Hi! Welcome to module 1 part 3. In this video I'm going to talk about what pieces you need to make a map. So this map is from a satirical site, but many maps that you see online say just as little as this one. In this case, it's a bunch of red dots and they could potentially be anything, but their red dots, so they definitely mean something bad.

We're going to talk about making data maps that actually say something instead of saying nothing. You got to start with real data. This course is focused on thematic maps which showed data, there's two components to those, there's the shapes and then the data.

First I'm going to talk about the shapes. The first thing we need to make a thematic map is geographic shapes which represent places in the real world that could be states, counties, cities or even your street. These come in specific file formats. Shapefiles, KMZ, and GeoJSON are three of the common types, you might see.

So we'll start with the simplest kind of geographic shape that's points. These have coordinates that represent locations in the real world, usually latitude and longitude. Shapefiles are cool because they combine visual elements. Here this is the locations of all the cities around the world with real data these coordinates that place the point on the globe.

So if I click on one of these points with the identity tool in QGIS, I could learn a little more about what it represents. The one I selected in this example is Houston. You can see its latitude and longitude and that's at the bottom of this list that pops up. In shapefiles you can also make lines. Line attributes string together two sets of two or more sets of coordinates.

These lines show International boundaries, are the lines between countries on land. Same idea, the data behind the set from which comes from Natural Earth isn't very detailed. It does indicate some disputed boundaries though such as this one between Western Sahara, Morocco and Mauritania. Your organization might have style guidelines for how to deal with boundaries like this on a map and what to display.

Remember geometry class? Polygons are shapes. In shapefiles, polygons connect the loop. You've got dots, lines, and those together can make a shape. The shape of a country is a good example. Same thing here, if we select one of these polygons for more information on its attributes, it doesn't have a long list of coordinates, with shapefiles these are baked into another part of the file. It does have the name of the country 'Brazil' here spelled out in a bunch of different languages.

So the next data file type that I'm going to talk about is called KMZ which stands for keyhole markup language or KMZ when it's compressed. This is Google's Geographic language. I don't see it around much, on government data sites and things like that anymore, shapefiles are far more prevalent, but in the US the National Weather Service uses it a lot.

Here's every river gauge in the country, news organizations covering Hurricane Katrina use this data to show flooding during that storm. The third type of geographic data you might see is GeoJSON. This is used with mostly digital maps, it's kind of a more digital map format. It encodes a variety of different Geographic data structures into one file. You could have points in limes in one file. Those are shapefiles.

Next we're going to talk about the data that can add some stories onto all these shapes. The format's you might see for this is CSV, Json or Raster Images. These represent information about the world and the stories we're going to use that information to tell.

CSV or comma separated values is a delimited text file format where each column of data is separated by a comma. In this example from my work at the Texas Tribune each row represents a city with shelters were children who were separated from their parents at the border were helped. I joined that CSV data into a map for publication by attaching it to a city shapefile and QGIS.

The next data format that you might see as you're making Maps is Json. Json stands for JavaScript object notation. This w3schools tutorial has good examples of how it works. But you would mostly use this for adding data digital maps with codes which we aren't going to go cover in depth in this course.

Raster data is another format you might see. At its simplest level its data, either images or very detailed gridded data where each pixel represents a thing in the real world. The national weather service has greeted rainfall raster data for instance. Elevation often shows up this way too.

Some raster data is aerial images taken with planes or satellites. This is a composite of for satellite images that show the Gulf of Mexico and Galveston, Texas. The black spots at the bottom indicate areas that are not covered by the satellites path. In this course will explore basic applications of the state of format. This has been an overview of different types of geographic data that we'll be using to create, analyze and produce maps in this class.

In the next lesson Chris will show you how to open some of these files in QGIS and start working with them.