In this lesson, you're going to learn how to build systems that you can execute faster and with better results by building them based on first principles.

To get started, we need to understand what first principles are and how they work.

I think the best definition for what a first principle is that it's a "foundational truth." That means it's something that we know to be absolutely true and doesn't rely on analogies or assumptions in order to make it true.

It's the core of truth.

So, you could say a first principle is a building block of knowledge. In that sense, everything we know about science is a first principle.

When you stack first principles on top of each other or combine them, you can create truly new and unique things that improve your life. Like systems that work almost flawlessly.

Here's an example: Elon Musk is a modern day scientist and a businessman who's exceptionally good at using first principles. When he started his company, SpaceX, he went to a number of different rocket manufacturers trying to figure out how much it would cost to buy rockets that he could use in his business.

And he was blown away by the prices. He couldn't believe how expensive it was for even the most simple and outdated technology.

So, he implemented first principle thinking. He got rid of the assumptions about how much space travel *should* cost based on what solutions were currently available.

And that's a big part of being successful in first principles thinking. You can't "reason by analogy." You can't say, "Well, it works like this *right now*, so that must be how it is" and then try to build your own solutions on top of that.

You have to abandon those assumptions and analogies and break your problem down into its most basic parts.

So, in Musk's case, he went and researched how much it would cost to buy the raw materials to build a rocket. Then, he figured out how much it would cost to hire the engineers and laborers to design and build it. He did this for all the pieces required to basically DIY a rocket, and learned that he could do it himself for about 20% the cost of purchasing the rockets from an existing company.

And that's what first principle thinking looks like. You throw away whatever assumptions you have about the way things work right now, and build new solutions from whatever knowledge is leftover once those assumptions are gone.

Henry Ford and the mass produced automobile is another example. He used to famously joke that, "If I asked most people what needed to improve about transportation, they would have told me to make faster horses."

People wanted faster horses because most people think in analogies. They can only imagine what's possible based on what already exists and works today. At the time, horses were what they understood transportation to be. Horses were tried and true. And cars even existed at this time. They were just too expensive for the common person, and it was hard to imagine making them cheaper or more reliable.

Thinking from first principles isn't a difficult concept to understand, but you have to be very disciplined in order to do it.

So, how can thinking from first principles help you create better systems in your life? By helping you find the root problems you're trying to solve—absent any assumptions—and then designing repeatable solutions from there.

There's a famous Einstein quote I'll paraphrase where he talks about the importance of finding the root of problems.

Someone had asked him how he would solve a complex problem if he only had 60 minutes to do it. And his answer was that he'd spend the first 55 minutes defining the problem because, once you have a perfectly defined problem, the answer becomes obvious. And an obvious answer is easy to implement so not much time is needed.

Most of us are used to just addressing the symptoms of the problems in our lives, not the root causes. We create systems and routines that fix what's obvious because going deeper is really hard and requires discipline.

For instance, if you're struggling at work because there's just too much to do, it's easy to attack the problem from the mindset that "there's just too much to do." You don't necessarily think any deeper about it, so you design systems that require you to work faster or organize your time differently, or just put in more hours. Those are the solutions that you come to when you're a little bit lazy about framing your problem.

It would be like going to the doctor because your heart is beating too fast and having the doctor skip an exam and immediately prescribe you some medicine to

slow down your heart rate instead of actually examine you and figure out what's causing your heart to beat so fast.

What if the actual problem is anxiety? Wouldn't you want to address the anxiety? What if it were some other underlying problem that's causing other issues? Wouldn't you want to fix the problem at the root rather than playing whack-a-mole with the symptoms?

So, first principles thinking helps you find the root cause of whatever problems you have that are leading to either too much work, unreliable results, lack of motivation, whatever else.

It's a way to shift your thinking so that you solve problems for good, and you do it in a way that's best for you instead of putting bandaids on all the smaller things.

So, how do you actually implement first principles thinking when you're trying to design a system to bring more order or better results to your life and work?

I've developed a little workflow that helps me get into the right mindset to build better systems, and I'll share it with you.

It's five steps, and the first step is to simply identify your goal. So, identify your big problem. Remember the Einstein story from a moment ago. The most important thing you can do to get useful results is to make sure that the problem you're trying to solve is the one that actually needs solving.

We're all pressed for time, and doing this kind of system building work is something you're probably trying to fit into a schedule that's already very busy.

I could say, "don't hurry through this process" but we both know sometimes there's no other choice. So, if you don't have a lot of time, do what Einstein would do and make sure you allocate most of your time right here at the beginning.

Spend as much time as you can just getting to the root of the problem.

Lots of times, you'll find there are a number of different issues. That's how this process works. You find a lot of little problems that all feel related, and getting to the bottom of them can be really tough work.

One question I like to ask myself to help get to the root of a problem is "What problem could I solve that would make all other related problems go away."

So, rather than trying to figure out how to solve 10 problems, I'll try to find the deeper problem that, once fixed, would automatically solve all the other ones.

Let's say you have a time management problem at work. You know, you're drowning in work, balls are getting dropped, and you're just not performing as well as you want to.

The easy, but less effective solution would be to find all the little problems that add up: not getting to tasks fast enough, dropping communication, lost paperwork, so on and so forth.

The harder, but much more effective thing to do would be to keep asking "What is the root cause of all these smaller problems?" There is almost certainly something bigger that is less obvious.

When you make the root of the problem the foundation, you'll build a much better solution.

Okay, so the second step is to figure out how you're *currently* solving the problem.

Now, maybe you aren't solving it—you're looking for a solution after all. But, you're doing *something* to address the situation.

Maybe it's that you're putting in extra hours. Or maybe you're just ignoring things and waiting for something to blow up.

Identify whatever it is you're doing right now. Make a list of the steps. Make a list of the solutions. Get a really clear picture of how things are working right now.

And once you've done that, step three is to make a list of all the assumptions that went into designing the solutions as they exist right now.

So, what do you believe to be true that led you to how you're solving the problem right now?

Going back to the problem of feeling overworked, the smaller constituent problems you might be trying to solve are too much paperwork, your focus is pulled too many directions, you don't have anyone to support you. Those kinds of things.

And you're attempting to solve those problems by working longer hours or ignoring work that seems less critical.

There are some common assumptions you'd probably have to make to be in that situation.

All of the paperwork you need to do is important and necessary. That's an assumption. You'll get fired if you don't get all your work done on time. That's an assumption. There's no money for an assistant to take on some of your workload. That's an assumption. There's no technology that can help speed things up. That's an assumption. The way you decide what to focus on when there's too much and how to prioritize it is all built on assumptions as well.

And there are lots more. Make a list of all the things about your current situation that you believe to be true.

This is the explanation for how you got to where you are now, and it's an important part of building a better solution because step 4 is to *question* all those assumptions.

You're going to question them by going through them one by one and asking, "How do I know that this is true?"

Don't get discouraged here. This can be a frustrating and uncomfortable task. Sometimes, it'll feel like you don't have any proof that something is true, but you believe it anyway.

Those are your opportunities. Those are the places where you have accepted something as true without actually knowing that it is.

This isn't a black and white process, either, which can add to the frustration in this step. These assumptions that you're questioning are based on evidence, and that evidence can rarely be described as true or false. Instead, you can really only describe it as strong or weak.

Where you have strong evidence, your assumptions are probably pretty good.

If one of your assumptions is that you'll get fired if you don't get all your work done on time, and you've seen other people at your company get fired for exactly that, then that's pretty strong evidence that you're right. If you don't get your work done on time, you'll get fired, too.

But if one of your assumptions is that all the paperwork you're buried under is equally important, but you don't have any evidence that something useful is actually being done with all that paperwork, then your assumption is based on pretty weak evidence.

It could be that some of it is really important, and some it is completely unimportant. Or that some of it is important in certain circumstances, and unimportant in others.

When you have weak evidence, look for more to help you confirm or deny it.

Most likely, when you're done with this step, you're going to find that some of your assumptions are incorrect—or at least less correct than you thought.

Based on that, you have to disregard them or at least give them less importance.

And that's when you move onto the last step, which is to rebuild your solutions or your systems based on everything you just learned.

When you understand the foundation of the problem you want to solve and you've rooted out all the unhelpful assumptions that led you to where you are now, you can start to imagine new solutions—new systems to use—that look wildly different from the ones you're using today.

And they will almost certainly be faster and produce more reliable results because they're no longer based on bad assumptions. You worked really hard to remove them.

So, here's what we just learned:

Building great systems that improve our lives requires you to use first principle thinking. That means rather than understanding things based on how they are *now*, you try to understand them based on the fundamental truths that make them up.

When you do that, you can build systems for yourself that look wildly different from what they look like now.

And the five step process to help you do that is to 1) focus on the fundamental problem instead of the symptoms that are easier to see. 2) Figure out how you're solving the problem right now. 3) Figure out all the assumptions that went into creating that solution. 4) Question those assumptions so that you can get rid of the ones that aren't actually true. And 5) Rebuild the solution based on the new understanding you have about it.

Again, I don't want to sugarcoat this. It's hard work. If I had to boil down everything we learned into just one sentence, it would be: Don't be afraid to question your beliefs.

Don't be afraid to question your beliefs because, when you find out one of them isn't true, your life will only improve.

Now, go ahead and complete that 5-step process we just went over, and I'll see you in the next lesson.