

# Activity 3: Modeling the Sun/Earth System

Time: 2 class periods (1 class period = 45 min)

Materials:

- Solar system model
- Sun poster (optional)
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### Activity Preparation:

Find a place in your classroom to display the model sun (poster or wooden). Assemble the planet models so that each is attached to the correct base.

### Activity Instructions:

1. Ask students to work with a partner to read pages 2-7 of the *Kiubuyat<sup>NS</sup> / Kiubiyaq<sup>NP</sup> Middle School Guide*, or work through the booklet as a group, asking students to take turns reading the sentences aloud. Discuss the content and check for comprehension. Ask students: Why is it important to learn about topics from more than one perspective, such as a cultural perspective and a physical science perspective?
2. Show students the model sun. Explain that this is a model sun or (*siqieiq<sup>NS</sup>/mazaq<sup>NP</sup>*). Ask students to practice the appropriate Iñupiaq word for sun. Ask: If the sun were this size, what size do you think Earth (*Nunaqpak*) would be? Ask them to draw their predictions on the whiteboard or chalkboard.
3. Explain that this model sun is based on a 2 billion to 1 scale. For every 2 billion meters a planetary body has in actuality, 1 meter was used. As a class, perform the calculations to determine the diameter of the model Earth ( $12,756 \text{ km} \div 2,000,000,000 \times 100,000 \text{ cm/km} = .6 \text{ cm}$ )
- 4.





Name: \_\_\_\_\_

# Modeling the sun/Earth System<sup>NP</sup>

Name: \_\_\_\_\_

Follow the steps below to create a scale model of objects in our solar system. This will help you to understand the vast distance between the sun and Earth.

	Actual Diameter (NASA data)	Model Diameter (Scale: 2 billion to 1)
Sun (mazaq)	1,391,016 km	69.5 cm
Earth (Nunaqpak)	12,756 km	0.6 cm

Predict:

How far apart do you think you will have to place the model sun and Earth to create a scale model?

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Make your model:

1. Earth is 149,600,000 km from the sun. Divide this distance by 2 billion to calculate how far apart to place the model sun and Earth to create a scale model.

$$149,600,000 \text{ km} \div 2,000,000,000 = \text{_____} \text{ km}$$

2. There are 1000 meters in a kilometer. Multiply your answer by 1000 m/km to find out how far apart, in meters, to place your sun and Earth models.

$$\text{_____} \text{ km} \times 1000 \text{ m/km} = \text{_____} \text{ m}$$

3. Take the sun and Earth models outside. Use a measuring tape and work with your classmates to place the sun and Earth models the correct distance apart.

Reflect: How accurate was your prediction?

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Extend: