORE



✓ **Hoover SmartWash Automatic FH52001**  
\$100

68 OVERALL SCORE

**ROBOTICS**

(\$200 to \$1,300)

**Strengths:** Want dust-free floors without having to lift a finger? Depending on the model, a robotic vacuum can learn your floor plan and clean on a schedule you set via an app. (Models without WiFi allow you to schedule a daily cleaning via a remote control or the robot's built-in control panel.) Prices have dropped significantly over the past few years. You can get a great robotic vacuum for as little as \$200. In our tests, robotics worked especially well on bare floors.

The less expensive models generally don't have WiFi connectivity. Pricier ones have more features, and some can now empty their own dustbins. When the robotic vacuum docks, it unloads what it picked up into a bag or canister.

**Weaknesses:** Our tests found that robotic vacs are generally not great on carpet and they can't handle heavier soil. Some get caught on thick cords and rug tassels, and some struggle with making the transition between bare floors and carpet.

**How to Get the Most From It:** It may take a few cleanings before a robotic vacuum can map your floor. Make sure it's docked and fully charged every day so that it can complete its scheduled cleaning.

**A Word On Our Robotic Vacuums Testing:** You won't find robotic vacuums ratings on pages 72 and 73 because we're updating them with the latest scores from our redesigned lab. If you're a digital member, you can go to [CR.org/robotic-vacuum](http://CR.org/robotic-vacuum) to see the ratings.

**HANDHELDS**

(\$35 to \$200)

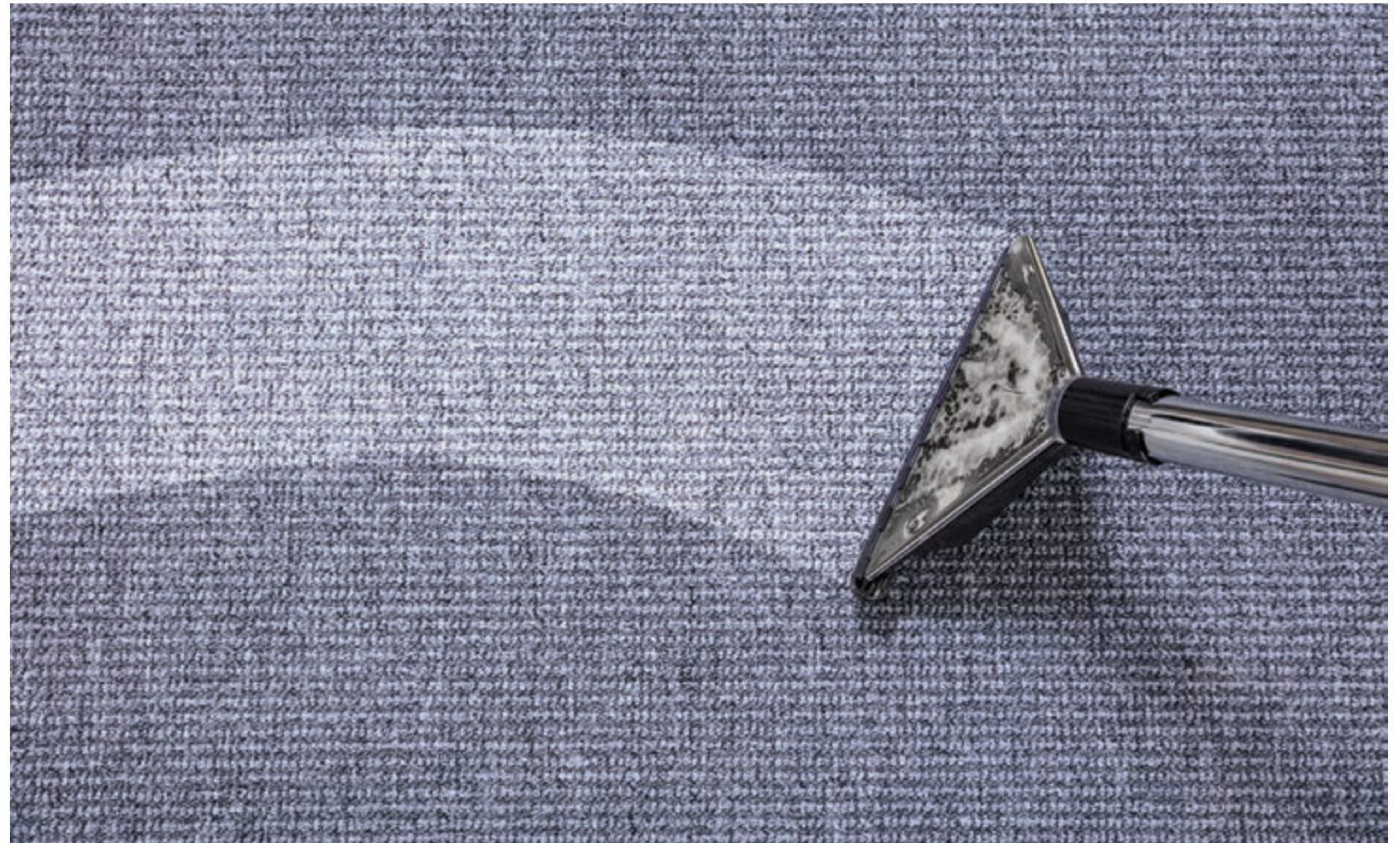
**Strengths:** If you have a young child or grandchild, you know how quickly the floor of



your kitchen or car can become littered with crushed Cheerios or Goldfish. Handheld vacuums make cleanup easy. All but one of the models in our tests are cordless. And many of those cordless vacs have longer-lasting lithium-ion batteries, and the run times range from 9 to 30 minutes.

**Weaknesses:** Handheld vacuums aren't very powerful, so they're really only for small messes. Even models that score well for cleaning carpet and bare floors are only appropriate for spot messes because the powerheads are small.

**How to Get the Most From It:** Keep your handheld vac in an accessible place so there's no obstacle to grabbing it and cleaning up the mess of the moment. But if you break a glass or plate, it's better to use a broom and dustpan so that pieces of glass or ceramic don't get stuck in your vacuum or otherwise damage it.



similar—and sometimes better—results. That said, steam mops generally work faster and pick up dirt more readily than a sponge mop. (Sponge mops tend to push dirt—and dirty water—around, requiring more passes to get the floor clean.)

**Weaknesses:** Some steam mops require you to manually pump the mop to generate steam. In our tests, the steam rate from these mops varied widely and sometimes our testers found it didn't get hot enough to clean well. You can't use them on wood floors, and you have to be careful with laminate or vinyl; if you let a steam mop sit in one place, the steam could warp the surface.

**How to Get the Most From It:** Depending on how dirty your floors are, you may need to sweep before using a steam mop so that you're not spreading dirt around.

**CARPET CLEANERS**  
(\$100 to \$600)

**Strengths:** If you have a lot of carpet and heavy foot traffic, it may make sense to buy one of these machines rather than always renting one from a home improvement store. The best models from our tests do a good job of getting dirt and gunk out

of carpet fibers by dispensing a cleaning solution and then sucking it back up. Two-tank systems with removable plastic tanks are easier to clean than one-tank systems, which may have two nonremovable plastic bladders inside a single tank.

**Weaknesses:** Carpet cleaners can be very heavy, as much as 65 pounds when filled with cleaning solution and water. The weight helps push down the carpet pile, allowing the cleaning solution to get into the fibers and do its work, but it also makes the appliance cumbersome to maneuver.

And brace yourself for the noise. In our tests, carpet cleaners averaged 80 decibels, which is twice as loud as the average vacuum cleaner. So be sure to wear hearing protection, especially if you're using the machine for a prolonged period.

**How to Get the Most From It:** Vacuum and spot-treat stains before using a carpet cleaner. Look for one with a long power cord so that you can move it around easier. (In our tests, cord lengths varied from 61 to 155 inches.) If you have carpeted stairs, look for a model that comes with an attachment for cleaning smaller areas.

BEYOND VACUUMS

**STEAM MOPS**  
(\$50 to \$200)

**Strengths:** The steam from one of these mops gets rid of muddy paw prints, sticky spilled juice, and other messes fast. But they're really only meant to be used on tile or vinyl floors.

These compact machines are easy to store, and some allow you to set the temperature they heat up to. They're convenient, but when we compared how well steam mops clean vs. a low-tech sponge mop, we found that as long as we wet the sponge mop several times, we got

**TOP-RATED STEAM MOPS**



✓ **Bissell PowerFresh Slim 2075A**  
\$150  
79 OVERALL SCORE

---



✓ **Bissell PowerFresh Deluxe 1806**  
\$90  
77 OVERALL SCORE

PHOTO, TOP RIGHT: ANDREY POPOV/GETTY IMAGES

Brand + Model	Overall Score	Price	Survey Results		Test Results							Features						
			Predicted reliability	Owner satisfaction	Carpet	Bare floors	Hose suction	Clean emissions	Handling	Pet hair	Noise	Weight (lb.)	Cord length (ft.)	Manual-pile adjust	Accepts tools	Suction control	Retractable cord	Full-bag/bin indicator
<b>BAGLESS UPRIGHT VACUUMS</b>																		
✓ Shark Navigator Powered Lift-Away NV586 (Target)	77	\$300	↑	↑	↑	↑	↑	↑	↑	↑	↓	16	26		•	•	•	•
Ⓢ Kenmore Pet Friendly Cross-Over DU3017	75	\$180	↓	↓	↑	↑	↑	↑	↑	↑	↓	17	25		•	•	•	•
✓ Shark Rotator Powered Lift-Away Speed NV680	74	\$300	↑	↑	↑	↑	↓	↑	↑	↑	↑	14	30		•	•	•	•
✓ Dyson Ball Animal 2	74	\$450	↓	↓	↑	↑	↑	↑	↑	↑	↓	17	30		•	•	•	•
Ⓢ Kenmore Pet Friendly CrossOver 31220	74	\$250	↓	↓	↑	↑	↑	↑	↑	↓	↓	18	29		•	•	•	•
✓ Dyson Ball Multi Floor 2	74	\$400	↓	↓	↑	↑	↑	↑	↑	↑	↓	16	31		•	•	•	•
Ⓢ Shark Rotator Professional Lift-Away NV501	73	\$260	↑	↑	↑	↑	↓	↑	↑	↓	↑	17	30		•	•	•	•
✓ Shark APEX DuoClean Powered Lift-Away Speed AX912	73	\$350	↑	↑	↑	↑	↓	↑	↑	↓	↑	16	30		•	•	•	•
<b>BAGGED UPRIGHT VACUUMS</b>																		
Ⓢ Kenmore Elite Pet Friendly 31150	77	\$350	↓	↓	↑	↑	↑	↑	↓	↑	↓	21	35		•	•	•	•
✓ Miele Dynamic U1 Cat & Dog	76	\$700	↓	↑	↑	↑	↑	↑	↓	↑	↑	22	40		•	•	•	•
Ⓢ Kenmore Pet Friendly 31140	74	\$280	↓	↓	↑	↑	↑	↑	↓	↑	↓	20	29		•	•	•	•
✓ Kirby Avalir 2	72	\$1,600	↓	↓	↑	↑	↑	↑	↓	↑	↓	23	29		•	•	•	•
Ⓢ Hoover WindTunnel Max UH30600	71	\$180	↓	↓	↑	↑	↑	↑	↓	↑	↓	17	29		•	•	•	•
<b>BAGLESS CANISTER VACUUMS</b>																		
✓ Miele Blizzard CX1 Cat & Dog	76	\$900	↑	↑	↓	↑	↑	↑	↓	↑	↑	15	21		•	•	•	•
Ⓢ Kenmore 22614	72	\$390	↓	↓	↑	↑	↑	↑	↓	↑	↓	23	24		•	•	•	•
<b>BAGGED CANISTER VACUUMS</b>																		
✓ Miele Complete C3 Marin	84	\$1,100	↑	↑	↑	↑	↑	↑	↓	↑	↑	23	24		•	•	•	•
✓ Miele Complete C3 Alize	77	\$700	↑	↑	↓	↑	↑	↑	↓	↑	↑	17	24		•	•	•	•
✓ Kenmore Elite Pet Friendly UltraPlush 81714	76	\$530	↓	↓	↑	↑	↑	↑	↓	↑	↓	25	26		•	•	•	•
Ⓢ Kenmore Pop-N-Go BC4026	76	\$280	↓	↓	↑	↑	↑	↑	↓	↑	↑	22	26		•	•	•	•
✓ Kenmore Elite Pet Friendly CrossOver 21814	76	\$660	↓	↓	↑	↑	↑	↑	↓	↑	↓	26	27		•	•	•	•
Ⓢ Kenmore 200 Series BC4002	76	\$220	↓	↓	↑	↑	↑	↑	↓	↑	↓	19	24		•	•	•	•

Brand + Model	Overall Score	Price	Survey Results		Test Results						Features			
			Predicted reliability	Owner satisfaction	Carpet	Bare floors	Edges	Noise	Pet hair	Clean emissions	Run time (min.)	Charge time (hr.)	Weight (lb.)	Battery type

### CORDED STICK VACUUMS

<b>Shark</b> APEX UpLight Lift-Away DuoClean LZ601	97	\$275									NA	NA	11.0	Corded model
<b>Shark</b> APEX DuoClean Corded ZS362	94	\$250									NA	NA	9.8	Corded model
<b>Dirt Devil</b> Power Stick SD12530	85	\$100									NA	NA	7.0	Corded model

### CORDLESS STICK VACUUMS

<b>Tineco</b> Pure One S11	95	\$350	—	—							21.5	4	5.8	21.6 volt lithium ion
<b>Tineco</b> Pure One S11 Tango EX	94	\$470	—	—							16.8	4	5.8	21.6 volt lithium ion
<b>Tineco</b> Pure One S12	92	\$600	—	—							18.0	4	6.6	21.6 volt lithium ion
<b>Dyson</b> V11 Outsize	90	\$800									40.0	5	7.9	25.2 volt lithium ion
<b>Samsung</b> Jet Light VS70 VS15T7031R4/AA	90	\$280	—	—							22.0	4	5.7	Lithium ion
<b>Samsung</b> Jet 90 Complete VS20R9046T3/AA	89	\$650	—	—							27.0	4	6.2	Lithium ion
<b>Dyson</b> V11 Torque Drive	89	\$700									43.2	4	6.6	25.2 volt lithium ion
<b>Dyson</b> V8 Absolute	89	\$450									21.0	5	5.6	21.6 volt lithium ion

Brand + Model	Overall Score	Price	Test Results					Features				
			Carpet	Bare floors	Edges	Noise	Pet hair	Run time (min.)	Charge time (hr.)	Weight (lb.)	Battery type	Clean emissions

### HANDHELD VACUUMS

<b>Shark</b> Ion W1 WV201	80	\$130						10	3	1.4	10.8 Volt Li-ion	
<b>Black+Decker</b> Max+ Dustbuster AdvancedClean+ HHVK515J00	79	\$90						31	5	2.7	20 Volt Li-ion	
<b>Black+Decker</b> Dustbuster CHV1410L	78	\$60						9	4	2.6	16 Volt Li-ion	

> Digital and All Access members can find the latest, complete ratings at [CR.org/vacuum-cleaners](https://www.cr.org/vacuum-cleaners).

**HOW WE TEST:** The **Overall Score** for all vacuums except handhelds takes into account information on predicted reliability and owner satisfaction from our member survey. **Predicted reliability** estimates the likelihood that newly purchased models from a given brand, not under service contract, will break within the first 5 years. **Owner**

**satisfaction** reflects the proportion of CR members who are extremely likely to recommend the dryer they bought to friends and family. In cases where we have insufficient survey data to provide a brand level rating, as indicated by a gray dash (—), we give the model weighted average reliability and satisfaction scores. Full-sized vacuums

(uprights and canisters) undergo our toughest tests. We sprinkle talc and sand on a medium-pile carpet for **Carpet** cleaning and spread sand on a linoleum floor for our **Bare floors** test. For **Pet hair**, we stomp pet fur into a carpet. We also measure **Noise** and how well the vacuum contains what it sweeps up for our **Emissions** score. Stick vacuums are

typically a secondary vacuum, so in our tests we concentrate on surface debris such as cereal and rice. For cordless stick vacs, we also measure each model's battery **run time**. Handhelds are the least powerful, so we calibrate our tests for **Carpet**, **Bare floors**, **Edges**, and **Pet hair** accordingly. **Price** is approximate retail.

# OUTDOOR SPACES



**RATINGS:**

EXTERIOR PAINT  
P. 77

WOOD STAIN  
P. 79

GRILLS  
P. 84

LAWN MOWERS  
P. 90

LAWN TRACTORS  
P. 92

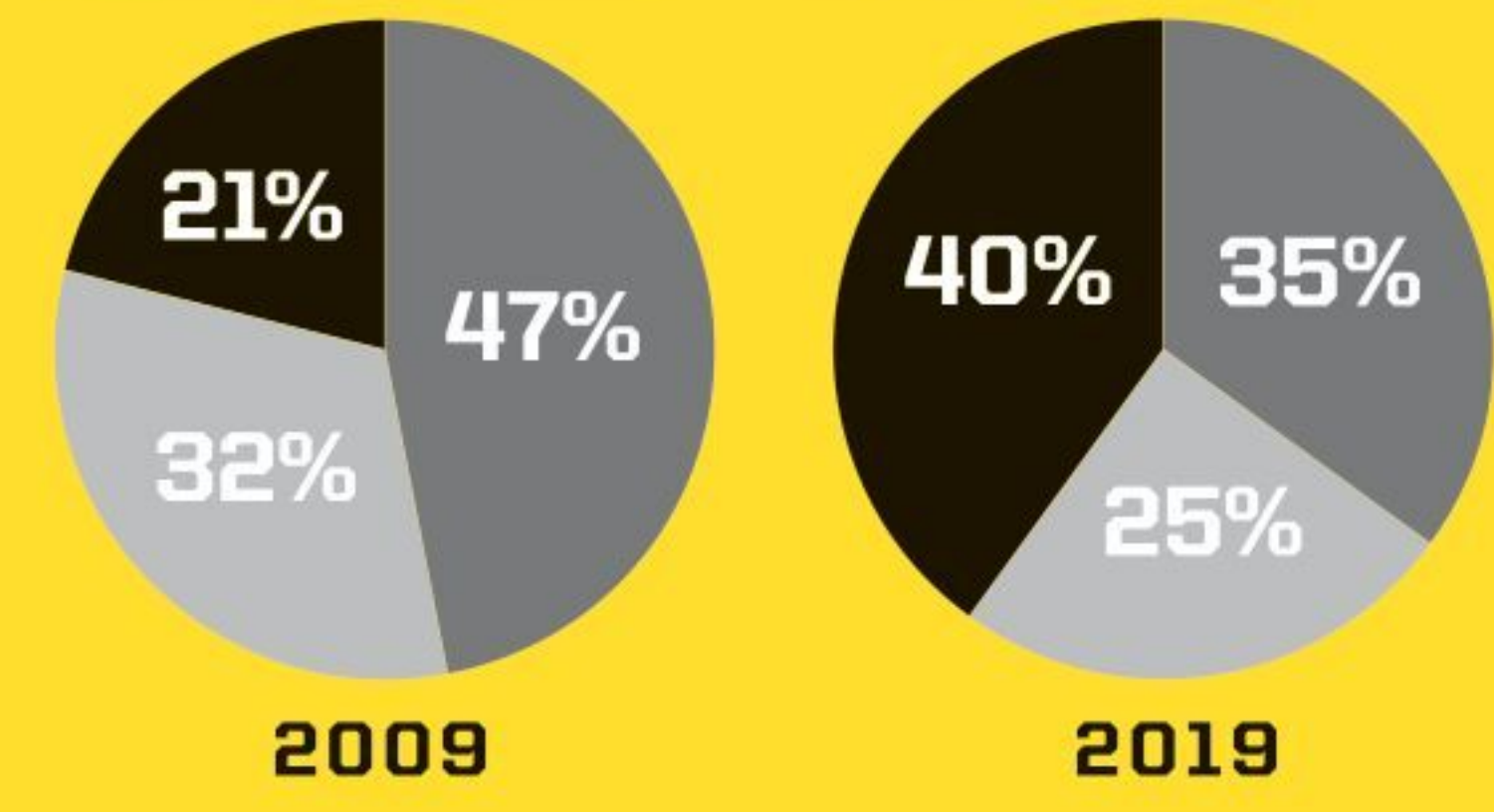
STRING TRIMMERS  
P. 93

LEAF BLOWERS  
P. 94

PRESSURE  
WASHERS  
P. 95

**Battery-powered string trimmers  
gain in market share**

■ BATTERY ■ GAS ■ CORDED



Source: Estimated breakdown from TTI.



# WHAT IS AVAXHOME?

# AVAXHOME-

the biggest Internet portal,  
providing you various content:  
brand new books, trending movies,  
fresh magazines, hot games,  
recent software, latest music releases.

Unlimited satisfaction one low price

Cheap constant access to piping hot media

Protect your downloadings from Big brother

Safer, than torrent-trackers

18 years of seamless operation and our users' satisfaction

All languages

Brand new content

One site



**AVXLIVE** **ICU**

AvaxHome - Your End Place

We have everything for all of your needs. Just open <https://avxlive.icu>



PHOTO, PREVIOUS SPREAD: JAMIE CHUNG/TRUNK ARCHIVE  
PHOTOS, THIS SPREAD FROM LEFT: DISCOVERY OR ITS SUBSIDIARIES AND AFFILIATES; GETTY IMAGES



# Outdoor Updates That Will Pay You Back

These upgrades will make your home more enjoyable now—and could make your house easier to sell later

**OUTDOOR LIVING SPACES** have become more important than ever as we're all spending time in homes that sometimes feel like they're bursting at the seams. Investing a little time or money now on amenities like a deck or outdoor lighting could improve your quality of life, and might pay off down the road when you decide to sell your house. So what changes should you make to transform your outdoor living areas and turn your home into real estate eye candy? Here are six the experts suggest.

**1. SPIFF UP YOUR ENTRY**  
Who knew that the color of your front door could translate into thousands of dollars in your pocket? According to Zillow, a black front door correlates to an extra \$6,000 in a home's sale price compared with similar homes. Notably, black is the only color that appears to work that magic.

But no matter what color your door is, at least freshen up the paint. Semi-gloss paint yields a smooth, slightly shiny sheen, and it's also easy to clean, says Rico de Paz, Consumer Reports' resident paint pro.

Other ways to make the front of your house more appealing: Pressure-wash walkways and your driveway, wash your windows, put a wreath on your front door, replace your door mat, and get a new mailbox or repaint your old one. Place tall plants in colorful pots on the front landing or porch.

Even fakes will do. "The buyers don't even notice that the plants are fake," says Francie Malina, a licensed real estate salesperson at Compass Real Estate in Dobbs Ferry, N.Y. "They're there for 20 minutes with one child in each arm."

**2. PLANT A TREE**  
A mature tree on a property can contribute thousands of dollars to a home's value. Even a leafy sapling, grounded by well-groomed mulch or colorful annuals, can add curb appeal, says Rachel Stults, a spokesperson for Realtor.com. "It can't hurt to plant a few small ones," she says.

**3. SPRUCE UP LANDSCAPING**  
Curb appeal is always key. "You have seconds to get a buyer's attention online," says Susan Williams, a real estate agent with Coldwell Banker serving areas outside of Los Angeles. "Especially now, a buyer has to look at a home's photo and be so seduced that they want to put on a mask and go look at it."

It comes as no surprise that a well-maintained lawn and plantings are among the top outdoor features that buyers prize, according to 2018 research by the National Association of Realtors (NAR). A yard that's overgrown detracts from the entire property. "When

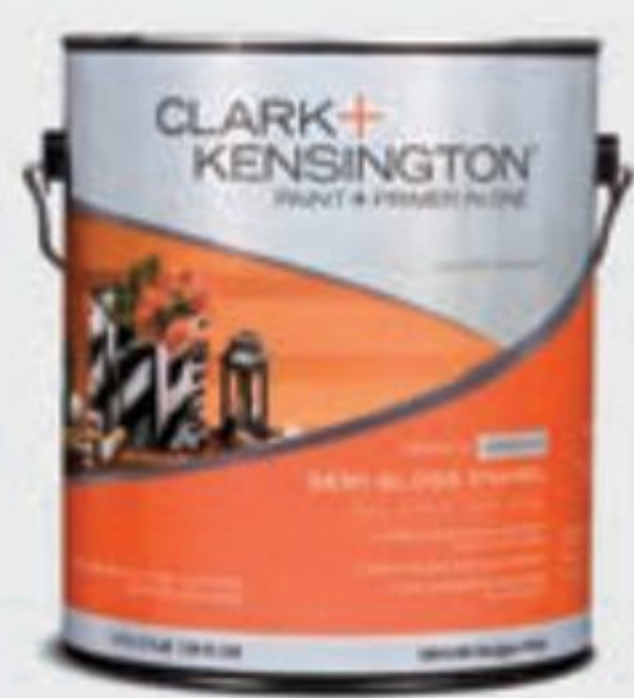


## TOP-RATED PICKS



✓ **Behr Premium Plus Ultra Exterior (Home Depot)**  
\$44

**75** OVERALL SCORE



✓ **Clark + Kensington Exterior (Ace)**  
\$35

**75** OVERALL SCORE

a yard is not kept up, people wonder what else is wrong with the house," Williams says.

According to Zillow, including the word "landscaping" to a home listing can add 2.7 percent more to the sale price. With a \$300,000 home, that's a gain of \$8,100. Of course, the increase isn't guaranteed, but Zillow's research shows there's a correlation between landscaping as a feature and a higher sales price, says Amanda Pendleton, a Zillow home trends expert. It's "often part of a package of features that signal to a buyer that a listing is a 'nice' home," Pendleton says. "That's why these homes command a price premium."

If you want to hire landscapers to freshen up your property, check prices in your area. The home services website Thumbtack says the price for a pro to mow, prune, weed, plant new flowers or shrubs, and add soil, bark dust, or mulch cost, on average, \$1,770 in Tampa, Fla., and \$3,100 in the Los Angeles area.

**But you can do a lot of the work yourself. Some advice from the experts:**

- To get the most visual "pop," use dark-brown or black mulch, which contrasts well with the colors of flowers and shrubs, says AnnMarie Janni, founder of the Element Realty Group in Cary, N.C.
- Don't mow too close to the ground in the summer to protect the grass from drying out, and use a string trimmer to keep edges clean, says David Trezza, head of lawn mower testing at CR. (To find the best lawn mowers, lawn tractors, string trimmers, and leaf blowers from CR's tests, see "The Tools You Need for Easy Outdoor Upkeep," page 88.)
- Trim foundation hedges so they don't obstruct first-

floor windows. "People like the light," says Malina.

- If your home is in a drought-prone area, consider xeriscaping—mingling succulents, cacti, and other water-sipping plants among stones and other features to minimize water use. "In L.A., it's kind of a faux pas if you have grass you need to water all the time," Williams says.

#### 4. CLEAN UP AND DECLUTTER

A neat and tidy yard and outdoor living space will look more tranquil and appealing. So, as attached as you may be to your antique bird bath or garden gnomes, stow them away. "You want to make your yard look pristine and clean of clutter, the same as you would the inside of your home," Stults says. Play structures in good condition are okay, though. "In our market, they are generally a positive," Janni says. Young families find them a plus, and older buyers want to keep them if they envision grandchildren visiting.

#### 5. MAKE THE MOST OF YOUR OUTSIDE LIVING AREA

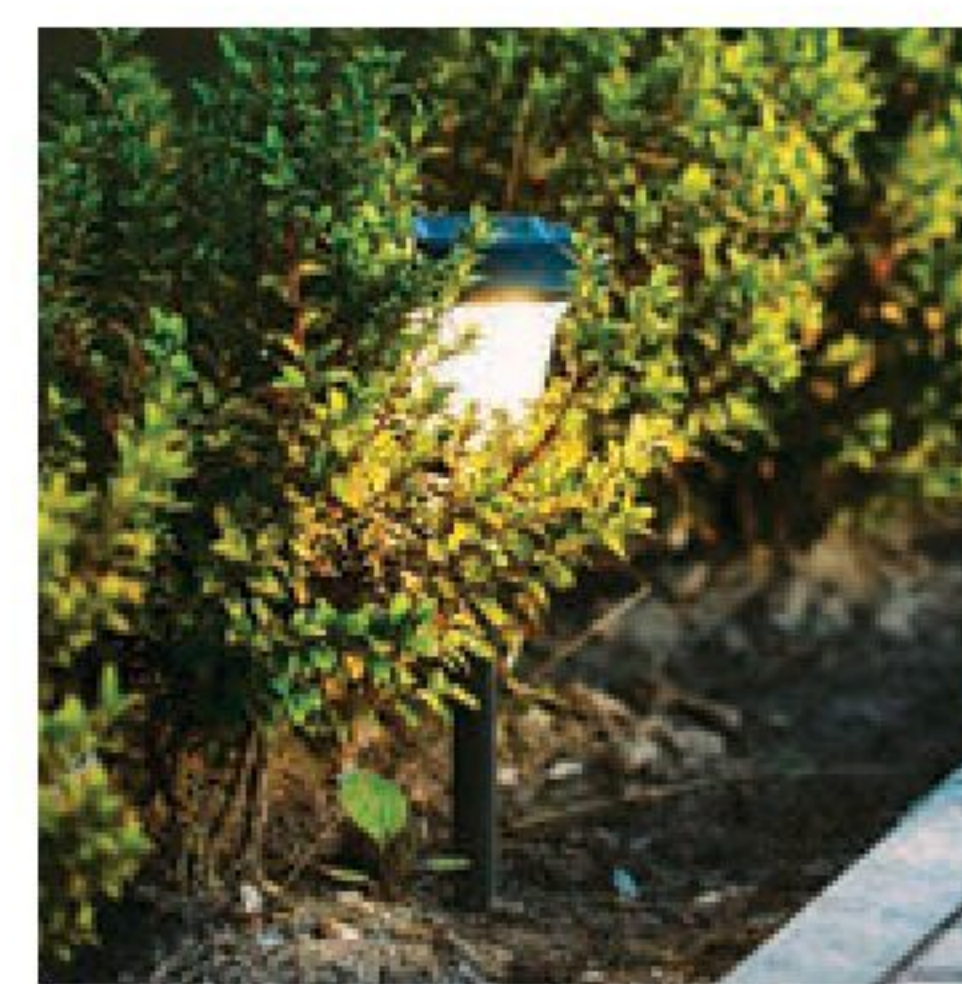
The pandemic has driven home the importance of outdoor living space. "When we have to social distance, that space is even more essential," says Kim Soper, founder of Better Homes and Gardens Real Estate Cypress in Lexington, Ky. An NAR study found that new decks and patios can return 69 to 80 percent on the investment. And the word "pergola" (an outdoor structure that provides shade) in a listing correlates to a price that's 2 percent higher and a property selling nine days faster, Zillow found.

Even small improvements to existing decks and patios can help sell your property. Get your deck refinished or painted, and power wash the patio, Williams

## HIGHLIGHT WITH LIGHTING

Including "outdoor lighting" in a listing description contributed to homes selling 3.1 days faster and for 1.6 percent more, on average, than homes listed without those words, according to Zillow. For a \$300,000 home, that's \$4,800.

Adding lighting could be as easy as installing solar-powered path lighting yourself. Or you could have lighting professionally installed. Even with the extra cost, you may still get a return on your investment. Patrick Harders, founder of Enlightened Lighting, an outdoor lighting design and installation company in Sterling, Va., says that illuminating basic areas of the front facade and walkway can start at \$1,500.



advises. Make safety repairs as needed. (See "Deck Out Your Deck," page 79, for details on how to identify and make those.) Replace furniture or cushions that look worn.

Buy inexpensive, colorful pillows and flower pots to brighten up living areas. And set a table with colorful place settings. "A lot of times when we're staging, you put down one of those bright colorful rugs and it warms up the space a bunch," Janni says. In general, you want to create a mood so buyers get a sense of what it's like to live there.

Daryl Beyers, a container-plant expert at the New York Botanical Garden, suggests tall plant containers on a deck because they bring plants to eye level when you're seated. "It can make you feel like you're sitting with the plants, not hovering above them," he says. "Even on a small deck, a 3-foot-tall planter can have a small footprint. It's the height that matters."

#### 6. INSTALL 'SMART' SPRINKLERS

These systems access local weather data through your WiFi connection and turn on your sprinklers accordingly to water your lawn and garden. Zillow's research found that listings on its site mentioning "smart sprinkler systems" sold 15 days faster, on average, than those that didn't list the feature.

If you already have a sprinkler system, upgrading involves purchasing a new smart controller, ranging from \$100 to \$300. You can install it yourself or hire an electrician. Besides boosting your home's value, a smart sprinkler controller can help you save money on water. For more on smart sprinklers and other tech, see "Your Ultimate Smart Home Toolkit," page 48.



Replace any decaying wood.

How can you tell if wood is rotten? "If you can poke a screwdriver into the wood more than 1/16 of an inch, it's probably rotted," says Bruce Barker, owner of Dream Home Consultants in Raleigh, N.C., who has written deck inspection guidelines for the American Society of Home Inspectors.

Decayed wood with paint or solid stain finishes may also look like they're lifting or flaking off, says Rich Handel, who tests decking for Consumer Reports.

**PREVENT SLIPS**

If you're shopping for new decking boards, consider their slip factor. You don't want to fall if you're out on your deck after rain or a water-gun duel. CR's decking tests show that some composite models resist a slip best, followed by wood decking. Other composite materials and plastic decking didn't perform as well.

Another way to reduce slips: Add outdoor area rugs. Look for those made from solution-dyed acrylic, says Tracy Morris, an interior designer in Washington, D.C. Because the dye is mixed into the acrylic solution before it's spun into fiber, the resulting material is colorfast, and water- and stain-resistant. "It's a high-quality material and isn't inexpensive," she says.

Here's a cleaning tip: Lift the rug to check for moss or algae, which—unlike mold—can grow on synthetics. Scrub affected areas with diluted vinegar. Soak up excess moisture with a towel, then hang to air-dry.

**CHECK UNDER THE DECK**

You might not think to look under your deck, but it's important to make sure the ledger board, which attaches the deck to your home, is secure. A ledger that's not well-attached can break away from your home

and cause a deck collapse. The safest ledger connection goes all the way through the wall to attach the ledger to your home's interior floor supports.

Decks built within the past five years are likely to use strong, new fastener designs that reduce that risk. But if your house is older, consider having a contractor or professional deck inspector check out your deck's attachments. (This specialized task isn't part of a standard home inspection, so it may be something that hasn't been checked before.)

If you need to have new attachments, it could run you anywhere from around \$600 for a small, low deck connected to a house with wood floor supports to \$2,000 for a large, high deck attached to floor supports that aren't wood.

"It's expensive," notes Andy Happ, owner of Happ Contractors in Doylestown, Pa., "but it's better than a bunch of people pitching off the side of a house when the deck fails."

You may also need a contractor to replace or add flashing to deflect water from the ledger board. Otherwise, the ledger beam can weaken from moisture damage and sag or collapse.

**GRILL SAFELY**

To prevent fire and smoke damage to siding, decking, and deck furniture, place your grill 2 feet away from railing, siding, and any wires, awnings, or other overhangs. "You don't want smoke and fumes to get into the house to damage items or sicken anyone inside," explains Larry Ciufo, who tests grills for Consumer Reports.

Place the grill on a non-flammable grill mat. Make sure any storage boxes—such as for lighter fluid, cleaners, and other hazardous materials—have childproof latches.



↘  
**Trim any branches hanging above your grill. They can dry out and ignite, even without a spark, from the heat alone.**

Also, trim any branches hanging above your grill. They can dry out over time and ignite, even without a spark, from the heat alone.

**LIGHT UP THE NIGHT**

To ensure safety and visibility, municipalities usually mandate lighting around deck areas such as steps and landings, says Patrick Harders, a landscape lighting designer and co-owner of Sterling Lighting, an outdoor lighting maker in Sterling, Va. But avoid wall-mounted security floodlights. "You don't need that 'prison break-out' look to make things safe," Harders says.

Instead, choose softer lighting for a warm, inviting feel. Place uplights at the bottom of deck posts and staple strings of LEDs under railings, advises Teris Pantazes, owner of Settle Rite Home Services, a Baltimore-based home-staging company.

PHOTOS, FROM LEFT: IRINA & EUGENE MOSKALEV/GETTY IMAGES; JEN GRANTHAM/STOCKSY



You can illuminate steps the same way. Each activity area—seating, grilling, eating—should get its own lighting as well. Just be sure to check the UL, ETL, or IP rating of all your lighting to confirm it's been tested and approved for outdoor and wet environments.

Some last pieces of advice: Keep in mind that town or other municipal codes might be more stringent—or more lax—than what we discuss here. And if you're uncomfortable assessing your deck yourself, consider having a deck builder or inspector do it; it typically costs \$200 to \$250, Barker says. Decks that are 10 years old or more should be inspected once every five years. If you live within a mile or two of a beach, up that to every year to ensure that salt water hasn't corroded your deck's fasteners.

## EASY UPDATE

### FIREPITS ARE A HOT COMMODITY

Firepits are becoming required outdoor equipment. Here's how to play it safe while you're working on your s'mores game.

We don't want to toss a wet blanket on your outdoor fun, but here's a not-so-fun fact: There are at least 5,300 injuries per year related to firepits or outdoor heaters that send people to the emergency room, according to 2017 data from the Consumer Products Safety Commission.

So here's what you need to know while gathering around the fire. Ukelele not required (but definitely recommended).

#### PICK A GOOD SPOT

To prevent accidental fires, place the pit far from the house, garage, barn, tool shed, and other structures that can burn, says Chuck Roydhouse, a veteran firefighter and president of the Chimney Safety Institute of America.

Also avoid bushes and trees, railing, fencing, awnings, clotheslines, and electrical wires, which are vulnerable to sparks and extreme heat.

The ideal place for a firepit would be in the center of a backyard, at least 20 to 25 feet away from anything, Roydhouse says. "With smaller yards, keep at least a 10-foot buffer zone around the pit," he adds.

And don't forget the weather. Try to avoid a windy spot, and never put a pit on a wood or

composite deck. If your fire pit is going directly on the ground, clear the area underneath of all foliage, in a circle at least twice the pit's diameter.

#### CONTAIN SPARKS

Always place a spark screen on top of the pit once you've built the fire. Keep a garden hose on hand as well to douse the flames if they get out of control. Never use a bucket of water. "Dumping water on a wood-burning fire forms a hard crust on top of remaining wood, coals, and ash, and causes a lot of water to run off," Roydhouse says. "As a result, you may not quench the fire completely, and still have hot coals burning underneath the crust."

#### CHOOSE WOOD WISELY

Avoid the softest woods like cedar or pine, which tend to smoke and spark, says Leroy Hite, owner of Cutting Edge Firewood in Atlanta. Get hardwoods like ash, hickory, and oak, which burn the longest. Hickory has a strong, classic "campfire" scent while oak is virtually odorless. You can also try cherry, which has a sweet aroma, or birch, which doesn't smoke much.

#### KILL EMBERS DEAD

Spread out the coals, ash, and unburnt logs in the thinnest layer possible. Then set the garden hose nozzle to a wide-spray or "fog" pattern, says Roydhouse, and spray the pit to lower the temperature and cool the area. Saturate the area until the embers die.



## The Right Grill for Every Cook

Gas, charcoal, pellet—there’s an option out there for how you like to cook, and live. (Spoiler alert: You might want more than just one.)



IF YOU PEEKED onto the patio of CR grilling expert (and trained chef) Paul Hope, you wouldn't find a single grill. You'd find five.

"Manufacturers of every type of grill—gas, charcoal, pellet—tend to market them as the only grill you'll ever need," says Hope. "And while it's true that you can cook almost anything on any type of grill, I tend to favor one type over another for different kinds of food, and even

occasions." So if you're buying a grill for the first time or building your own collection, it's a good idea to match the grill (or grills) to your cooking style and lifestyle. Here's what you need to know about each type.

### **GAS GRILLS**

These are an easy choice for weeknights and cooking for a large crowd. They light instantly and heat quickly. They're great

for staples like burgers, hot dogs, squash, and most fish—basically, anything where you want grill marks and a little flavor," says Hope. They're also low-maintenance: Just scrape the grates with a grill brush after each use, and periodically empty the fat-drip tray. It's easy to see why this type claims the lion's share of the market, accounting for about 60 percent of all grills sold.

### **CHARCOAL**

A charcoal grill is great for imparting smoky flavor to the same kinds of food you would cook over gas. It takes about 20 to 30 minutes to get a good fire going, and the coals need to be extinguished when the cooking is done—so it might be best for a weekend barbecue, not a quick weekday dinner. "The flavor is complex and unmatched by any other

## OUR TOP GRILL PICKS

Find your perfect match from these stand-out performers

cooking technique," says Hope. "For me, smoking on a gas grill just can't compare."

### KAMADO

"This one's my favorite," says Hope. It's a highly versatile option, though the cooking area is pretty small, just big enough for two racks of ribs. The best maintain low and high temperatures well, easily holding a smoking temperature of about 225° F for slow-smoking ribs or brisket. Or, pack it with lump charcoal, open the vents, and raise temperatures close to 1,000° F to sear a steak or cook a thin-crust pizza.

### PELLET

Easy to use and fast to heat, these let you control the temperature with ease and the digital thermostat allows you to set the temperature, like an oven. "The wood pellets impart a pleasant, smoky taste, not unlike a charcoal grill," says Hope. It does a decent job with brisket, ribs, and pulled pork, but it doesn't get hot enough to sear meat. Also, pellets can be harder to find than charcoal and propane, and if you don't store in a watertight container, they turn into wet sawdust.

### PORTABLE

Last up, portable gas grills are great for hot dogs and burgers away from home. With one or two burners, it's like someone trapped a small campfire inside a metal case. "Mine has a locking lid that keeps the greasy grate from falling out in my car trunk," says Hope. Of course, you don't need all five types—you might start with a gas grill and add a charcoal grill or kamado, or a portable grill for open-air getaways. But as your outdoor cooking repertoire expands, you might find yourself with a collection.

### GAS

✓ Weber  
**Genesis II E-310**  
 \$750

78 OVERALL SCORE



**Why It's Great:** Less expensive than other Weber mid-sized grills, this one stands out in indirect cooking, and the evenness of the heat is impressive. The preheat time and high/low temperature range are both middling. Still, there's no skimping when it comes to the cast-iron grates, fuel gauge, warming rack, and 10-year warranty.

### CHARCOAL

✓ Dyna-Glo  
**DGN576DNC-D**  
 \$230

81 OVERALL SCORE



**Why It's Great:** This barrel-style Dyna-Glo offers easy fire and cooking control. A door in the bottom of the grill allows you to add additional coals without taking food off the grates. A crank raises and lowers the coal bed, so you can sear your food or cook indirectly. And the flue has its own crank, which regulates airflow and temperature.

### PELLET

✓ Traeger  
**Ironwood 650**  
**TFB65BLE**  
 \$1,200

83 OVERALL SCORE



**Why It's Great:** The Traeger provides nearly 700 square inches of cooking surface, split between the main grates and an elevated area, which can be used for indirect cooking. It has a 20-pound hopper for pellets and a claimed temperature range of 165° to 500° F. The top model in our tests, it excels in evenness and temperature range.

### KAMADO

✓ Kamado Joe  
**Classic II**  
 \$1,000

79 OVERALL SCORE



**Why It's Great:** The Kamado Joe Classic II is the best kamado we've seen. It offers countless features that make grilling and smoking easier than with other models. It has a catch for removing ashes, adjustable split racks, and the heavy lid is spring-assisted but also locks during cooking for a tighter seal.

### PORTABLE

Nexgrill  
**820-0033**  
 \$110

74 OVERALL SCORE



**Why It's Great:** For the money, it's tough to beat the Nexgrill 820-0033. It has two burners and a rotary igniter, as well as two fold-down legs. It earns a rating of Excellent for both preheating and evenness. But for indirect cooking, it earns only a rating of Fair, making it better suited for burgers and hot dogs than, say, ribs.

## OUTDOOR SPACES

### Ratings > Grills

Brand + Model	Overall Score	Price	Survey Results		Test Results						Features			
			Predicted reliability	Owner satisfaction	Evenness performance	Preheat performance	Temperature range	Indirect cooking	Convenience	Sturdiness	Stainless steel grates	Coated-cast-iron grates	Long-warranty burners	Side burner
<b>MIDSIZED GAS GRILLS (ROOM FOR 18 TO 28 BURGERS)</b>														
✓ Weber Genesis II E-310	78	\$750	↑	↑	↑	↓	↑	↑	↑	↑		•	•	
✓ Weber Genesis II S-335 61006001	77	\$1,050	↑	↑	↑	↓	↑	↑	↑	↑	•		•	•
✓ Weber Genesis II E-330 61012001	76	\$900	↑	↑	↑	↓	↑	↑	↑	↑		•	•	•
✓ Weber Genesis II SE-335 61016201	76	\$1,000	↑	↑	↑	↓	↑	↑	↑	↑	•		•	•
✓ Weber Summit S-470	76	\$2,100	↑	↑	↑	↑	↑	↑	↑	↑	•		•	•
✓ Napoleon Rogue 525 RSE525SIBPSS	76	\$1,200	↑	↑	↑	↓	↓	↑	↑	↑	•		•	•
✓ Even Embers GAS8560AS	75	\$395	–	–	↑	↑	↑	↑	↑	↑	•		•	•
✓ Nexgrill Deluxe 720-0896B (Home Depot)	74	\$500	↑	↓	↑	↑	↑	↑	↑	↑		•		•
✓ Nexgrill 720-0896C (Home Depot)	73	\$660	↑	↓	↓	↑	↑	↑	↑	↑		•		•
✓ 3 Embers GAS9675AF	73	\$850	–	–	↑	↑	↑	↑	↑	↑	•		•	•
Ⓢ Member's Mark GAS0440AS (Sam's Club)	73	\$330	↓	↓	↑	↑	↑	↑	↑	↑		•		•
✓ Weber Spirit SP-335 46802101	72	\$700	↑	↑	↑	↓	↓	↓	↓	↓	•		•	•
✓ Napoleon Prestige P500RSIB	72	\$1,200	↑	↑	↑	↓	↑	↑	↑	↑	•		•	•
✓ 3 Embers GAS7480BS	72	\$785	–	–	↑	↑	↑	↓	↓	↓	•		•	•
✓ Char-Broil Signature 463372017	71	\$430	↓	↓	↑	↓	↑	↑	↓	↓	•		•	•
✓ Napoleon LEX485RSIB	71	\$1,200	↑	↑	↑	↑	↑	↑	↑	↓	•			•
Ⓢ Even Embers GAS7540AS	71	\$320	–	–	↑	↑	↑	↑	↓	↓		•	•	•
Ⓢ Nexgrill 720-0830H (Home Depot)	71	\$270	↑	↓	↑	↑	↑	↑	↓	↓	•			•
✓ Member's Mark GAS0565ASO (Sam's club)	71	\$450	↓	↓	↑	↑	↑	↑	↑	↑	•		•	•
✓ Monument Grills 24367	71	\$395	–	–	↑	↑	↑	↓	↓	↓		•		•
RevoAce GBC1748WS (Walmart)	70	\$160	–	–	↑	↑	↑	↑	↓	↑		•		•
Megamaster 720-0983	70	\$240	↑	↓	↑	↑	↑	↑	↑	↓		•		
Nexgrill 720-0925S (Home Depot)	70	\$200	↑	↓	↑	↑	↑	↑	↓	↓		•		•
Weber Spirit E-310 46510001	70	\$530	↑	↑	↑	↑	↓	↑	↑	↑		•	•	•
Napoleon Rogue R425SBPK	70	\$750	↑	↑	↑	↓	↑	↑	↓	↓		•	•	•
Fuego F27S	70	\$1,500	–	–	↑	↑	↑	↑	↓	↑	•		•	
KitchenAid 720-0990C (Costco)	68	\$1,500	↓	↓	↑	↑	↑	↑	↑	↑	•		•	•
Megamaster 720-0982	68	\$220	↑	↓	↑	↑	↑	↑	↓	↓		•		
Kenmore 6256595 [PG-40405SOL] (KMart)	68	\$465	↓	↓	↑	↑	↑	↑	↓	↓	•			•
Napoleon Rogue 525 RXT525PSS-1	68	\$800	↑	↑	↑	↑	↑	↑	↓	↓		•	•	



Brand + Model	Overall Score	Price	Survey Results		Test Results						Features			
			Predicted reliability	Owner satisfaction	Evenness performance	Preheat performance	Temperature range	Indirect cooking	Convenience	Sturdiness	Stainless steel grates	Coated-cast-iron grates	Long-warranty burners	Side burner

**MIDSIZED GAS GRILLS (ROOM FOR 18 TO 28 BURGERS)** *Continued*

Napoleon Rogue R425SIBPSS	67	\$1,000	↑	↑	↑	↓	↓	↑	↑	↑	•		•	•
Char-Broil Performance 463342119 [Item #895417] (Lowe's)	67	\$290	↓	↓	↑	↑	↑	↑	↓	↓	•			•
Monument Grills 35633	67	\$370	—	—	↓	↑	↑	↓	↑	↓		•		•
Dyna-Glo Premium DGA550SSP-D	67	\$400	↑	↓	↓	↑	↑	↑	↓	↓	•			•
Cuisinart GAS9556ASO	67	\$350	—	—	↑	↓	↓	↑	↓	↑		•	•	•
Nexgrill Evolution 720-0882A (Home Depot)	66	\$450	↑	↓	↓	↑	↑	↑	↑	↓	•			•
Cuisinart GAS9456ASO	66	\$300	—	—	↑	↑	↓	↑	↓	↑	•		•	•
Member's Mark PG-4030400LG (Sam's Club)	66	\$270	↓	↓	↑	↑	↑	↑	↓	↓		•		
Expert Grill 720-0789H [Item # 577599367] (Walmart)	66	\$175	—	—	↑	↑	↑	↑	↓	↓		•		
Char-Broil Signature TRU-Infrared 463367016	66	\$550	↓	↓	↑	↓	↑	↑	↓	↑		•	•	•

**LARGE GAS GRILLS (ROOM FOR 28 OR MORE BURGERS)**

Monument Grills 77352	84	\$540	—	—	↑	↑	↑	↑	↑	↓	•			•
Weber Summit E-670	80	\$2,750	↑	↑	↑	↑	↑	↑	↑	↑	•		•	•
Weber Genesis II E-410	77	\$1,000	↑	↑	↑	↓	↑	↑	↑	↑		•	•	
Weber Genesis II S-435 62006001	77	\$1,250	↑	↑	↑	↑	↓	↓	↑	↑	•		•	•
Napoleon Rogue 625 RXT625SIBPSS-1	76	\$1,100	↑	↑	↑	↑	↑	↑	↑	↑		•	•	•
Napoleon LEX730RSBIPSS	76	\$2,050	↑	↑	↑	↑	↑	↑	↓	↑	•		•	•
Signateur 5 Burner Item #1500111 (Costco)	75	\$900	—	—	↑	↑	↑	↑	↑	↑	•			•
Fuego Premium 3 Burners F36S	74	\$2,000	—	—	↑	↑	↑	↑	↓	↑	•		•	
Napoleon Prestige Pro 665RSIB	74	\$3,300	↑	↑	↑	↓	↑	↑	↓	↑	•		•	•
Broil King Regal S590 Pro 958344	71	\$1,100	↑	↓	↓	↑	↑	↑	↑	↑	•		•	•
Broil King Baron 590 923184	67	\$800	↑	↓	↓	↓	↑	↑	↑	↑		•	•	•
Char-Broil Performance 463276517	66	\$380	↓	↓	↑	↑	↑	↑	↓	↑		•		•
Dyna-Glo DGP552SSP-D	66	\$590	↑	↓	↑	↑	↑	↓	↑	↓		•		•
Grill Zone BG2615B [Item # 204381] (True Value)	65	\$400	—	—	↑	↑	↑	↑	↓	↑	•			•
Broil King Imperial 590 958884	65	\$1,990	↑	↓	↓	↓	↑	↑	↑	↑	•		•	•

**SMALL GAS GRILLS (ROOM FOR 18 OR FEWER BURGERS)**

Weber Genesis II LX S-240	76	\$1,000	↑	↑	↑	↓	↑	↑	↑	↑	•		•	•
Weber Spirit E-210 46110001	72	\$430	↑	↑	↑	↓	↓	↑	↑	↓		•	•	
Weber Spirit II E-210 44020001	71	\$380	↑	↑	↑	↓	↑	↑	↑	↑		•	•	

# OUTDOOR SPACES

## Ratings > Grills

Brand + Model	Overall Score	Price	Test Results					Features					
			Indirect cooking	Evenness performance	Cleaning	Convenience	Temperature range	Coated-steel grates	Stainless-steel grates	Coated-cast iron grates	Hopper size (lb.)	Fuel input ratings (lb.)	Claimed temperature range

### PELLET GRILLS

✓ Traeger Ironwood 650 TFB65BLE	83	\$1,200	↑↑	↑↑	↑	↑	↑	●			20	3.3	165-500
✓ Camp Chef Woodwind PG24WWSS	76	\$900	↑↑	↑↑	↑	↓	↓	●			22	3.0	160-500
Weber SmokeFire EX6 23510001	75	\$1,200	↑↑	↑	↑	↑↑	↓		●		22	4.8	200-600
Z Grills Master Pellet ZPG-700D	74	\$690	↑↑	↑↑	↓	↑↑	↓	●			20	1.0	160-475
Landmann Pellet Kettle 470106	74	\$500	↑↑	↑↑	↓	↓	↓	●			10	1.8	159-500
Broil King Pellet 500 Pro 495051	74	\$1,200	↑↑	↑	↑	↑	↓		●		22	2.4	180-600
Louisiana Grills LG900	74	\$900	↑↑	↑	↓	↑	↓		●		14	4.3	180-600
Cuisinart Woodcreek 4-in-1 Pellet Grill	73	\$500	↑↑	↑	↑	↑	↓		●		30	5.4	200-500

Brand + Model	Overall Score	Price	Survey Results	Test Results					Features							
			Predicted reliability	Owner satisfaction	Evenness performance	Convenience	Preheat performance	Temperature range	Indirect cooking	Coated-cast-iron grates	Stainless steel grates	Coated-steel grates	Igniter type	Propane tank size needed (lb.)	Wheels	Warranty (yr.)

### PORTABLE GRILLS

Nexgrill 820-0033	74	\$110	↑↑	↓	↑↑	↑	↑↑	↓	↓		●		rotary	20		3
Broil King Porta-Chef 320 952654	72	\$300	-	-	↑	↑↑	↑	↑	↑↑	●			electronic	20		3
Nexgrill 820-0065B	72	\$80	↑↑	↓	↑	↑↑	↑	↓	NA		●		pushbutton	1		5
Cuisinart CGG-306	70	\$175	-	-	↑	↑	↑↑	↑	↓		●		rotary	20		3
Napoleon TravelQ TQ285X	70	\$350	↑	↑↑	↑	↑↑	↑	↓	↓	●			pushbutton	1	●	5
Coleman RoadTrip 285	70	\$250	↓	↓	↓	↑↑	↑↑	↑	↑	●			pushbutton	1	●	3
Weber Q 2200 54060001	70	\$250	↓	↑↑	↑	↑↑	↓	↓	NA	●			electronic	1		5

**HOW WE TEST:** Overall Score combines test results with survey data for predicted reliability and owner satisfaction. Predicted reliability estimates the likelihood that newly purchased models from a given brand will develop problems or break in the first five years. Owner satisfaction reflects

the proportion of CR members who are extremely likely to recommend the gas grill they bought. In cases where we have insufficient survey data to provide a brand-level rating, indicated by a gray dash (—), we give the model weighted average reliability and satisfaction scores. Evenness per-

formance reflects how evenly a grill heats on low and high settings after a 10-minute preheat. Preheat performance indicates how hot a grill gets in 10 minutes. Temperature range captures the difference in the lowest and highest temperature the grill can reach, while indirect cooking denotes

how well food is cooked over indirect heat. For kamado and charcoal grills, Convenience includes adjusting the vents and adding charcoal. Price is approximate retail.

Brand + Model	Overall Score	Price	Test Results			Features				
			Convenience	Cleaning	Cooking performance	Exterior grill material	Grates	Locking lid	Utensil hooks	Fold down shelf(s)
<b>CERAMIC GRILLS</b>										
<b>Kamado Joe</b> Classic II 18" KJ23RHC	79	\$1,000				Ceramic with plastic shelves	Stainless			
<b>Vision Kamado</b> Professional S-T4C1D1	75	\$700				Ceramic with wood shelves	Stainless			
<b>Pit Boss</b> K22 Ceramic Charcoal Grill 71220	70	\$800				Ceramic with bamboo shelves	Stainless			
<b>Big Green Egg</b> Large 18.25	56	\$1,030				Ceramic	Stainless			

Brand + Model	Overall Score	Price	Test Results				Features			
			Convenience	Cleaning	Evenness performance	Indirect cooking	Exterior grill material	Grates	Warranty (yr.)	Warming rack
<b>CHARCOAL KETTLE GRILLS</b>										
<b>Weber</b> 22" 14402001	67	\$165					Porcelain coated steel	Plated steel	10	
<b>Char-Broil</b> Kettleman 16301878	58	\$140					Porcelain coated steel	Coated-steel grates	10	
<b>Weber</b> 18" 441001	58	\$90					Porcelain coated steel	Plated steel	10	

<b>CHARCOAL BARREL GRILLS</b>										
Brand + Model	Overall Score	Price	Test Results				Features			
			Convenience	Cleaning	Evenness performance	Indirect cooking	Exterior grill material	Grates	Warranty (yr.)	Warming rack
<b>Dyna-Glo</b> DGN576DNC-D	81	\$230					Powder coated steel	Coated-cast-iron	1	
<b>Char-Broil</b> Charcoal Grill 580 16302038	71	\$150					Painted steel	Coated-steel	1	
<b>Expert Grill</b> 24" XG1709603411	71	\$100					Powder coated steel	Cast-iron	2	
<b>Char-Griller</b> Pro Deluxe 2828	71	\$140					Powder coated steel	Cast-iron	5	
<b>Royal Gourmet</b> CD1824A	69	\$110					Painted steel	Coated-steel	1	
<b>Landmann</b> Vista 560200	69	\$135					Powder coated steel	Coated-cast-iron	90 days	
<b>Nexgrill</b> 810-0025	69	\$120					Painted steel	Coated-cast-iron	1	
<b>KitchenAid</b> 810-0021	68	\$220					Painted steel	Coated-cast-iron	1	
<b>Kingsford</b> Lone Star CG2240501	68	\$130					Powder coated steel	Coated-steel	1	

Digital and All Access members can find the latest, complete ratings at [CR.org/grills](https://www.crisp.com/grills).



## The Tools You Need for Easy Outdoor Upkeep

The top mowers, trimmers, blowers, and pressure washers from our tests can help you keep your lawn and patio looking neat and inviting.

**YOUR YARD MAY** be your main spot for outdoor recreation this year, so you want it looking its best. And keeping it that way doesn't have to be a chore—if you have the right tools. Here's what you need to know about shopping for lawn mowers and tractors, string trimmers, leaf blowers, and pressure washers, plus details on our picks from our extensive tests (opposite) and a selection of our exclusive ratings (see page 90).

### LAWN MOWER OR TRACTOR

The workhorse of your outdoor equipment arsenal is a good lawn mower. The type you get should be based on the size and

slope of your yard. Consumer Reports recommends a push mower for yards up to  $\frac{1}{4}$  acre, and a self-propelled mower for yards larger than  $\frac{1}{4}$  acre, and up to about  $\frac{1}{2}$  or  $\frac{3}{4}$  acre. For yards these sizes, you can choose a gas or battery-powered mower.

If your yard is bigger than  $\frac{3}{4}$  acre, it's best to go with a riding mower (or "lawn tractor"). Choose a regular riding mower for a sloped yard; the alternative, a zero-turn-radius model can be tough to control on slopes. If you have a flat yard and you're willing to spend a little more, consider a zero-turn-radius mower, which can maneuver more quickly and can turn in place.

For great-looking grass, and to minimize weeds, let the grass grow to a height of about  $4\frac{1}{2}$  inches before you mow it down to about 3 inches. Letting your grass grow taller helps prevent light from reaching weeds, which in turn keeps them from growing. It also promotes a healthy root system, for a lush lawn. See the facing page for our picks for two standout push mowers and a riding tractor that will give your lawn an even cut every time.

### STRING TRIMMERS

A string trimmer cuts grass everywhere your mower can't, like along the edges of walkways or flower beds, around

mailbox or lamp posts, and on rockier surfaces. You can get gas, battery-powered, or corded versions. If you already own a battery mower, consider choosing a battery-powered string trimmer from the same brand that shares an interchangeable battery. That way, you'll have an extra battery charged and ready when the one you're using runs out. See our pick, right.

### LEAF BLOWERS

You probably think of leaf blowers as a fall tool, but they play an important role in summer, too. They're great for clearing away fallen flowers, bunched-up grass clippings, and even twigs, and you can use them to quickly dust off a driveway, patio, porch, or steps. Most models run on gas, but there are solid battery-powered and corded options, too. If you go that route, again consider selecting a model from the same brand as any other battery-powered tools you might own, so you can use the same charger for all. Check out one great choice, right.

### PRESSURE WASHERS

A pressure washer makes quick work of some of the toughest cleaning problems you'll encounter. It can blast away stains on a deck or patio, rinse your siding, and even clean your car if you use a light setting with a wide spray tip. Gas-powered pressure washers tend to be the most powerful, but plug-in electric models are capable of lighter tasks, like clearing mildew from a deck or moss off your walkway. Consumer Reports doesn't recommend any pressure washer with a zero-degree nozzle, because the concentrated stream of water it produces poses an unnecessary risk—in our tests, a wider nozzle cleans just fine.

# TOP PICKS FOR LAWN CARE

## TRACTORS AND MOWERS



Ⓢ Ego LM2101  
 Battery-Powered Mower  
 \$400

**75** OVERALL SCORE

**CR'S TAKE:** For performance on a par with gas mowers, consider this model. It rates Excellent for handling and the time it takes to charge, as well as for noise at the ear and at 25 feet. It earns Very Good ratings for side discharging, mulching, and evenness. But it could be better at bagging and run longer on a single charge.



✓ Honda HRN216PKA  
 Gas Push Mower  
 \$400

**78** OVERALL SCORE

**CR'S TAKE:** Our testers found this model's mulching and bagging performance to rate Very Good, which makes it a solid option whether you tend to bag your clippings or not. Another selling point: Honda mowers earn Excellent satisfaction and reliability ratings based on CR owner surveys.



✓ John Deere S240-48 Riding  
 Lawn Mower & Tractor  
 \$2,600

**90** OVERALL SCORE

**CR'S TAKE:** Talk about an ace performer. The 48-inch John Deere has Excellent side-discharging, mulching, and bagging performance ratings. It features a comfortable high-back seat that gives you a clear view of the fuel level and a washout port that lets you easily clear clippings beneath the mower deck.

## STRING TRIMMERS



✓ Stihl FS 56 C-E  
 \$240

**88** OVERALL SCORE

**CR'S TAKE:** The Stihl FS 56 C-E cuts like a champ through tall, thick weeds, earning a rating of Excellent in that test. It performs just as well in our edging test, which means it makes it easy for you to get rid of weeds along walkways and create a neat, manicured look.

## LEAF BLOWERS



✓ Stihl BGA 57  
 \$200

**84** OVERALL SCORE

**CR'S TAKE:** This battery powered Stihl model is very fast, with aggressive power for moving leaves and other debris. And, it packs effective cleaning power for removing embedded material, such as leaf particles. It's also easy to handle and control, and relatively quiet for a blower, with no hearing protection required while operating it.

## PRESSURE WASHERS



Ryobi RY803111  
 Gas Pressure Washer  
 \$470

**70** OVERALL SCORE

**CR'S TAKE:** Powerful and compact, this Ryobi cleans exceptionally well. Like most gas models, it's loud and earns a rating of Fair in our noise test, so you'll want to wear hearing protection. In addition to a pull cord for starting, this model can be equipped with any Ryobi 18-volt power tool battery, and it can be fired up with the press of a button, using electric start.

# OUTDOOR SPACES

## Ratings > Lawn Mowers

Brand + Model	Overall Score	Price	Survey Results		Test Results								Features				
			Predicted reliability	Owner satisfaction	Side discharging	Mulching	Bagging	Evenness	Handling	Run time	Charge time	Noise at ear	Noise at 25 ft.	Deck size (in.)	Volts (V DC)/ Engine size (cc)	Drive wheels	Optional discharge chute
<b>GAS PUSH MOWERS</b>																	
✓ Honda HRN216PKA	78	\$400	↑	↑	↑	↑	↑	↑	↑	NA	NA	↓	↓	21	167cc	NA	
✓ Cub Cadet SC100 HW	72	\$300	↑	↑	↑	↑	↓	↑	↑	NA	NA	↓	↓	21	160cc	NA	
✓ Troy-Bilt TB160 XP	70	\$280	↑	↓	↑	↑	↓	↑	↑	NA	NA	↓	↓	21	160cc	NA	
✓ Snapper 2691610	68	\$300	—	—	↓	↑	↓	↑	↑	NA	NA	↓	↑	21	163cc	NA	
💰 Troy-Bilt TB 115	68	\$230	↑	↓	↑	↓	↓	↑	↑	NA	NA	↓	↓	21	140cc	NA	
✓ Toro Recycler SmartStow 21329	68	\$300	↓	↓	↑	↑	↑	↑	↑	NA	NA	↓	↓	22	150cc	NA	
✓ Toro Recycler 21320	66	\$270	↓	↓	↑	↑	↑	↑	↑	NA	NA	↓	↑	21	163cc	NA	•
Craftsman M160	65	\$290	↓	↓	↑	↓	↓	↑	↑	NA	NA	↓	↑	21	150cc	NA	
Craftsman M110	63	\$230	↓	↓	↑	↑	↓	↑	↑	NA	NA	↓	↑	21	140cc	NA	
Remington RM110	61	\$230	—	—	↓	↑	NA	↑	↑	NA	NA	↓	↓	21	132cc	NA	
<b>GAS SELF-PROPELLED MOWERS</b>																	
✓ Honda HRX217K6HZA	88	\$850	↑	↑	↓	↑	↑	↑	↑	NA	NA	↓	↓	21	201cc	rear	
✓ Honda HRN216VLA	85	\$510	↑	↑	↑	↑	↑	↑	↑	NA	NA	↓	↑	21	167cc	rear	
✓ Honda HRX217K6VKA	84	\$600	↑	↑	↓	↑	↑	↑	↑	NA	NA	↓	↓	21	201cc	rear	
✓ Toro Super Recycler 21387	75	\$600	↓	↑	↑	↑	↑	↑	↑	NA	NA	↓	↑	21	190cc	rear	
✓ Toro Super Recycler 21386	74	\$500	↓	↑	↑	↑	↑	↑	↑	NA	NA	↓	↑	21	163cc	rear	
✓ Toro Super Recycler 21385	73	\$550	↓	↑	↑	↑	↑	↑	↑	NA	NA	↓	↓	21	159cc	rear	
✓ Honda HRS216K6 VKA	71	\$400	↑	↑	↑	↑	NA	↑	↑	NA	NA	↓	↑	21	160cc	rear	
✓ Cub Cadet SC 700h	70	\$550	↓	↑	↑	↑	↑	↑	↑	NA	NA	↓	↑	21	190cc	all	
✓ Cub Cadet SC 900	69	\$450	↓	↑	NA	↑	↑	↑	↑	NA	NA	↓	↓	23	196cc	rear	
✓ Toro Recycler SmartStow 20340	69	\$400	↓	↑	↑	↑	↑	↑	↑	NA	NA	↓	↓	22	163cc	rear	
✓ Toro Recycler 20333	68	\$400	↓	↑	↑	↑	↑	↑	↑	NA	NA	↓	↓	22	163cc	rear	
✓ Toro PowerReverse Recycler SmartStow 20355	68	\$450	↓	↑	↑	↑	↑	↑	↑	NA	NA	↓	↓	22	163cc	rear with forward reverse	
💰 Toro Recycler 20332	67	\$360	↓	↑	↑	↑	↑	↑	↑	NA	NA	↓	↓	22	163cc	rear	
Toro Recycler 20353	66	\$400	↓	↑	↑	↑	↑	↑	↑	NA	NA	↓	↓	22	163cc	all	
Craftsman M310	66	\$370	↓	↓	↑	↑	↑	↑	↑	NA	NA	↓	↓	21	163cc	rear	
Cub Cadet SC 700 E	65	\$490	↓	↑	↓	↑	↑	↑	↑	NA	NA	↓	↓	21	196cc	all	
Cub Cadet SC 300 e	64	\$350	↓	↑	↑	↑	↓	↑	↑	NA	NA	↓	↓	21	159cc	front	
Cub Cadet SC300 IP	64	\$370	↓	↑	↑	↑	↓	↑	↑	NA	NA	↓	↑	21	159cc	front	
Cub Cadet SC 300HW	64	\$320	↓	↑	↑	↑	↓	↑	↑	NA	NA	↓	↑	21	159cc	front	
Masport 479905	64	\$450	—	—	↑	↑	↑	↑	↑	NA	NA	↓	↓	21	163cc	rear	

Brand + Model	Overall Score	Price	Survey Results		Test Results									Features				
			Predicted reliability	Owner satisfaction	Side discharging	Mulching	Bagging	Evenness	Handling	Run time	Charge time	Noise at ear	Noise at 25 ft.	Deck size (in.)	Volts (V DC)/Engine size (cc)	Drive wheels	Optional discharge chute	
<b>GAS SELF-PROPELLED MOWERS</b> <i>Continued</i>																		
Ariens 911159	64	\$500	↓	↓	↑	↑	↓	↑	↑	↑	NA	NA	↓	↓	22	159cc	rear	
DR Power Equipment SP22	62	\$500	—	—	↓	↑	↑	↑	↑	↑	NA	NA	↓	↓	22	174cc	rear	
Cub Cadet SC 500HW	61	\$370	↓	↑	↑	↑	↓	↑	↑	↑	NA	NA	↓	↑	21	159cc	rear	
<b>GAS WIDE-DECK SELF-PROPELLED MOWERS</b>																		
👉 Troy-Bilt TB WC28	74	\$850	↓	↓	↑	↑	↑	↑	↑	↑	NA	NA	↓	↓	28	223cc	rear	
👍 Toro Timemaster 21199	73	\$1,000	↓	↑	↑	↑	↑	↑	↑	↑	NA	NA	↓	↓	30	223cc	rear	
<b>BATTERY PUSH MOWERS</b>																		
👉 Ego LM2101	75	\$400	↑	↑	↑	↑	↓	↑	↑	↓	↑	↑	↑	↑	21	56V	NA	●
👍 Stihl RMA 510	71	\$550	↑	↑	↓	↓	↓	↑	↑	↓	↑	↑	↑	↑	21	36V	NA	
👍 Toro 20367	67	\$500	—	—	↑	↑	↓	↑	↑	↑	↓	↑	↑	21	60V	NA		
👍 Ryobi RY401110	65	\$300	↓	↑	↓	↑	↓	↑	↑	↑	↓	↑	↑	20	40V	NA	●	
Wen 40441	62	\$350	—	—	↑	↑	↓	↑	↑	↓	↓	↑	↑	21	40V	NA		
Snapper 1687884	62	\$500	—	—	↓	↓	↓	↑	↑	↓	↑	↑	↑	21	82V	NA		
Worx WG751	62	\$350	↓	↓	↑	↑	↓	↑	↑	↑	↓	↑	↑	20	40V	NA		
Greenworks MO60L410 [Item# 725987] (Lowe's)	61	\$430	↓	↑	↓	↓	↓	↑	↑	↓	↓	↑	↑	21	60V	NA		
<b>BATTERY SELF-PROPELLED MOWERS</b>																		
👍 Ego LM2142SP	77	\$750	↑	↑	↑	↑	↓	↑	↑	↑	↓	↑	↑	21	56V	rear		
👉 Ego LM2102SP	76	\$550	↑	↑	↑	↑	↓	↑	↑	↑	↑	↑	↑	21	56V	rear	●	
👍 Ego LM2135SP	75	\$660	↑	↑	↓	↑	↑	↑	↑	↑	↑	↑	↑	21	56V	rear		
👍 Toro Recycler 20363	70	\$550	—	—	↑	↑	↓	↑	↑	↓	↓	↑	↑	22	60V	rear		
👍 Greenworks 2510802	70	\$700	↑	↑	NA	↑	↓	↓	↑	↑	↓	↑	↑	25	60V	rear		
Kobalt (Lowe's) KMP 6080-06	68	\$570	↓	↑	↓	↓	↓	↑	↑	↑	↓	↑	↑	21	80V	rear		
DR Power Equipment Pulse CE77021XENO	67	\$600	—	—	↓	↑	↓	↑	↑	↑	↑	↑	↑	21	62V	rear		
Greenworks MO80L510	65	\$600	↑	↑	↓	↓	↓	↑	↑	↓	↓	↑	↑	21	80V	rear		
Ryobi RY401130	63	\$500	↓	↑	↑	↓	↑	↑	↑	↓	↓	↑	↑	21	40V	rear	●	
Snapper 1687982	62	\$700	—	—	↓	↓	↓	↓	↑	↑	↓	↑	↑	21	82V	rear		

> Digital and All Access members can find the latest, complete ratings at [CR.org/lawn-mowers](https://www.cr.org/lawn-mowers).

**HOW WE TEST:** Overall Score combines test results with survey data for predicted reliability and owner satisfaction. Predicted reliability estimates the likelihood that newly purchased models from a given brand will develop problems or break within the first five years. Owner satisfaction reflects the proportion of CR members who

are extremely likely to recommend the mower they bought. In cases where we have insufficient data to provide a brand-level rating, indicated by a gray dash (—), we assume the model has average reliability and satisfaction. For Side discharging, we measure how evenly grass clippings are cut and dispersed through the discharge chute,

favoring models that don't leave big clumps of grass behind. We prioritize Mulching, our recommended method, and measure how well mowers can churn grass into clippings that readily recede into the surrounding lawn. For Bagging, we determine how easy it is to attach and remove the bag, then record the weight of a full bag.

Evenness is our measurement of how evenly the mower cuts. Handling is ease of using drive controls, making U-turns, and other maneuvers. Engine power (hp) is measured in horsepower, unless otherwise specified. Price is approximate retail.

# OUTDOOR SPACES

## Ratings > Lawn Tractors

Brand + Model	Overall Score	Price	Survey Results		Test Results							Features			
			Predicted reliability	Owner satisfaction	Side discharging	Mulching	Bagging	Evenness	Handling	Noise at ear	Noise at 25 ft.	Deck size (in.)	Engine power (hp)	Cuts in reverse	Power steering
<b>LAWN TRACTORS</b>															
✓ John Deere X350-42	91	\$3,200	↑	↑	↑	↑	↑	↑	↑	↑	↓	↓	42	18.5	●
✓ John Deere S240-48	90	\$2,600	↑	↑	↑	↑	↑	↑	↑	↑	↓	↓	48	18.5	●
✓ John Deere E160	90	\$2,300	↑	↑	↑	↑	↑	↑	↑	↑	↓	↓	48	24.0	●
Ⓢ John Deere E130	88	\$2,000	↑	↑	↑	↑	↓	↑	↑	↓	↓	42	22.0	●	
Ⓢ John Deere E140	86	\$2,000	↑	↑	↑	↑	↓	↑	↑	↓	↓	48	22.0	●	
✓ Cub Cadet XT2 SLX50	82	\$2,500	↓	↑	↑	↑	↑	↑	↑	↑	↓	↓	50	ns	●
✓ Husqvarna TS 354X	81	\$3,500	↑	↑	↑	↑	↑	↑	↑	↑	↓	↓	54	26.0	●
✓ John Deere E110	80	\$1,700	↑	↑	↑	↑	↓	↑	↑	↓	↓	42	19.0	●	
✓ Husqvarna TS 254XG	79	\$3,400	↑	↑	↑	↑	↑	↑	↑	↓	↓	54	24.0	●	
<b>REAR ENGINE RIDERS</b>															
✓ Cub Cadet CC30e (Battery)	69	\$2,800	↑	↑	↑	↑	↓	↑	↑	↑	↑	30	48V (56V Max)	●	
✓ Ryobi R48110 (Battery)	65	\$2,500	—	—	↑	↑	↓	↑	↑	↓	↓	38	48V	●	
Ⓢ Cub Cadet CC30 H	65	\$1,300	↑	↑	↑	↑	↓	↑	↑	↓	↓	30	ns	●	
<b>ZERO TURN</b>															
✓ Toro MYRIDE TimeCutter 75755	88	\$3,700	↑	↑	↑	↑	NA	↑	↑	↓	↓	50	24.5	●	
✓ John Deere Z375R-54	86	\$3,500	↑	↑	↑	↑	NA	↑	↑	↓	↓	54	25.0	●	
✓ John Deere Z355E	86	\$2,900	↑	↑	↑	↑	NA	↑	↑	↓	↓	48	22.0	●	
✓ John Deere Z345R-42	86	\$2,800	↑	↑	↑	↑	NA	↑	↑	↓	↓	42	22.0	●	
Ⓢ Toro TimeCutter SS4225 75742	85	\$2,500	↑	↑	↑	↑	NA	↑	↑	↓	↓	42	22.5	●	
✓ Toro 75750	85	\$3,100	↑	↑	↑	↑	NA	↑	↑	↓	↓	50	23.0	●	
Ⓢ John Deere Z335E-42	84	\$2,500	↑	↑	↑	↑	NA	↑	↑	↓	↓	42	20.0	●	
✓ Gravely ZT HD 48 991152	84	\$4,200	—	—	↑	↑	NA	↑	↑	↓	↓	48	25.0	●	
✓ Craftsman Z530	83	\$2,700	↑	↑	↑	↑	NA	↑	↑	↓	↓	46	22.0	●	
✓ Cub Cadet RZT SX 42	80	\$3,000	↓	↑	↑	↑	NA	↑	↑	↓	↓	42	ns	●	
✓ Cub Cadet Ultima ZT2-50	80	\$3,700	↓	↑	↑	↑	NA	↑	↑	↓	↓	50	23.0	●	

> Digital and All Access members can find the latest, complete ratings at [CR.org/lawn-tractors](https://www.cr.org/lawn-tractors).

**HOW WE TEST:** Overall Score combines test results with survey data for predicted reliability and owner satisfaction. Predicted reliability estimates the likelihood that newly purchased models from a given brand will develop problems or break within the first five years. Owner satisfaction reflects the proportion of CR members who are

extremely likely to recommend the lawn tractor they bought. In cases where we have insufficient data to provide a brand-level rating, indicated by a gray dash (—), we assume the model has average reliability and satisfaction. For Side discharging, we measure how evenly grass clippings are cut and dispersed through the discharge chute,

favoring models that don't leave big clumps of grass behind. We prioritize Mulching, our recommended method, and measure how well mowers can churn grass into clippings that readily recede into the surrounding lawn. For Bagging, we determine how easy it is to attach and remove the bag, then record the weight of a full bag.

Evenness is our measurement of how evenly the mower cuts. Handling is ease of using drive controls, making U-turns, and other maneuvers. Engine power (hp) is measured in horsepower, unless otherwise specified. Price is approximate retail.



Ratings > String Trimmers

Brand + Model	Overall Score	Price	Survey Results		Test Results					Features						
			Predicted reliability	Owner satisfaction	Trimming	Edging	Tall grass and weeds	Handling	Ease of use	Weight (lb.)	Engine size	Shaft	Four-cycle engine	Dual line	Line diameter	Clutch
<b>GAS CURVED SHAFT STRING TRIMMERS</b>																
Troy-Bilt TB25C	71	\$80	↓	↓↓	↑	↑	↑	↓	↑	10.0	25-cc	Curved		•	0.095	•
Craftsman WC210	70	\$110	↓	↓↓	↑	↑	↑	↑	↓	11.5	25-cc	Curved		•	0.095	•
Remington RM2510 Rustler	63	\$80	↓	↓↓	↑	↑	↑	↓	↓	10.2	25-cc	Curved		•	0.095	•
Bolens BL110	63	\$70	↓	↓↓	↑	↑	↑	↑	↓	10.2	25-cc	Curved		•	0.095	•
<b>GAS STRAIGHT SHAFT STRING TRIMMERS</b>																
✓ Stihl FS 56 C-E	88	\$240	↑	↑	↑	↑	↑	↑	↑	12.5	27-cc	Straight		•	0.095 or 0.105	•
✓ Echo SRM-225i	86	\$260	↑	↑	↑	↑	↑	↑	↑	12.1	21.2-cc	Straight		•	0.095	•
✓ Husqvarna 322L	74	\$250	↑	↑	↑	↑	↑	↑	↑	10.6	22.5-cc	Straight		•	0.095	•
<b>BATTERY STRING TRIMMERS</b>																
💰 Ego ST1502SA	92	\$170	↑	↑	↑	↑	↑	↑	↑	10.2	56-volt	Straight	NA	•	0.095	NA
💰 Kobalt (Lowe's) KST 2580-06	91	\$150	↑	↑	↑	↑	↑	↑	↑	10.8	80-volt	Straight	NA	•	0.080 or 0.095	NA
✓ Snapper 1687875	89	\$230	—	—	↑	↑	↑	↑	↑	14.6	82-volt	Straight	NA	•	0.08	NA
💰 Greenworks ST60L212	89	\$170	—	—	↑	↑	↑	↑	↑	10.8	60-volt	Straight	NA	•	0.080 or 0.095	NA
✓ Ego ST1521S	88	\$230	↑	↑	↑	↑	↑	↑	↑	9.9	56-volt	Straight	NA	•	0.095	NA
✓ Hart HLST031	88	\$195	↑	↓	↑	↑	↑	↑	↑	11.3	40-volt	Straight	NA	•	0.080 or 0.095	NA
✓ Stihl FSA 57	86	\$200	↑	↑	↑	↑	↑	↑	↑	7.5	36-volt	Straight	NA	•	0.065 or 0.08	NA
✓ Ryobi RY40270VNM	85	\$200	↑	↓	↑	↑	↑	↑	↑	11.7	40-volt	Straight	NA	•	0.080 or 0.095	NA
✓ Toro 51830	85	\$180	↑	↓	↑	↑	↑	↑	↑	10.1	60-volt	Straight	NA	•	0.080 or 0.095	NA
✓ DeWalt DCST922P1	84	\$200	↑	↑	↑	↑	↑	↑	↑	9.3	20-volt	Straight	NA	•	0.08	NA
✓ Echo CDST-58V2AH	83	\$230	↑	↑	↑	↑	↑	↓	↓	10.2	58-volt	Straight	NA	•	0.080 or 0.095	NA
✓ Milwaukee 2725-21HD	83	\$300	↑	↑	↑	↑	↑	↓	↓	11.1	18-volt	Straight	NA	•	0.080 or 0.095	NA
✓ Makita XRU12SM1	83	\$180	—	—	↑	↑	↑	↑	↓	7.5	18-volt	Straight	NA	•	0.08	NA
<b>ELECTRIC CORDED STRING TRIMMERS</b>																
💰 Ryobi RY41135	77	\$70	—	—	↑	↑	↑	↑	↑	10.0	10-amp	Straight	NA	•	0.08	NA
✓ Black+Decker BESTE620	71	\$55	—	—	↑	↑	↑	↓	↓	5.0	6.5-amp	Straight	NA		0.065	NA

> Digital and All Access members can find the latest, complete ratings at [CR.org/string-trimmers](https://www.cr.org/string-trimmers).

**HOW WE TEST:** Overall Score combines test results with survey data for predicted reliability and owner satisfaction. Predicted reliability estimates the likelihood that newly purchased models from a given

brand will develop problems or break within the first five years. Owner satisfaction reflects the proportion of CR members who are extremely likely to recommend the trimmer they bought. In cases where we have insufficient

survey data to provide a brand-level rating, indicated by a gray dash (—), we assume the model has average reliability and satisfaction. Trimming reflects how quickly and neatly a model cuts regular grass, and Edging is

how well it creates a vertical line along a walkway. Ease of use reflects startup, string advancement, controls, and handle comfort. Price is approximate retail.

# OUTDOOR SPACES

## Ratings > Leaf Blowers

Brand + Model	Overall Score	Price	Survey Results		Test Results						Features					
			Predicted reliability	Owner satisfaction	Sweeping	Loosening	Vacuuming	Handling and ease of use	Noise at 50 ft.	Noise at ear	Weight (lb.)	cc/amp	Multiple speeds	Vacuum capability	Translucent fuel tank	Four-cycle engine
<b>ELECTRIC HANDHELD BLOWERS</b>																
\$ Toro 51624	81	\$55	↓	↑	↑	↑	NA	↑	↑	↓	6.8	12-amp	●		NA	NA
✓ Toro UltraPlus 51621	79	\$100	↓	↑	↑	↑	↑	↑	↑	↓	8.9	12-amp	●	●	NA	NA
\$ Ryobi RY421021	76	\$40	↑	↓	↑	↑	NA	↑	↑	↓	6.8	12-amp	●		NA	NA
\$ Worx WG520	73	\$60	↑	↓	↑	↑	NA	↑	↑	↓	6.4	12-amp	●		NA	NA
✓ Toro 51619	73	\$70	↓	↑	↑	↑	↑	↑	↓	↓	9.0	12-amp	●	●	NA	NA
<b>GASOLINE HANDHELD BLOWERS</b>																
✓ Stihl BG 86 C-E	78	\$270	↓	↑	↑	↑	NA	↑	↓	↓	10.4	27.0-cc	●		●	
<b>GASOLINE BACKPACK BLOWERS</b>																
✓ Husqvarna 350BT	84	\$320	↑	↑	↑	↑	NA	↑	↓	↓	20.2	50.2-cc	●		●	
✓ Stihl BR-200	83	\$280	↑	↑	↑	↑	NA	↑	↑	↓	12.6	27.2-cc	●		●	
✓ Husqvarna 150BT	82	\$300	↑	↑	↑	↑	NA	↑	↓	↓	22.6	50.0-cc	●		●	
✓ Stihl BR 350	81	\$350	↑	↑	↑	↑	NA	↑	↓	↓	22.0	63.3-cc	●			
<b>GASOLINE WHEELED BLOWERS</b>																
✓ Little Wonder C5	79	\$700	—	—	↑	↑	NA	↑	↓	↓	109.0	170.0-cc	●			●
<b>BATTERY HANDHELD BLOWERS</b>																
\$ Stihl BGA 57	84	\$200	↑	↑	↑	↑	NA	↑	↑	↑	7.6	36-volt			NA	NA
✓ DeWalt DCBL772X1	81	\$270	↑	↑	↑	↑	NA	↓	↑	↓	9.1	60-volt	●		NA	NA
✓ Husqvarna 320iB	80	\$230	—	—	↑	↑	NA	↑	↑	↓	5.3	40-volt	●		NA	NA
✓ Ego LB6504	80	\$300	↑	↑	↑	↑	NA	↑	↑	↓	10.0	56-volt	●		NA	NA
\$ Ego LB5302	80	\$200	↑	↑	↑	↑	NA	↑	↑	↓	7.8	56-volt	●		NA	NA
\$ Makita XBU03SM1	79	\$180	↑	↑	↑	↓	NA	↑	↑	↓	6.1	18-volt	●		NA	NA
\$ Kobalt (Lowe's) KHB 2580-06	79	\$200	↑	↑	↑	↑	NA	↓	↑	↓	9.2	80-volt	●		NA	NA
\$ Oregon BL300	79	\$370	—	—	↑	↑	NA	↑	↑	↓	9.2	40-volt	●		NA	NA
✓ Ryobi RY40470VNM	76	\$180	↓	↑	↑	↑	NA	↑	↑	↓	10.3	40-volt	●		NA	NA
<b>BATTERY BACKPACK BLOWERS</b>																
\$ Ego LB6002	83	\$300	↑	↑	↑	↑	NA	↑	↑	↓	18.3	56-volt	●		NA	NA
✓ Greenworks BPB60L510	82	\$250	—	—	↑	↑	NA	↑	↑	↓	14.0	60-volt	●		NA	NA

> Digital and All Access members can find the latest, complete ratings at [CR.org/leaf-blowers](https://www.cr.org/leaf-blowers).

**HOW WE TEST:** Overall Score combines test results with survey data for predicted reliability and owner satisfaction. Predicted reliability estimates the likelihood that newly purchased models from a given brand will develop problems or break within the first five years. Owner satisfaction reflects the proportion of CR members who

are extremely likely to recommend the trimmer they bought. In cases where we have insufficient survey data to provide a brand-level rating, indicated by a gray dash (—), we assume the model has average reliability and satisfaction. Sweeping indicates the speed of moving a pile of leaves. Loosening is the speed of removing embedded leaf particles

from the lawn. Vacuuming reflects how quickly and effectively models with this capability pick up leaves and how finely they are mulched. Handling and ease of use includes the ease of maneuvering, using controls, and changing modes. For Noise at ear, blower-mode noise is based on our measurements at the operator's ear level. Models rated Fair

or Poor at ear level emitted at least 85 dBA, loud enough to warrant hearing protection. For Noise at 50 feet, blower-mode noise is based on industry-standard measurements at 50 feet. Models rated Very Good or Excellent at 50 feet should meet common municipal limits of 65 decibels (dBA). Price is approximate retail.

Ratings > Pressure Washers

Brand + Model	Overall Score	Price	Survey Results		Test Results				Features							
			Predicted reliability	Owner satisfaction	Cleaning	Power	Noise	Ease of use	Weight (lb.)	Pressure range (psi)	Cord length (ft)	Hose (ft)	Wheels	Nozzle type	Soap/detergent dispenser	Warranty (mos.)
<b>GAS-POWERED PRESSURE WASHERS</b>																
Simpson MS60763-S	71	\$320	↑	↑↑	↑↑	↑	↓	↑	57.0	3000	NA	25	Solid	R	None	1
Generac 10000006882	71	\$350	↑	↑	↑↑	↑	↓	↑	59.6	3000	NA	30	Solid	R	None	3
Simpson MS60805-S	70	\$390	↑	↑↑	↑↑	↑	↓	↑	52.6	3000	NA	25	Solid	R	T	2
Ryobi RY803111	70	\$470	—	—	↑↑	↑	↓	↑	57.4	3200	NA	25	Solid	R	T	3
Ryobi RY80942	67	\$420	—	—	↑	↑↑	↓	↑	58.5	3300	NA	50	Solid	R	T	3
Predator 62214	67	\$370	—	—	↑↑	↑	↓	↑	70.0	3100	NA	25	Solid	R	T	0.25
Westinghouse WPX2700	66	\$260	—	—	↑↑	↑	↓	↑	62.6	2700	NA	25	Solid	R	T	3
Generac 6882	66	\$310	↑	↑	↑	↑	↓	↑	61.6	2900	NA	25	Solid	R	T	3
Briggs & Stratton 020725	66	\$600	↓	↓	↑	↑↑	↓	↑	77.3	3300	NA	30	Pneumatic	R	None	2
Craftsman 020735	63	\$400	↓	↓	↑↑	↑	↓	↑	55.6	3200	NA	30	Solid	R	T	2
Champion 100384	63	\$340	—	—	↑	↑	↓	↑	66.3	3200	NA	26	Solid	R	T	2
Craftsman 020734	63	\$380	↓	↓	↑↑	↑	↓	↑	52.8	3000	NA	30	Solid	R	T	2
Cub Cadet CC3024H	62	\$400	↓	↓	↑↑	↑	↓	↑	54.0	3000	NA	25	Solid	R	T	3
<b>ELECTRIC-POWERED 240V PRESSURE WASHERS</b>																
✓ NorthStar 1573021	68	\$950	—	—	↑	↑↑	↓	↑	112.0	3000	35	25	Pneumatic	R	None	12
<b>ELECTRIC-POWERED 120V PRESSURE WASHERS</b>																
✓ Greenworks GPW2700	66	\$400	↑↑	↓	↓	↓	↑	↑	46.4	2700	35	25	Solid	R	T	3
✓ Greenworks GPW2000	62	\$200	↑↑	↓	↑	↓	↑	↑	40.0	2000	35	24	Solid	R	T	12
✓ Greenworks GPW2006	62	\$240	↑↑	↓	↓	↓	↑	↑	29.4	2000	35	25	Solid	R	T	3
Sun Joe SPX3000	61	\$150	↑↑	↓	↑	↓	↑	↑	28.0	2030	35	19	Solid	R	T	24
Ryobi RY142300	59	\$300	↑↑	↓	↓	↓	↓	↑	49.3	2300	35	25	Solid	R	T	3
Ryobi RY141900	58	\$230	↑↑	↓	↓	↓	↑	↑	42.2	2000	35	25	Solid	R	T	3
Greenworks GPW1600	57	\$100	↑↑	↓	↓	↓	↓	↓	17.0	1600	35	20	Solid	R	B	12
Greenworks GPW1702	57	\$130	↑↑	↓	↓	↓	↑	↑	19.6	1700	36	25	Solid	R	B	1
<b>BATTERY-POWERED PRESSURE WASHERS</b>																
Worx WG644	46	\$200	↓	↓	↓	↓	↑	↑	7.3	450	NA	20	NA	R	None	3

> Digital and All Access members can find the latest, complete ratings at [CR.org/pressure-washers](https://www.cr.org/pressure-washers).

**HOW WE TEST:** We base the **Overall Score** primarily on each model's ability to clean, the power to remove stubborn stains, how easy it is to use, and how quiet it runs. **Predicted reliability** estimates the likelihood that newly purchased models from a given brand will develop problems or break within the first five years. **Owner satisfaction** reflects the proportion of CR members who are extremely

likely to recommend the pressure washer they bought. In cases where we have insufficient survey data to provide a brand-level rating, indicated by a gray dash (—), we assume the model has average reliability and satisfaction. **Cleaning** is versatility and efficiency in cleaning a range of surfaces. The better performers have multiple spray patterns that can cover various cleaning chores. **Power** is a

combination of pressure, measured in pounds per square inch (psi), and flow, measured in gallons per minute (gpm). Higher pressure delivers better cleaning of a given surface; coupled with a higher flow, you'll get the job done the fastest. **Noise**, based on dBA, averages measurements taken close by the machine and at the end of the hose's typical reach. We strongly recommend hearing protection for

working close to a gas-powered model in particular. **Ease of use** reflects how easy it is to operate, including transport, power (adding fuel or plugging in), storage (hose and cord wrapping), and protection (from thermal and low-oil conditions). That score also includes helpful features and water inlet and outlet, nozzle, and wand connections. **Price** is approximate retail



## CREATE A BACKYARD THEATER



**GREAT VALUE**  
**Aaxa S2 Pico Projector, 720p HD**  
 \$280

- 4/5 PICTURE QUALITY
- 4/5 65" BRIGHTNESS
- 3/5 100" BRIGHTNESS

DO YOU MISS viewing films on the big screen? Mini projectors, a relatively new breed of small, portable projectors, allow you to beam movies onto a wall inside your home—or at

night outdoors using a sheet, screen, or other smooth, light surface. (You may need a USB or HDMI cable to connect a laptop or streaming player, such as an Apple TV or Roku, to the projector.)

In our testing—which included how well a mini tabletop projector displayed test patterns, as well as TV shows and movies at both 65- and 100-inch screen sizes—we found that many models offer decent brightness and picture quality. “Plus many

of these small projectors can run on a rechargeable battery, which lets you take them almost anywhere,” says Claudio Ciacci, the TV testing lead at CR.

A big differentiator in our tests was brightness, which can affect both image quality and how enjoyable the picture will be on a large screen. The LG, which excels at brightness and overall picture quality, topped our tests. Otherwise, the Aaxa model above, which isn’t quite as bright but costs

\$170 less, offers the best overall value.

Keep in mind that all projectors benefit from a dark environment: The darker the room (or evening), the better the picture you’ll see, especially with larger screen sizes. Also, the built-in sound quality wasn’t great on any of the models we tested, but you can send audio to a Bluetooth speaker, a sound bar, or headphones from all four models shown here.

### BEST PICTURE QUALITY



**LG CineBeam PH550, 720p HD**  
 \$450

- 4/5 PICTURE QUALITY
- 5/5 65" BRIGHTNESS
- 4/5 100" BRIGHTNESS

### SUPER-PORTABLE



**Miroir HD Pro Projector M220**  
 720p \$400

- 3/5 PICTURE QUALITY
- 5/5 65" BRIGHTNESS
- 4/5 100" BRIGHTNESS

### BARGAIN BUY



**Vankyo Leisure 430 (2020 Upgraded)**  
 480p \$120

- 3/5 PICTURE QUALITY
- 4/5 65" BRIGHTNESS
- 3/5 100" BRIGHTNESS

ILLUSTRATION: RODRIGO DAMATI

# Trusted Advice Delivered Straight to Your Inbox

Sign up for our FREE email newsletters.



From Money, Home, and Cars to Food, Health, and Shopping, CR's **FREE** email newsletters are packed with the information you need to shop smart and stay informed.

Go to

**[cr.org/getnewsletters](https://www.consumerreports.org/getnewsletters)**

to sign up today!

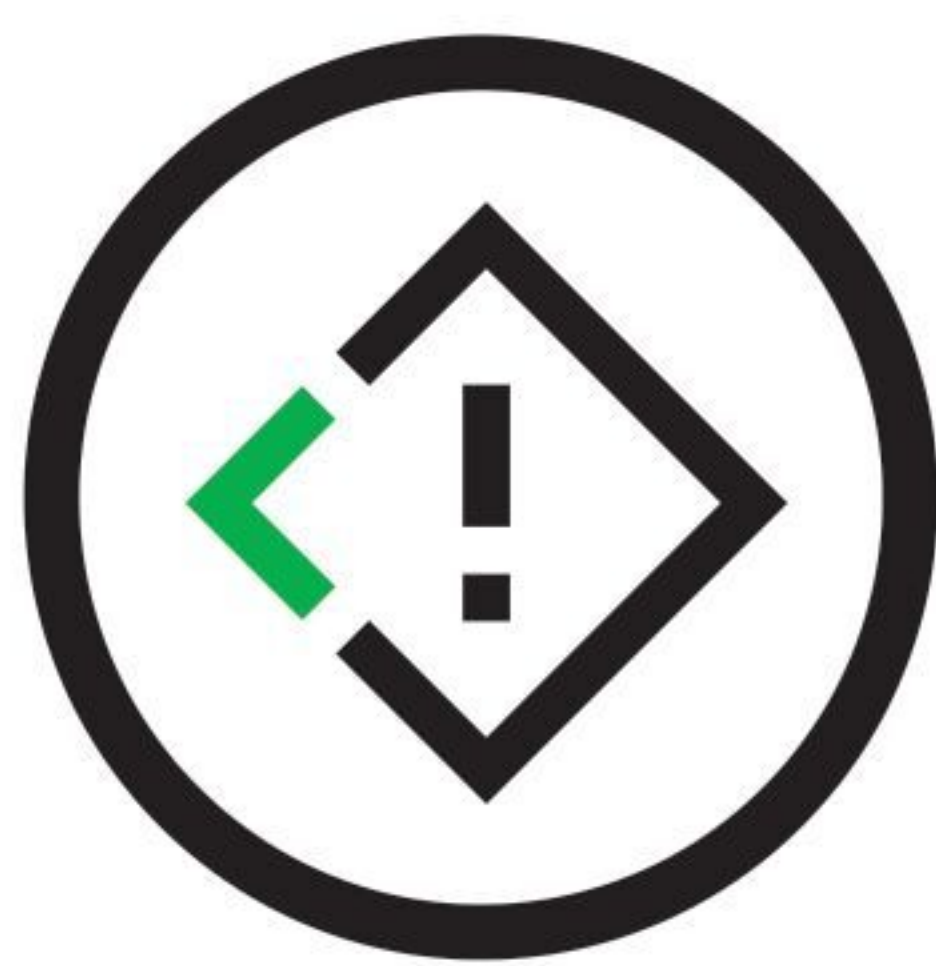
Money • Home • Cars • Shopping • Health • Food • What's New • Salud y Bienestar

**CR** Consumer Reports®

MEMBERSHIP BENEFIT



# FIND OUT IF YOUR CAR HAS A RECALL



**Car Recall Tracker™** keeps you  
up to date on recalls for your vehicles.

One out of four cars on the road has a recall that hasn't been fixed, so stay informed and stay safe with this valuable CR tool. Just enter your car's make and model, and we'll give you a list of any recalls, plus information on what to do next.

**Check out Car Recall Tracker™ at [cr.org/carrecalltracker](https://www.consumerreports.org/car-recall-tracker)**

**CR**ConsumerReports®