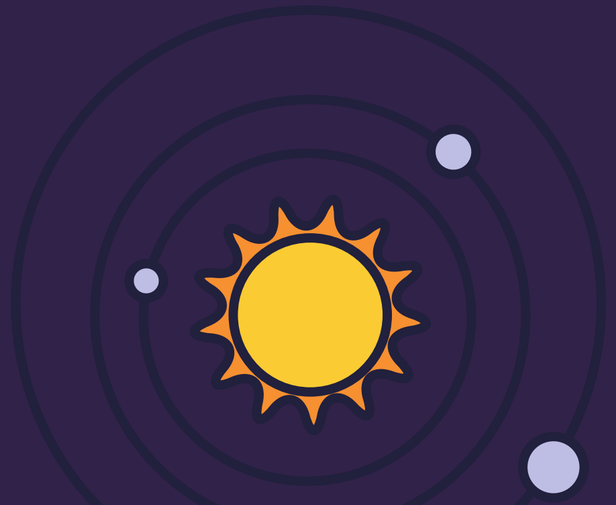
Project: Planetary Distances



Grade 5 | Topic 1 | Pick a Project

Pacing Plan

Day 1

Background research
Scientific Notation
Introduce Project

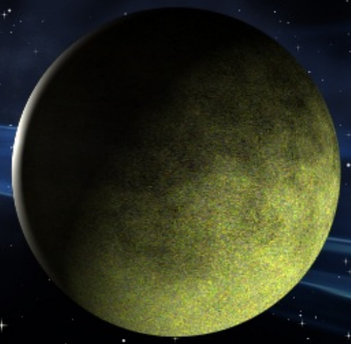
Day 2

Create your data table
Fill in planetary distances

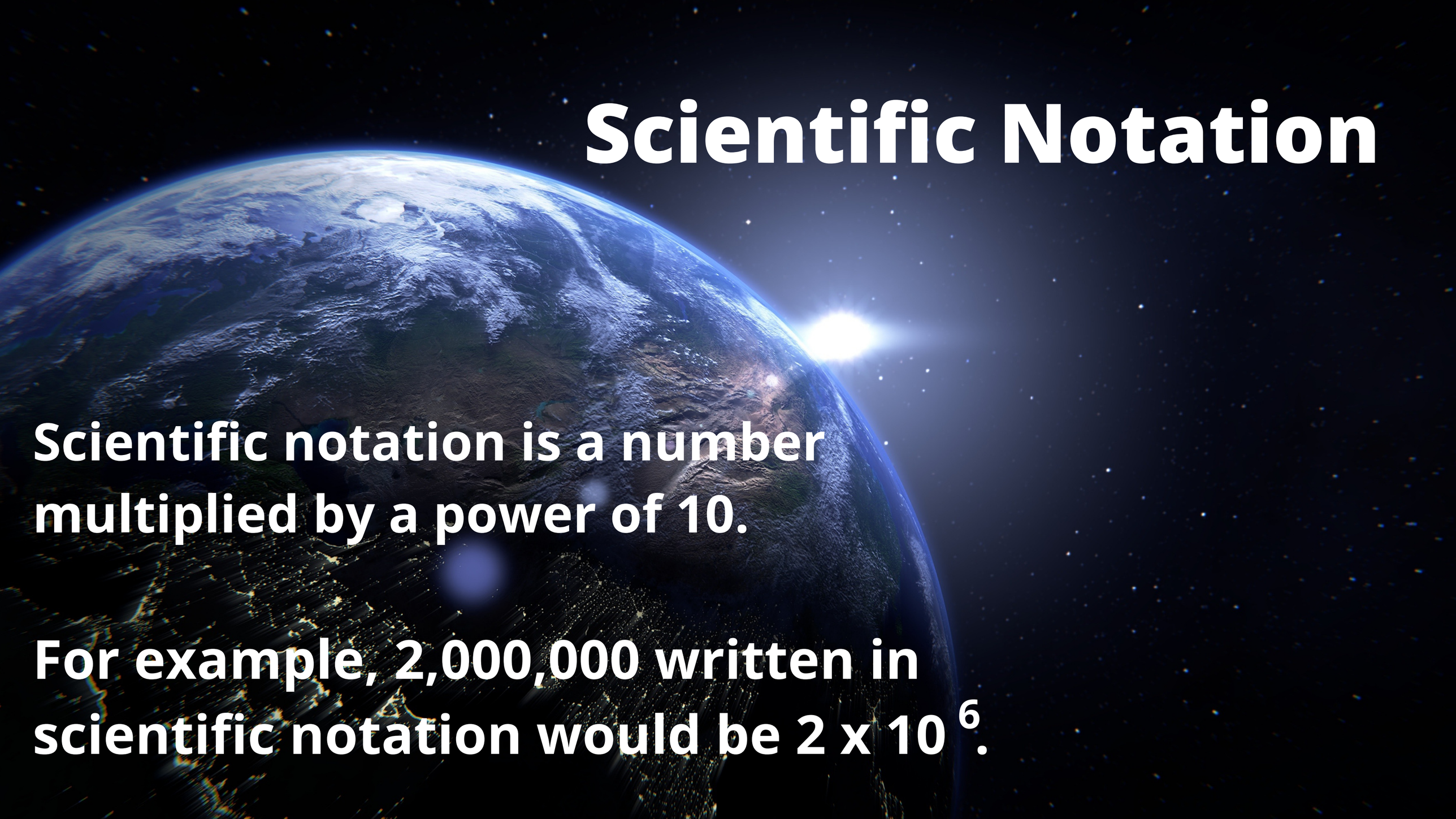
Day 3

Write each distance in scientific notation
Research other interesting measurements

Did you know?



Distances between the sun and the planets in our solar system range from millions to billions of kilometers. Because those distances are so great, scientists sometimes write them in **scientific notation.**



Scientific Notation

Scientific notation is a number multiplied by a power of 10.

For example, 2,000,000 written in scientific notation would be 2×10^{6}.

Your Project: Research Measurements in Our Solar System

- Use books or the internet to research the distance from the sun to each planet in our solar system.
- Create a chart to record each distance, in kilometers, in both standard notation and scientific notation.
- Also include other interesting measurements, such as the distance Mercury travels in one trip around the sun, the size of Jupiter's Great Red Spot, or the time it takes Neptune to revolve around the sun

Step 1

Create a chart to record each distance, in kilometers, in both standard notation and scientific notation.

Planet	Distance from the sun (km)	Distance in scientific notation	Other fun facts
Mercury			
Venus			
Earth			
Mars			
Jupiter			
Saturn			
Uranus			
Neptune			

Step 2

Use books or the internet, or this chart from NASA to research the distance from the sun to each planet in our solar system.

Record the distances in your table.

Diameter of planets and their distance from the Sun in kilometers (km):

Planet	Diameter (km)	Distance from Sun (km)
Sun	1,391,400	-
Mercury	4,879	57,900,000
Venus	12,104	108,200,000
Earth	12,756	149,600,000
Mars	6,792	227,900,000
Jupiter	142,984	778,600,000
Saturn	120,536	1,433,500,000
Uranus	51,118	2,872,500,000
Neptune	49,528	4,495,100,000

Step 3 Write each distance in scientific notation.

Planet	Distance from the sun (km)	Distance in scientific notation
Mercury	57,900,000	5.79×10^{7}

The decimal point will go after the digit in the number that is farthest to the left.

Count the number of digits after the digit farthest to the left. There are **seven** digits after the 5. So 57,900,000 = 5.79 x 10^{7}

Step 4

Write each distance in scientific notation.

Planet	Distance from the sun (km)	Distance in scientific notation
Mercury	57,900,000	5.79×10^{7}
Venus	108,200,000	$= 1.08 \times 10^{?}$
Earth	149,600,000	$= 1.496 \times 10^{?}$
Mars	227,900,000	
Jupiter	778,600,000	
Saturn	1,433,500,000	
Uranus	2,872,500,000	
Neptune	4,495,100,000	

Step 5

Use books or the internet to include other interesting measurements, such as the distance Mercury travels in one trip around the sun, the size of Jupiter's Great Red Spot, or the time it takes Neptune to revolve around the sun. Record the information in the last column of your table.