

# How To Summary

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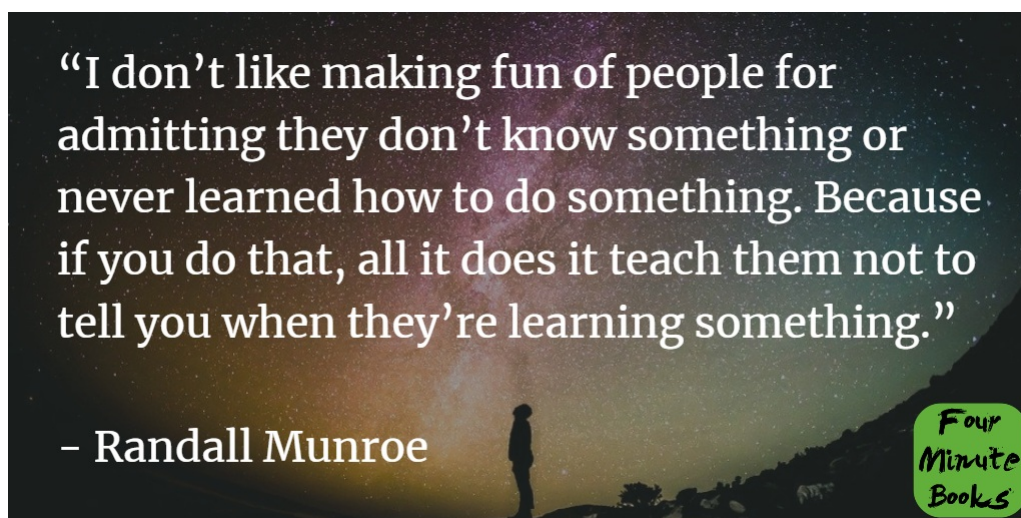


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**1-Sentence-Summary:** *How To* will help you get better at abstract thinking as it gives solutions to some of the strangest problems in the wackiest, but still scientific, ways.

**Read in:** 4 minutes

**Favorite quote from the author:**



If you like math, science, and history, you're going to love How To: Absurd Scientific Advice for Common Real-World Problems. And even if you don't like some of those subjects, you may learn a thing or two that will pique your interest. This book is a little different than most of the books we summarize. Actually, maybe a lot different. It's got a few fun, crazy, and scientific ways to solve scenarios you'd never want to be in.

While you may be interested in self-improvement, this book is a break from that. But there is a lesson to be learned here: innovative ideas are important. If this type of thinking sounds strange to you, just remember it was the "weird ideas" that brought us the airplane, computer, internet, and smartphone.

A bit of abstract thinking can go a long way to improving our world, and this book has plenty of that. Who knows, maybe something you read here will be a stepping stone for the next big technological advancement!

Here are the 3 most interesting how-to scenarios this book taught me:

1. Proper management of heat is the key to building a sustainable lava moat.
2. Traveling faster than the speed of light is possible, sort of.

3. To know people's age, you don't need to ask, you just need to know a little history and science.

Are you ready to learn how to do some weird things? Let's begin!

## Lesson 1: To build a lava moat around your house, you just need to know how to manage the heat properly.

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This book will teach you how to dig a hole deep enough to make a fortune on buried treasure. But once you have your riches, you're going to want a way to protect your home from thieves. How does a moat sound? For extra protection, let's make it a lava moat.

First, create lava. For that, you just need rocks and heat. Sounds simple enough, right? **If you use the right rocks you only have to heat them to a modest 900 degrees Celsius.** This will keep your lava moat glowing bright orange throughout the day and night.

But exposure to the air will constantly cool your lava and eventually turn it back into rock. You're going to need to put insulated electric coils underneath your moat. The air takes about 100 kilowatts of energy from your 900 degree lava, so you need to put that much back into it from your coils. Let's say energy costs about \$0.10 per kilowatt hour. For a one meter wide and one meter deep moat around a typical house, this comes out to \$60,000 a day.

I know you might be thinking this is crazy. You're definitely wanting a wider moat than just one meter. But don't fret. Anyone who tries to jump over it will get second-degree burns in less than a second just from the heated air! Oh and don't worry about your house. You'll just need to pump water through the walls to keep it from burning to the ground.

## Lesson 2: You can go faster than the speed of light, in a round-about way.

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Getting to the stars requires a lot of time. That is, unless you know how to travel faster than the speed of light. Scientifically it's impossible to do that, but with some work you can get a comparable effect.

You're going to want to start by building a rocket ship that can continually accelerate at 1g. In other words, in one second it's speed increases as much as an object falling toward earth, or 9.8 meters per second. We could go faster, but our bodies aren't great at handling those speeds. But this will do just fine.

**According to the math, at the rate of acceleration of 1g, you could reach the moon in only four hours!** Jupiter would be outside your window within a week. The acceleration adds up quickly.

Now, let's talk about relativity. If you're traveling faster, you experience time more slowly from an outside perspective. From your perspective, time moves more quickly for the observer. With more acceleration, you gain more distance traveled than you'd expect in one year of time according to your outside observer.

After two years from the other perspective, you will have traveled more than two light-years worth of distance. It appears that you're covering more ground than travel at the speed of light would allow!

## Lesson 3: Knowing your history and science can help you determine people's ages without asking.

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Well, all that talk of relativity probably has you wondering what your age would be after going the speed of light. But our next how-to lesson isn't about your age but other people's. **If you're curious to know if you're talking with a Baby Boomer, for example, check for strontium-90 in their teeth.**

Nuclear weapons testing was common from 1945 to 1962. Contaminants in the wind moving through the atmosphere eventually found their way into people. And specifically, the bodies of young children in the early 1960's. Because strontium-90 is similar to Calcium, traces of it made its way into the permanent teeth of some Boomers.

If you also find lead in their teeth, though, you might have a Gen-Xer on your hands. Up through the late 1970's leaded gasoline was commonly used to fuel cars. Also contributing to a lead poisoning epidemic, this little fact can help us tell people's ages, also.

To get even more accuracy, though, check for the scar from a smallpox shot. The disease was wiped out in the US in 1949 but the vaccination for it stopped in 1972. Anyone born before 1972 will have a tiny oval imprint on their outer leg or upper arm.

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## How To Review

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Well that was a different one, wasn't it? I think How To is just my kind of book. What I really like is the abstract thinking that Munroe employs. We can use a lot more of that in our world to come up with better solutions to our problems.

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## **Who would I recommend the How To summary to?**

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The 36-year-old employee of a tech company who wants some inspiration to innovate, the 54-year-old science nerd who loves a good laugh, and anyone who thinks that science is boring.