Activity 3: Modeling the Sun/Earth System

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

Materials:

- Solar system model
- Sun poster (optional)
- R

Activity Preparation:

Find a place in your classroom to display the model sun (poster or wooden). Assemble the planet models s
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 [NS] / Kiubiyaq [NP] 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 [NS]/mazaq [NP]). 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 km ÷ 2,000,000,000 x 100,000 cm/km = .6 cm)

4.

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Name:_____

Modeling the sun/Earth System[NP]

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?

_____

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 km ÷ 2,000,000,000 = _____ 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.

   _____ km x 1000 m/km = _____ 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?

_____

Extend: