Before, I shared how data analysis, helped a company figure out, where to advertise its services. An important part of this process, was strong problem solving skills. As a data analyst, you will find that problems are at the center of what you do, every single day, but that's a good thing. Think of problems as opportunities to put your skills to work and find creative and insightful solutions. Problems can be large or small, simple or complex. No problem is like another and they all require a slightly different approach. But the first step is always the same: understanding what kind of problem you are trying to solve. And that is what we are going to talk about now. Data analysts work with six basic problem types: making predictions, categorizing things, spotting something unusual, identifying themes, discovering connections and finding patterns. Think back to a real-world example from the previous video. In that example Anywhere Gaming Repair wanted to figure out how to bring in new customers. So the problem was how to determine the best advertising method for Anywhere Gaming Repair's target audience. To help solve this problem, the company used data to envision what would happen if it advertised in different places. Now, nobody can see the future. But the data helped them make an informed decision about how things would likely work out. So their problem type was making predictions.

1:36 Now, let's think about the second problem type, categorizing things. Here's an example of a problem that involves categorization. Let's say a business wants to improve its customer satisfaction levels. Data analysts could review recorded calls to the company's customer service department. And evaluate the satisfaction level of each caller. They could identify certain keywords or phrases that come up during the phone calls. And then assign them to categories such as politeness, satisfaction, dissatisfaction, empathy, and more. Categorizing these keywords gives us data that lets the company identify top- performing customer service representatives and those who might need more training. This leads to happier customers and higher customer service scores. Okay, now let's talk about a problem that involves finding something unusual. Some of you may have a smartwatch. My favorite app is for health tracking. These apps can help people stay healthy by collecting data such as their heart rate, sleep patterns, exercise routine, and much more. There are many stories out there about health apps actually saving people's lives. One is about a woman who was young, athletic, and had no previous medical problems. One night she heard a beep on her smartwatch. A notification said her heart rate had spiked. Now in this example, think of the watch as a data analyst. The watch was collecting and analyzing health data. So when her resting heartbeat rate was suddenly 120 beats per minute, the watch spotted something unusual. Because according to its data, the rate was normally around 70. Thanks to the data her smartwatch gave her the woman went to the hospital and discovered she had a condition which could have led to life-threatening complications if she hadn't gotten medical help. Now let's move on to the next type of problem: identifying themes. We see a lot of examples of this in the user experience field. User experience designers study and work to improve the interactions people have with products they use every day, like apps, websites, and even coffee makers. Let's say a user experience designer wants to see what customers think about the coffeemaker his company manufactures. This business collects anonymous survey data from users, which can be used to answer this question. But first, to make sense of it all. He will need to find themes that represent the most valuable data. Especially information he can use to make the user experience even better. So the problem that user experience designer's company faces is how to improve the user experience for its coffeemakers. The process here is kind of like finding categories for the keywords and phrases in customer service conversations.

4:32 But identifying themes goes even further by grouping each insight into a broader theme.

4:39 Then the designer can pinpoint the themes that are most common. In this case, he learned users often couldn't tell if the coffee maker was on or off. He ended up optimizing the design with improved placement and lighting for the on off button. Leading to product improvement and happy users. Now we come to the problem of discovering connections. This example is from the transportation industry, and uses something called third-party logistics. Third-party logistics partners help businesses ship products when they don't have their own trucks, planes or ships. A common problem these partners face is figuring out how to reduce wait time. Wait time happens when a truck driver from a third party logistics provider arrives to pick up a shipment, but it's not ready. So she has to wait. That costs both company time and money. And it stops the trucks from getting back on the road to make more deliveries. So how can they solve this? Well, by sharing data, the partner companies can view each other's timelines and see what's causing shipments to run late. Then they can figure out how to avoid those problems in the future. So a problem for one business doesn't cause a negative impact for the other. For example, if shipments are running late because one company only delivers Mondays, Wednesdays and Fridays, and the other company only delivers Tuesdays and Thursdays, then companies can adjust to do deliveries on the same day to reduce waiting time for customers. All right, we've come to our final problem type, finding patterns. Oil and gas companies are constantly working to keep their machines running properly. So the problem is how to stop machines

from breaking down. One way data analysts can do this is by looking at patterns in the company's historical data. For example, they could investigate how and when a particular machine broke down in the past and then generate insights into what led to the breakage. In this case, the company saw patterns indicating that machines began breaking down at faster rates when maintenance wasn't kept up in 15-day cycles.

6:55 They can then keep track of current conditions and intervene if any of these issues happen again. You've now learned the six basic problem types data analysts typically face. As a future data analyst, this is going to be valuable knowledge for your career.