WONDERY KIDS

KIDS' TELESCOPE & ASTRONOMY KIT

NEXT LEVEL CHALLENGES!

THAMES & KOSMOS

WOW IN THE WORLD

NAME:

❶ SUPER MOON

You will need:
A clear night with a full or nearly-full moon
A piece of cardboard
A pen or marker

Here's how:

1. Observe the moon just after it rises, when it is low in the sky. Notice how big it looks.
2. Hold your piece of cardboard out at arms length in front of the moon, and mark the moon's diameter (from edge to edge at the widest point).
3. Wait a few hours for the moon to be higher in the sky, and observe it again. How big does it look now?
4. Repeat step 2. What do you notice?

What's happening?

When the moon is close to the horizon, it creates a type of optical illusion based on perspective. The moon is the same size, no matter where it is in the sky. However, your brain perceives the horizon as being much further away than the sky above you. Perspective makes objects that are further away look small and objects that are closer look big. Since the moon is the same size in both cases, your brain does a calculation like this:

>> Moon size + "far away" (at the horizon) = very large moon
>> Moon size + "close" (above you) = smaller moon

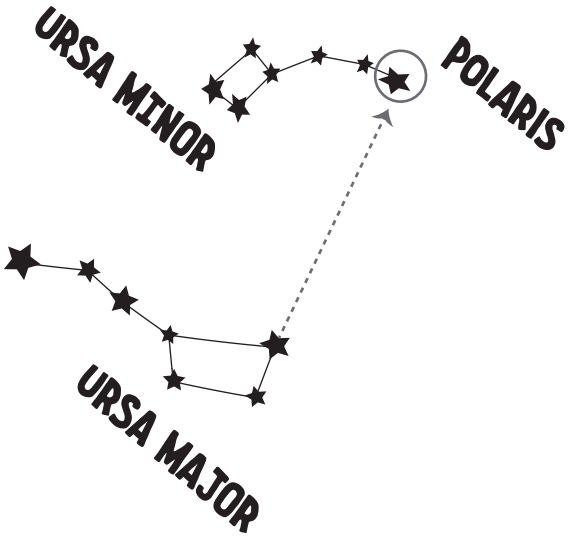
The moon stays the same size, but the context in which your brain is processing it changes.

❷ TERRESTRIAL SCAVENGER HUNT

Using your telescope to observe the night sky is great, but you can also use it during the day to explore the world around you. Take your telescope to a park or your own backyard and see how many of these things you can spot.
Remember: never look directly into the sun with your naked eye or through the telescope, and never leave the telescope lenses in direct sunlight.

What to find	What is it? And where and when did you see it?
Something yellow	
A furry animal	
A bird	
Two different types of tree	
Something red	
Some kind of food	
A flower	
Some kind of toy	

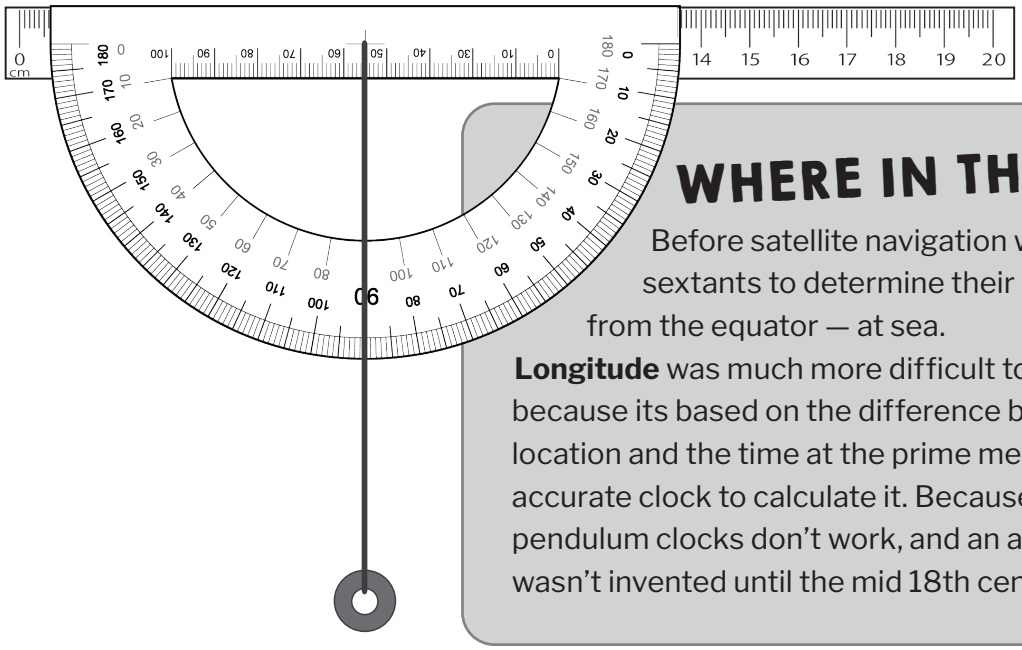
❸ DIY SEXTANT



You will need:
Star wheel
Protractor
Ruler
String
Tape
Washer or other small weight

Here's how:

1. Hold the protractor with the flat edge facing up, and tie or tape the string to the midpoint of the protractor, so that the end of the string hangs down over the rounded side.
2. Tie the washer to the other end of the string. Check to make sure that the string hangs down across the 90° mark when the flat edge is parallel to the ground. This string is called a plumb line.
3. Tape the protractor to a ruler close to one end so that the ruler is along the flat edge. This will be your sight.
4. Take your sextant outside and use your star wheel to locate Polaris — the North Star. If you are having some trouble, it's at the end of Ursa Minor's tail. You can also find the bright star at the corner of Ursa Major and trace a line over to Polaris.
5. Hold the short end of the ruler up to your eye and line up the other end with Polaris. Have a helper read the angle the plumb line shows on the protractor. This is your latitude! Look up the latitude on a map to see how well your sextant worked.



WHERE IN THE WORLD?

Before satellite navigation was invented, sailors used sextants to determine their **latitude** — their distance from the equator — at sea.

Longitude was much more difficult to calculate for a long time because its based on the difference between the time at your location and the time at the prime meridian — so it requires an accurate clock to calculate it. Because of the motion of a ship, pendulum clocks don't work, and an accurate ships' timepiece wasn't invented until the mid 18th century.