

1. READ and WATCH

ENGAGE

What is a map?

A map is a visual representation, a picture, of objects that are related. Most maps are developed to show the reader the relationship between the objects so the reader can develop an understanding of a bigger picture. There are many types of maps but in this lesson we are going to focus on physical maps.

A physical map is a picture or image of a place that can include physical features such as mountains, forests, streams, buildings, roads, and other unique features. Physical maps can be used in a variety of ways. Maps can tell us:

- How to get somewhere either by car, bike, or walking
- Where things are (like cities, states, countries, oceans, and more)
- About specific features like how tall mountain is, how long a stream is, or where a trail is
- Where to find buried treasure!

In order to understand how to read a map, we are going to learn about four key components of a map by watching this short video:



Video: Parts of a Map

<https://www.youtube.com/watch?v=vJtQBJEpc10>

2. Answer

1) How could you use map? Provide a specific example of how you might use a map to make a decision or a plan.

2) List the four major components of a map:

1. _____

2. _____

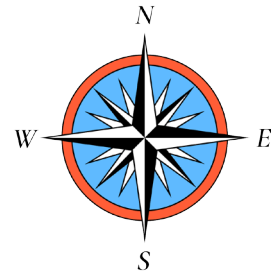
3. _____

4. _____

3) If you are going to use a symbol for a tree, practice drawing that symbol below.

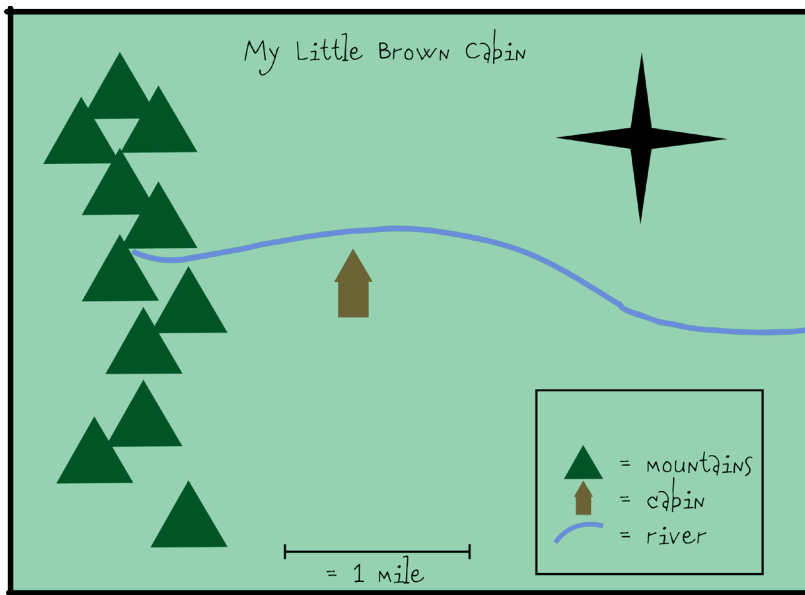
3) Look at this compass rose. What does each letter stand for?

N
E
S
W



4) It's helpful to remember the order of the directions around the compass rose so we make up silly sentences like this one: **N**ever **E**at **S**oggy **W**affles. Come up with your own silly sentence to remember the order of the cardinal directions!

N
E
S
W



We need your help! We started making this map but forgot to include some of the key parts!

1) Can you please label the **scale** and the **key** for us?

2) We put the compass rose on there but can't figure out which way is North! Use the clues below to help fill in the directions on the compass rose...

Clue: From your little brown cabin, if you walk directly south, you would reach the mountains.

Knowing that information, can you **label all four cardinal directions on the compass rose**?

3) What direction would you walk to get to the closest spot on the river?

3. Activity - Map Your Yard

EXPLORE

What units would you use to measure the following distances:

The distance from your house to school? _____

The distance from one side of your bedroom to the other? _____

The length of a sheet of paper? _____

When we make maps, the units we choose depend a lot on the *scale* of the map -- how much area the map contains. For example, a map of the country might be measured in miles or kilometers while a map of your kitchen might use feet and inches.

If you wanted to make a map of your backyard or your schoolyard it might make sense to make your measurements in feet, yards, or meters. But it would be pretty difficult to use a yardstick to measure your whole yard. Or maybe you want to make a map but don't have a measuring tape at all. In this situation, you might want to try measuring with *paces*. *Paces* just means your steps.

To measure by pacing, try to take even steps as you walk from one object to another. *The number of steps you take is the number of paces and that can become your measurement.*

• • •

Choose an area that has some landmarks – it can be your backyard, the school playground, a park, or a section of your neighborhood. Once you have picked a space, try to imagine what it would look like from above.

Close your eyes and imagine that you are able to fly above us. When you look down, objects look a little different.

If you fly above a swimming pool, it might look like a blue circle or a blue rectangle.

If you fly above a house, it might look like a square or rectangle.



Right now imagine that you are floating right above us, and looking down. Now open your eyes.

4. Activity: Map Your Yard

Use the space below to draw your backyard (park, school, etc.) as if you were looking down from above. It is helpful to walk around and count bushes, notice placement of decks, sheds, and other permanent objects (playground equipment, etc.). You might use pacing to figure out how far apart things are.

If you are older than 5th grade, make a key using symbols on the maps instead of realistic drawings. Draw a simple compass rose to show north, south, east and west if you have one (most smartphones have one).

Make sure your map has the following:

1. Compass Rose
2. Key or Legend
3. Title
4. Scale

1. Was it difficult to imagine your yard from a bird's view?
2. Do you think your map will look like the Google Maps view? Compare if you can!
<http://www.google.com/maps>

5. Describe Your Map

EXPLAIN

Take a picture of your map to submit to your teacher and think about these questions:

What units of measurement did you choose? Why?

What was the hardest part of the map-making for you?

6. Activity- Finding North

EXTEND

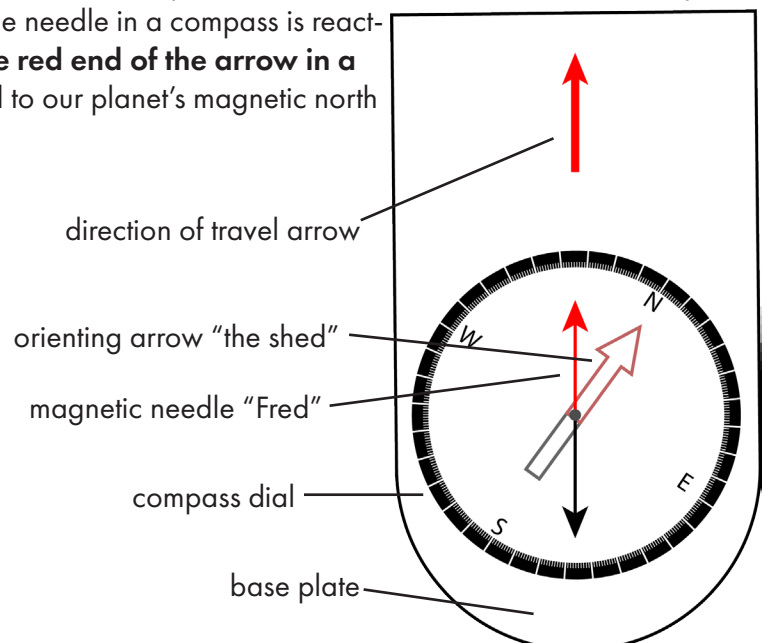
COMPASSES

Compasses are useful tools, especially when used together with maps, to keep track of your direction of travel.

A compass works because of magnetism. Have you ever played with two refrigerator magnets and found that sometimes they pull together and if you flip one around then they push each other apart instead? Our earth's north and south poles have magnetism just like the magnets on your fridge and the needle in a compass is reacting to the earth's magnetic field. What this means is that **the red end of the arrow in a compass is always going to point north** -- it is attracted to our planet's magnetic north pole.

The compass dial is divided into 360 tiny segments much like a clock is divided into sixty minutes. Each segment is called a *degree* and if you counted each little mark between north and east you would find they are 90 degrees apart.

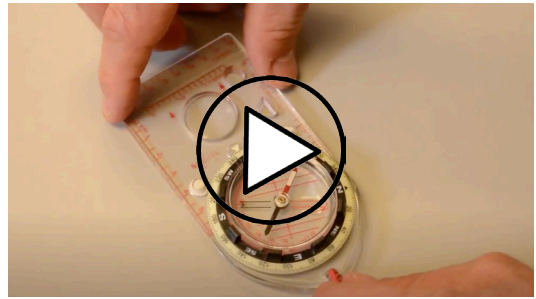
To use a compass, you would start by finding North. We know that the red arrow (we like to call this arrow FRED) is already pointing north, so to get aligned we will rotate the compass dial so that RED FRED is in his SHED. Can you find the area on the dial labeled "the Shed"?



Compass Video:

Learn how to put Fred in his Red Shed >>

<https://www.youtube.com/watch?v=oc50IFZ60fY>



If you have a compass you can always use the needle to find North. And of course, once you know which direction is North you can figure out all the other directions as well. But what if you don't have a compass? How else can you figure out which direction is which?

- 1) Use the landscape. If you know that the river is south of your town, then point towards the river and that's roughly south. That means the opposite direction is north. Major landmarks like rivers, lakes, mountains can really help you orient yourself.
- 2) Man made objects can be useful too. Highways often run generally east/west or north/south, for example.
- 3) The sun is a huge clue for orienting yourself. It rises in the east and sets in the west. In the winter though here in North America, it is also pretty far south so the actual spot of sunrise might be more like Southeast than just straight East.
- 4) What if it is a cloudy day? Or the middle of the day and the sun is high in the sky? If you are inside your house or out in the yard, think about where you like to go to find a nice sunny spot in the morning. This spot is probably on the east side of your house or yard.

Use one or more of these tricks to figure out which side of your house faces North.

7. Reflect

EVALUATE

In a very real way maps and navigation skills can help us get to where we want to go. When we take a step back we can apply these skills to other parts of our lives as well.

Think about what you want to do and where you want to go.

Set a personal goal and create a map of how you are going to get there. In this case a map might just mean a list of steps you need to take to accomplish your goal.

Take a picture and share with your teacher.

8. Extras

Book: **Julie of the Wolves**, by Jean Craighead George

In this book, a young Native American girl who grew up in northern Alaska is lost and alone on the arctic tundra and must use all that she has learned to survive. She pulls strongly from her people's traditions to figure out where she is and what direction she must travel to find other humans.