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- Seeing where you can buy Alexa
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Chapter 1
Getting to Know Alexa

An old proverb tells us that "Well begun is half done." That is, if you begin a project in the best way you can, you'll have made such a good start that it'll seem like you're already halfway to your goal. In this chapter, you begin your relationship with Alexa well by learning some useful, perhaps even interesting, background about Alexa, including an answer to what might be the most important question of all: Just what *is* Alexa, anyway? (Or should that be just *who* is Alexa?)

To get your Alexa education off to a solid start, this chapter takes you on an exploratory tour of the Alexa landscape. This is big-picture stuff where you learn not only what Alexa is but also where you can get Alexa and how to figure out which Alexa-friendly device you need. After taking you through these *what*, *where*, and *how* fundamentals, you also investigate what is likely the *second* most important question: *Why* would people even need Alexa in their lives?

What Is This Alexa That Everyone's Talking About (or, Really, To)?

Okay, let me get right to it: Amazon Alexa is a *voice service*, a cloud-based software program that acts as a voice-controlled virtual personal assistant. In a nutshell, you use your voice to ask Alexa a question or give Alexa a command, and it

dutifully answers you (assuming an answer exists) or carries out your request (assuming your request is possible). The key here is that Alexa responds to *voice* commands.

In the movie *Star Trek IV: Voyage Home,* the crew of the Starship *Enterprise* travel back in time 300 years to 1986. In a memorable scene, Scotty, the ship's chief engineer, goes up to a mid-'80s-era PC and says, "Computer!" When the machine doesn't respond, he says, "Computer!" once again. He's then handed a mouse and, thinking it's a microphone, says, "Hello, computer!" Apparently, in the year 2286, interacting with a computer using anything but voice commands is unthinkable.

We're a long way from the voice-only future envisioned in *Star Trek* (and countless other sci-fi stories; remember voice-controlled HAL in *2001: A Space Odyssey?*). However, as we sit here near the end of the second decade of the 21st century, you can feel the computer-interaction landscape starting to shift. After some 40 years of folks sitting in front of their PCs, typing away in near-total silence (with only the occasional wail of exasperation or groan of impatience to break the quiet), users are starting to find their voices.

True, operating systems such as Windows and macOS have had voice-control tools for many years, but they were obscure and unreliable and used by only a handful of people. Voice control's bid for the mainstream didn't get serious until Apple purchased the Siri speech-recognition app in 2010 and released it with iOS 5 a year later. Suddenly, it became cool to interact with a computer (at least one in the shape of a smartphone) by using voice commands.

Since then, numerous voice-control tools have been released, including Google's Assistant, Microsoft's Cortana, and various voice-command features found in modern cars. But it was the release of the full version of Amazon's Alexa in 2015 that really got the voice ball rolling. Amazon doesn't share sales figures, but most industry know-it-alls agree that at least two hundred million Alexa devices have been sold.

Meet your new assistant

Why is Alexa so popular? There are lots of reasons, but the one that matters is that Alexa is (or tries hard to be) a personal assistant. Older voice-command tools were geared toward using a computer: running programs, pulling down menus, accessing settings, and so on. Alexa doesn't do any of that. Instead, it's focused on doing things for you in your real life, including (but by no means limited to) the following:

- Playing music, podcasts, or audiobooks
- Setting timers and alarms
- Telling you the latest news, weather, or traffic
- Creating to-do lists and shopping lists
- Buying something from Amazon
- Controlling home-automation devices such as lights and thermostats
- Telling jokes

That last one may be a bit surprising, but perhaps the second-most important reason behind's Alexa's success is that it comes with whimsy as a feature. Alexa, as I hope to show in this book, is both useful *and* fun.

REMEMBER

Older and lesser voice-controlled systems recognize only a limited set of commands that have to be enunciated precisely, so using such systems feels stilted and slow. Alexa, by contrast, is an example of a new breed of voice-aware systems that use *conversational artificial intelligence.* That term sounds pretty geeky, but it simply means that Alexa isn't meant to be controlled so much as *interacted* with. With Alexa, you ask your questions and give your commands using natural language and your normal voice. Does it work perfectly every time? Nope, we're not in *Star Trek* territory just yet, but I think you'll be pleasantly surprised at just how well it *does* work.

Alexa's components

Throughout this book I talk about "Alexa" as though it's a single object, but Alexa is actually a large collection of objects that, together, create the full, seamless Alexa experience. I talk about many of these objects — particularly the Alexa app — throughout this book. From the behind-the-scenes perspective, however, all you need to know for now is that Alexa consists of the following four components:

- **Name recognition:** When you interact with Alexa, it seems as though the device understands what you say, but the only speech your Alexa device recognizes is the word *Alexa,* which Amazon calls the *wake word.* That is, it's the word that lets Alexa know it should wake up and start listening for an incoming command or question. (In case you're wondering: Yep, you can change the wake word to something else. I show you how to do that in Chapter 15.)
- **Speech recording:** Your Alexa device has one or more built-in microphones that capture the questions, commands, requests, and other utterances that you direct to the device. A simple computer inside records what you say and

then sends the recording over the Internet to the Alexa Voice Service (discussed next). This part of Alexa is sometimes called the *voice user interface* (VUI).

- **Alexa Voice Service (AVS):** Here's where the real Alexa magic happens. This part of Alexa resides in Amazon's cloud. AVS takes the recording that contains your voice command and uses some fancy-schmancy speech recognition to tease out the words you spoke. AVS then uses natural-language processing to analyze the meaning of your command, from which it produces a result.
- **Speech synthesis:** This component takes the results provided by AVS and renders them as speech, which it stores in an audio file. That file is returned and played through the Alexa device's built-in or connected speakers.

TECHNICAL STUFF

WHAT'S ALL THIS ABOUT A "CLOUD"?

I've mentioned the term *cloud* a couple of times now, so let me take a few minutes of your precious time to explain what I'm talking about. In many network diagrams, the designer is most interested in the devices that connect to the network, not the network itself. After all, the details of what happens inside the network to shunt signals from source to destination are often complex and convoluted, so all those minutiae would only detract from the network diagram's larger message of showing which devices can connect to the network, how they connect, and their network entry and exit points.

When designers of a network flowchart want to show the network but not any of its details, they almost always abstract the network by displaying it as a cloud symbol. (It is, if you will, the "yadda yadda yadda" of network diagrams.) At first the cloud symbol represented the workings of a single network, but in recent years it has come to represent the Internet (the network of networks).

So far, so good. Earlier in this millennium, some folks had the bright idea that instead of storing files on local computers, they could be stored on a server connected to the Internet, which meant that anyone with the right credentials could access the files from anywhere in the world. Eventually, folks started storing programs on Internet servers, too, and started telling anyone who'd listen that these files and applications resided "in the cloud" (meaning on a server — or, more typically, a large collection of servers that reside in a special building called a *data center* — accessible via the Internet).

One such application is Alexa Voice Service, which resides inside Amazon's cloud service called Amazon Web Services (AWS). So, that's why I say that Alexa is a "cloud-based voice service." That's also why you need an Internet connection to use Alexa: It requires that connection to access its cloud component.

How Alexa works

Given the various Alexa components that I outline in the preceding section, here's the general procedure that happens when you interact with Alexa to get something done:

1. **You say "Alexa."**

   Your Alexa device wakes up, as indicated (in most cases) by the device's light ring turning blue. (See Chapter 3 for more about the light ring.) The device is now hanging on your every word.

2. **You state your business: a question, a command, or whatever.**

   The Alexa device records what you say. When you're done, the device uses your Internet-connected Wi-Fi network to send the recording to AVS in Amazon's cloud.

WARNING

   It may seem as though Alexa lives inside whatever device you have, but Alexa is an Internet-based service. If you don't have Internet access, you don't have Alexa access either.

3. **AVS uses its speech-recognition component to turn the recorded words into data that can be analyzed.**

4. **AVS uses its natural-language processing component to analyze the words in your command and then try to figure out exactly what you asked Alexa to do.**

   AVS doesn't analyze every single word you say. Instead, it's mostly looking for the telltale *keywords* that indicate what you've asked Alexa to provide. For example, if you said "What's the weather forecast for tomorrow?," all AVS needs are the words *weather, forecast,* and *tomorrow* to deliver the correct info.

5. **If AVS can't fulfill your request directly, it passes the request along to a third-party service (such as AccuWeather or Wikipedia), and then gathers the response.**

6. **AVS returns the response via the Internet to your Alexa device.**

   What AVS returns to your Alexa device depends on the result. If the result is just information for you, AVS passes along the text and also converts the text to speech and stores the speech in an audio file that your Alexa device can play. If the result is a command (for example, to play a particular song), AVS passes that command back to the Alexa device.

7. **The Alexa device either uses its built-in or connected speaker to broadcast the result of your request or carries out your command and lets you know what it did.**

   If your Alexa device has a screen, you also see the result on the screen.

Where Do You Get Alexa?

In most cases, Alexa is closely associated with hardware devices, and how close that association is depends on the device. There are three types of devices to consider:

- **Devices that have Alexa built in:** As you might have expected, Amazon offers a huge range of products that have Alexa inside, including the Echo, Echo Dot, Echo Plus, Echo Spot, Echo Show, Fire tablet, and Fire TV. In addition, a massive ecosystem of third-party devices are Alexa-enabled, including select Windows PCs, sound systems, TVs, tablets, appliances, GPS units, and even car models.
- **Devices that Alexa can control directly:** Many devices are Alexa-friendly, meaning that Alexa can connect to and control those devices directly using either a Bluetooth or Wi-Fi connection. For example, you can use Amazon's Echo Show to connect to and control a smart-home device such as a thermostat. Similarly, you can use any Amazon Echo device to operate the AmazonBasics microwave (yes, that's right: a microwave oven that you can control with your voice!).
- **Devices that Alexa can control indirectly:** Although as I write this some 100,000 devices fit into the previous two categories, that still leaves a huge number of Alexa-ignorant devices. However, in some cases you can still have limited control over even these devices. For example, you can connect any Amazon Echo device to an Amazon smart plug, which you can turn on and off using Alexa. So, when you plug a non-Alexa device (such as a lamp) into the smart plug, you can use Alexa to turn that device on and off.

Note that, at the start of this section, I said, "in most cases." What are the exceptions? As I talk about in Chapter 2, Amazon offers the Alexa app, which is a program that you install on your smartphone or tablet. You can use the app to connect with and manage smart-home devices, but if you just want the standard Alexa experience — that is, using voice commands to ask questions and make requests — you can do all that directly from the app; no external hardware (such as the devices I ramble on about in the next section) is required.

Figuring Out Which Alexa Device You Need

In the preceding section, I mention that, with the exception of using Alexa on your phone or tablet, you can't do the Alexa thing until you get a device that's Alexa-enabled. That sounds straightforward enough, but that illusion of

simplicity is shattered when you see the sheer number of available devices — and I'm not even talking about all the third-party Alexa devices. Amazon alone offers well over a dozen different Alexa-enabled devices just in its Echo brand of smart speakers. How are you supposed to know which one to get?

Checking out Amazon's Echo devices

To help you make the right Alexa decision, this section offers a quick look at what's available from Amazon's Echo brand.

Echo

Echo (the fourth generation is shown in Figure 1-1) is your garden-variety Echo smart speaker designed for larger rooms because it comes with three speakers: a 3-inch woofer and two 0.8-inch tweeters. It's fairly big — 5.7 inches in diameter and 5.2 inches high — so you may need to clear a spot for it. The fourth generation of the Echo comes with a built-in smart-home hub.

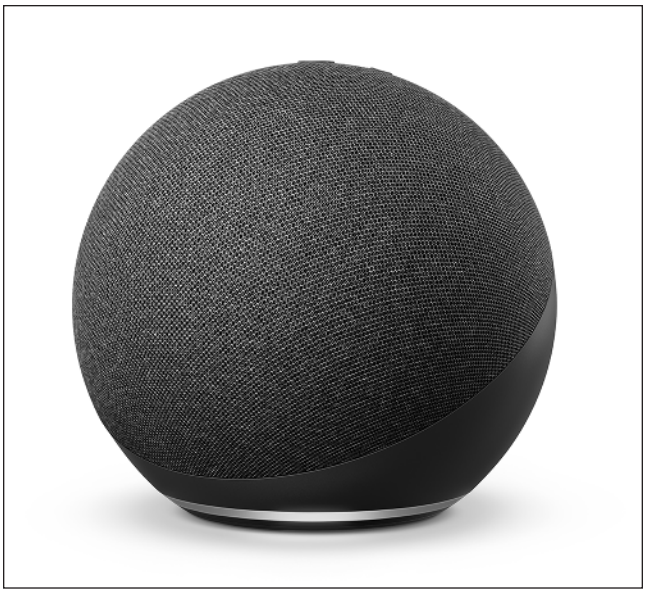

FIGURE 1-1: Amazon's Echo smart speaker.

Photograph courtesy of Amazon

Echo Dot

The Echo Dot is a smart speaker designed for smaller rooms because it comes with a single speaker. It's quite a bit teensier overall than the Echo (about 3.9 inches in diameter and about 3.5 inches high). It's also half the price of the Echo, which is

likely why it's Amazon's bestselling Alexa device. Some models of the fourth generation Echo Dot also come with a built-in clock, as shown in Figure 1-2.

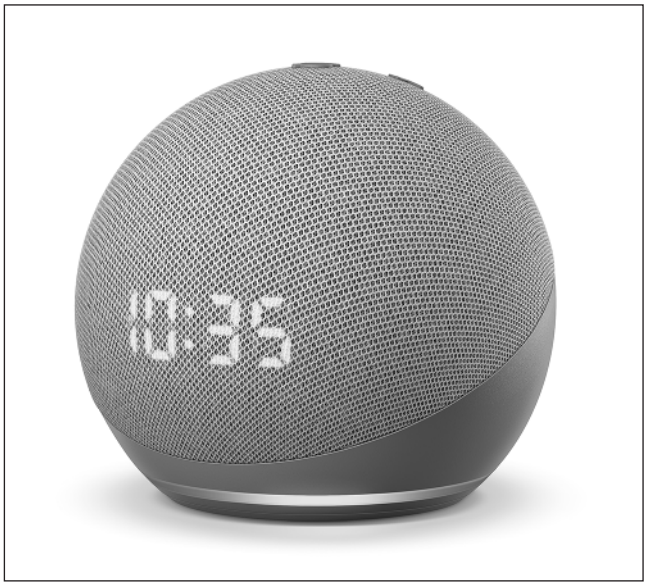

FIGURE 1-2: Amazon's Echo Dot smart speaker.

Photograph courtesy of Amazon

Echo Studio

Echo Studio (shown in Figure 1-3) is the smart speaker designed for audiophiles thanks to its support of several high-end audio formats (including Dolby Atmos) and five — yep, you read that right: *five* — speakers: a 5.3-inch woofer, a 1-inch tweeter, and three 2-inch midrange speakers. It's the biggest Echo at 6.9 inches in diameter and 8.1 inches high, so it won't go unnoticed. Echo Studio also comes with a built-in smart-home hub.

Echo Flex

The Echo Flex (shown in Figure 1-4) is a smart speaker that plugs directly into an electrical outlet. The Echo Flex comes with a single speaker (so it's not suitable for music playback) and is 2.6 inches wide and 2.8 inches high. Yep, that's tiny, but Echo Flex has a USB port that you can use to charge your USB devices or connect accessories such as a night light or a motion sensor.

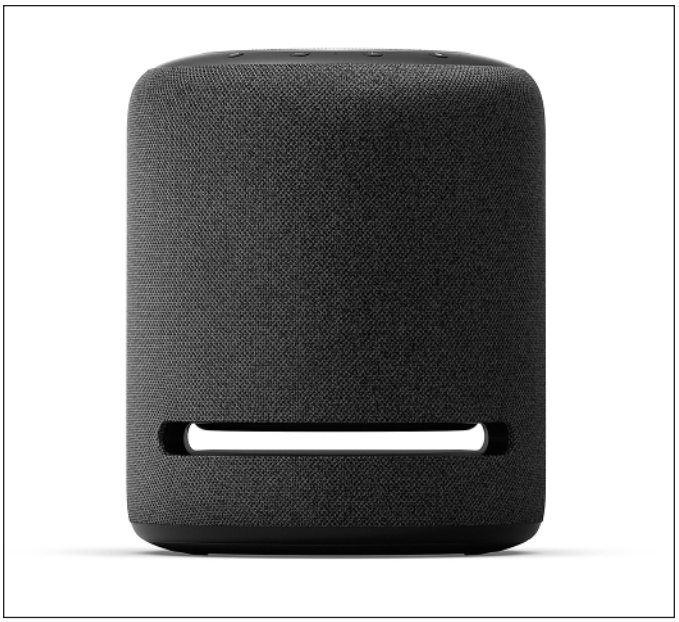

FIGURE 1-3: Amazon's Echo Studio smart speaker.

Photograph courtesy of Amazon

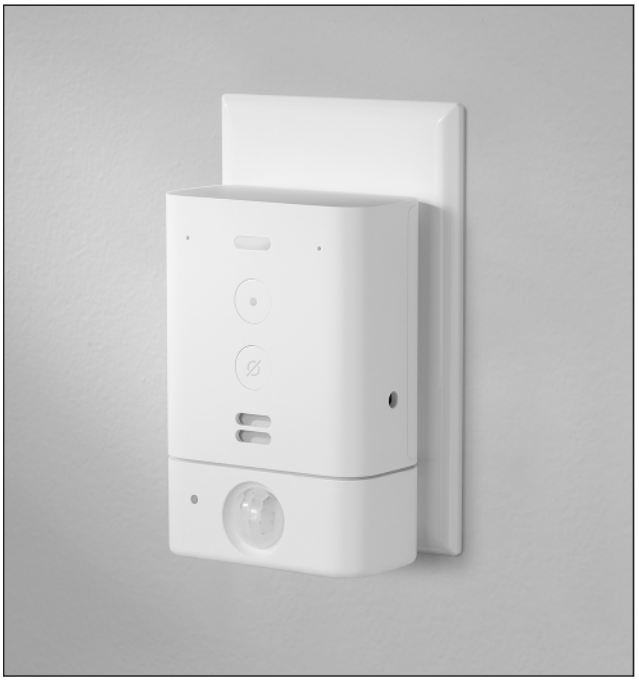

FIGURE 1-4: Amazon's Echo Flex plug-in smart speaker.

Photograph courtesy of Amazon

Echo Show

The Echo Show is a smart speaker that comes with a screen. Three models are available:

- **Echo Show 5:** Comes with a 5.5-inch (measured on the diagonal) screen that supports 960x480 resolution; a 1-megapixel (MP) camera; and a single 1.7-inch speaker. See Figure 1-5.
- **Echo Show 8:** Has an 8-inch screen and 1280x800 resolution; a 1MP camera; and two 2-inch speakers.
- **Echo Show 10:** Offers a 10.1-inch and 1280x800 resolution; a 13MP camera; and three speakers (a 3-inch woofer and two 1-inch tweeters); and a built-in smart-home hub.

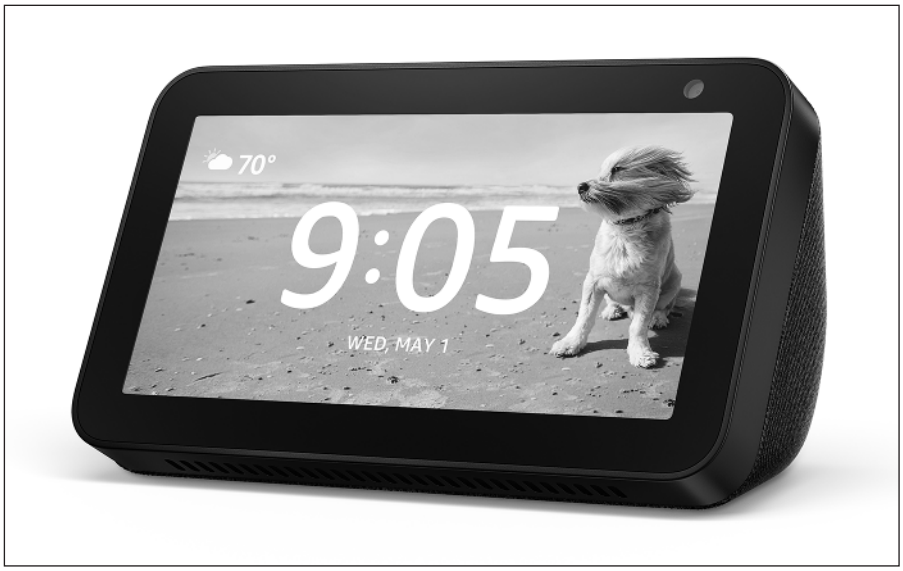

FIGURE 1-5: Amazon's Echo Show 5 smart speaker.

Photograph courtesy of Amazon

Echo Auto

The Echo Auto (shown in Figure 1-6) is designed to hang out with you in your car. It connects to the Internet via your smartphone. The Echo Auto doesn't have a built-in speaker, but you can use it to connect to your car's speakers via Bluetooth or by plugging in an audio cable (assuming your car supports either of these options). The Echo Auto is 3.3 inches wide and 1.9 inches deep.

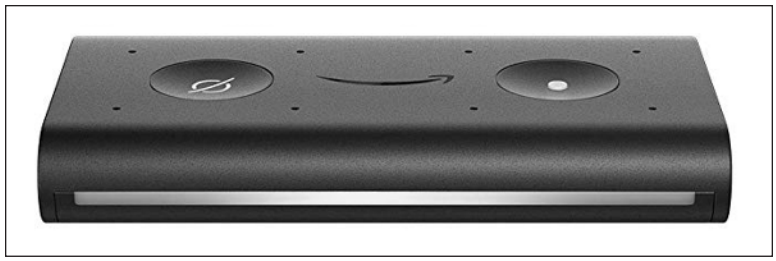

FIGURE 1-6: Amazon's Echo Auto device.

Photograph courtesy of Amazon

Echo Frames

Echo Frames (see Figure 1-7) is a pair of smart glasses that somehow manages to shoehorn two microphones and four teensy speakers (called *microspeakers*) into what look like a regular pair of reading glasses. (You supply the lenses, by the way.) Echo Frames uses the Alexa app on your iOS, iPadOS, or Android mobile device to connect to the Internet to process your voice commands and to return the results of those requests.

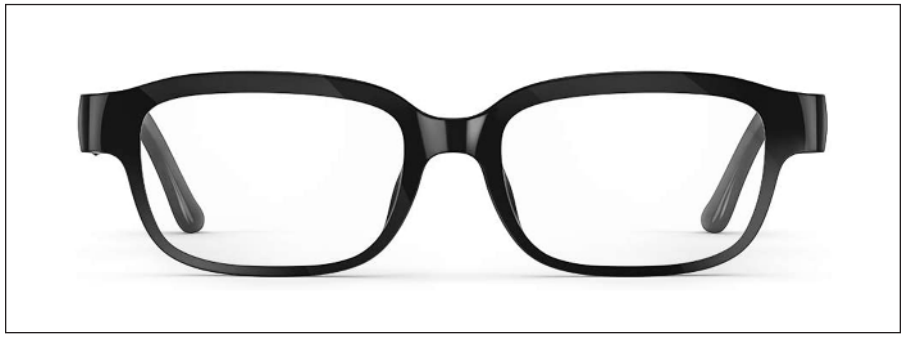

FIGURE 1-7: Amazon's Echo Frames smart glasses.

Photograph courtesy of Amazon

Choosing an Alexa device

Okay, so which one should you choose? The answer depends on your needs and budget, so here are some questions to help you decide:

- **Do you just want to ask questions and make requests?** If you have a smartphone or tablet that's Alexa-friendly (I talk about what that means in Chapter 2), don't bother getting any Alexa device. Just use the Alexa app instead.
- **Are you on a tight budget?** Go for the Echo Flex, which is by far the cheapest of the Echo devices.

- **Do you want decent sound without breaking the bank?** Get the Echo, which comes with both a woofer and a tweeter and is priced midway between the Echo Dot and the Echo Studio.
- **Do you want the best sound possible?** Buy the Echo Studio, with its five speakers. If your budget can handle it, you might want to add an Echo Sub, which is a powerful subwoofer (see Chapter 12).
- **Do you want Alexa available in multiple rooms?** Most people who go this route have an Echo or Echo Studio in a main area (such as the kitchen or living room) and multiple Echo Dots or Echo Flexes: one in each room where you want to use Alexa.
- **Do you want to use Alexa to manage smart-home devices?** In this case, you need the Echo, Echo Studio, or Echo Show 10, each of which has a smart-home hub built in.
- **Do you want to use Alexa while you're rambling around town?** You can use the Alexa app on your iOS or Android smartphone, but if you also prefer to use Alexa hands-free, you'll want a pair of Echo Frames.
- **Do you want to make video calls?** You need an Echo with both a screen and a camera, so that means one of the Echo Show devices.

Learning What Alexa Can Do

Some people think an Alexa-enabled device is nothing but a glorified clock-radio. Sure, it's true that some versions of the Echo Dot and all versions of the Echo Show can display the time (and all Alexa devices can tell you the time) and you can use Alexa to play a radio station. However, Alexa can do more — *way* more. Let me show you what I mean.

Playing media

You can connect your Alexa device to your favorite music service — such as Amazon Music or Spotify — which gives you voice-controlled access to millions of songs. You can ask Alexa to play a particular song, artist, playlist, or genre. If you have multiple smart speakers in your home, Alexa's multiroom music feature enables you to play the same music in each room that has a speaker. Alexa can also play radio stations, podcasts, and audiobooks; recite the text of a Kindle book; and, if your device has a screen, play shows from Amazon Prime Video. See Chapter 4 to get the scoop on Alexa's media playback features and Chapter 12 to learn about multiroom music.

Communicating

One of Alexa's more surprising features is that you can use it to communicate with other people, even if they don't have an Alexa device. You can send text messages and place voice calls, but the fun begins when you and the other person have Alexa devices with screens because then you can make video calls to that person. If you have multiple Alexa devices at home, you can also use them as a two-way intercom system or as a one-way intercom for making announcements. Some restrictions apply, so be sure to check out Chapter 5 to learn more.

Shopping

It wouldn't be an Amazon product if shopping weren't involved, so of course you can use Alexa to place orders through your Amazon account, check the latest Amazon deals, and track your shipments. I cover shopping details in Chapter 6.

Getting help around the home

We're all busy, so who couldn't use an extra hand around the house now and then? Alexa has no hands, alas, but it can help big-time by making it easy to create a to-do list or shopping list; manage your Google, iCloud, or Office calendar; and set reminders for upcoming tasks. Alexa can also set an alarm and run a timer. I talk about all these features and more in Chapter 7.

Getting news and information

Alexa is always up on the latest news, so all you have to do is ask. You can even customize the news you hear by configuring Alexa's Flash Briefing feature. Alexa can also tell you the current weather and the latest forecast, give you traffic updates, let you know the scores and schedules of your favorite sports teams, and tell you movie showtimes at nearby theaters. Alexa is a veritable fount of information, as I describe in more detail in Chapter 6.

Answering your questions

If there were such a thing as a Swiss Army knife for information, Alexa would be it. I've already mentioned that it's a news anchor, a weather forecaster, and a sportscaster, but Alexa can also be a calculator, a speller, dictionary, an encyclopedia, and a search engine. Ask a question, and the odds are in your favor that Alexa can find the answer. I talk about Alexa's Q&A prowess in Chapter 8.

Accessing skills

Alexa comes with tons of built-in features, but Amazon has set up a system that lets third parties add new features to Alexa. These features are called *skills,* and thousands of them are available in Amazon's Alexa Skills Store. There are skills for ordering a pizza or an Uber, playing games or trivia, tracking your fitness or your investments, and so much more. You can even build your own skills without programming! I take you to skills school in Chapter 9.

Automating your home

Alexa is smart-home savvy, so it gives you voice control over many different home-automation products, including lights, thermostats, baby monitors, security cameras, and door locks. I tell you how to set up and manage your smart home in Chapters 11 and 12.

Having fun

With its easy access to news and weather, its to-do lists and reminders, and its massive catalog of life-hacking skills, Alexa may seem as though it's all business, but it has a fun side as well. Alexa can tell jokes, read limericks, sing songs, tell stories, and play games. Alexa even comes with a large trove of so-called Easter eggs that bring surprise and whimsy to your Alexa conversations. Loosen your tie or your let down your hair, and then head for Chapter 13 to learn more.