



Coherence and Alignment Among Science Curriculum, Instruction, and Assessment (CASCIA) Project

Grade 8 Unit 2: Gravity and Motion of Objects in the Solar System

Task 1 Prompt 3 Parts A & B Scored and Annotated Anchor Set

March 2025

Grade 8 Unit 2: Gravity and Motion of Objects in the Solar System, Task 1 Prompt 3 Parts A & B Scored and Annotated Anchor Set was developed with funding from the U.S. Department of Education under the Competitive Grants for State Assessments Program CFDA 84.368A. The contents of this paper do not represent the policy of the U.S. Department of Education, and no assumption of endorsement by the Federal government should be made.

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CASCIA Grade 8 EOU Assessment 2 Task 1: Orbiting Around

Prompt 3 Parts A & B Score Point 3

Prompt 3 Parts A & B Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 3 Part A. & Part B.	No aspect of the response is correct	Response includes the following aspects: Part A - Distortions in scale - Inaccurate labels Part B - Inaccurate or missing description of a limitation based on the scale constraints	Response includes the following aspects: Part A - Accurate drawing of distances but is not correctly labeled OR - Correctly labeled but contains distortions in the scale Part B - Identifies at least one limitation of objects with that wide a difference in size	Response includes the following aspects: Part A - Accurate drawing of distances using the scale indicated in the key - Correctly labels the model using the symbols indicated in the key Part B - Identifies at least one limitation of objects with that wide of a difference in size (e.g., either that the NEO (or moon) would be too small to be seen, or that the model would be too large to fit in the provided space)	NA

Score Point 3 (3/3 aspects met)

- Part A
 - Accurately draws distances using the scale of $\frac{1}{2}$ in = 1LD.
 - Correctly labels the model with the symbols in their key.
- Part B
 - Identifies at least one limitation of using the scale of Part A for both data sets (i.e., The student identifies limitations related to the range of the distances and diameters.).

Part A.
Use a ruler to draw and label a scale model in Figure 2 that represents how close the NEO was to Earth. Use the scale of 1 LD equals one-half inch as shown in the key. In your model, be sure to show:

- Earth
- the moon
- the NEO

Be sure to complete the key.

Figure 2. Scale Model of Earth, Moon, NEO System

Part B.
Consider if the same scale model you used in Figure 2, which compares the distance between the objects in the Earth, moon, and NEO system, also needs to represent the diameter of each object drawn to scale. Table 2 shows the diameters of the Earth, moon, and NEO.

Table 2. Diameters of the Earth, Moon, and NEO

Object	Diameter (km)
Earth	12,742.00
Moon	3,474.00
NEO	0.02

Why would it be challenging to represent the diameter AND the distances of the three objects accurately and to scale when looking at Figure 2? Remember, the distance between the moon and Earth is approximately 385,000 kilometers (km) or 1 LD.

It would be difficult because the distances and diameters range from super big, like 385,000 km, to something so small, like 0.02 km.

CASCIA Grade 8 EOU Assessment 2 Task 1: Orbiting Around

Prompt 3 Parts A & B Score Point 2

Prompt 3 Parts A & B Rubric

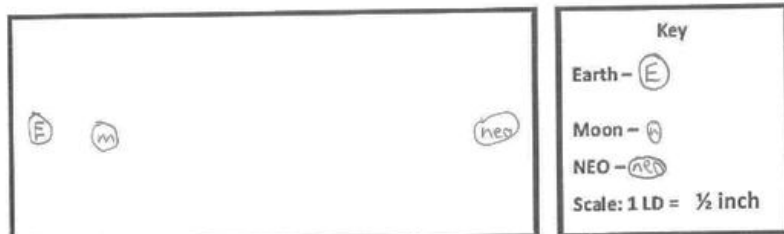
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Score Point 2 (2/3 aspects met)

- Part A
 - Accurately draws distances using the scale of $\frac{1}{2}$ in = 1LD.
 - Correctly labels the model with the symbols in their key.
- Part B
 - Does **NOT** identify at least one limitation of using the scale of Part A for both data sets.

NOTE: The student response does not compare the two scales.

Figure 2. Scale Model of Earth, Moon, NEO System



Key

Earth - E

Moon - M

NEO - NEO

Scale: 1 LD = $\frac{1}{2}$ inch

Part B.

Consider if the same scale model you used in Figure 2, which compares the distance between the objects in the Earth, moon, and NEO system, also needs to represent the diameter of each object drawn to scale. Table 2 shows the diameters of the Earth, moon, and NEO.

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we cant ever make things exactly exact

CASCIA Grade 8 EOU Assessment 2 Task 1: Orbiting Around

Prompt 3 Parts A & B Score Point 1

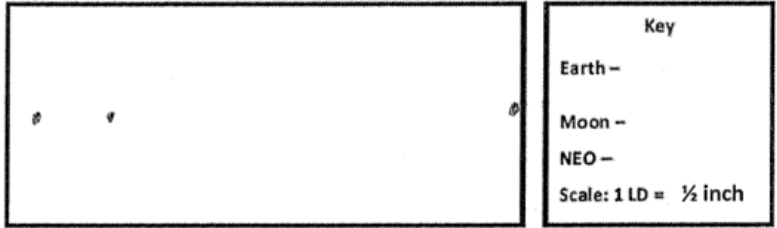
Prompt 3 Parts A & B Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
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Score Point 1 (1/3 aspects met)

- Part A
 - Accurately draws distances using the scale of $\frac{1}{2}$ in = 1LD.
 - Does **NOT** correctly label the model with the symbols in their key.
- Part B
 - Does **NOT** identify at least one limitation of using the scale of Part A for both data sets.

Figure 2. Scale Model of Earth, Moon, NEO System



Key

Earth – 

Moon – 

NEO – 

Scale: 1 LD = $\frac{1}{2}$ inch

Part B.

Consider if the same scale model you used in **Figure 2**, which compares the distance between the objects in the Earth, moon, and NEO system, also needs to represent the diameter of each object drawn to scale. Table 2 shows the diameters of the Earth, moon, and NEO.

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Why would it be challenging to represent the **diameter AND the distances** of the three objects accurately and to scale when looking at **Figure 2**? Remember, the distance between the moon and Earth is approximately 385,000 kilometers (km) or 1 LD.

because we don't have a way to measure it physically

CASCIA Grade 8 EOU Assessment 2 Task 1: Orbiting Around

Prompt 3 Parts A & B Score Point 0

Prompt 3 Parts A & B Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 3 Part A. & Part B.	No aspect of the response is correct	Response includes the following aspects: Part A - Distortions in scale - Inaccurate labels Part B - Inaccurate or missing description of a limitation based on the scale constraints	Response includes the following aspects: Part A - Accurate drawing of distances but is not correctly labeled OR - Correctly labeled but contains distortions in the scale Part B - Identifies at least one limitation of objects with that wide a difference in size	Response includes the following aspects: Part A - Accurate drawing of distances using the scale indicated in the key - Correctly labels the model using the symbols indicated in the key Part B - Identifies at least one limitation of objects with that wide of a difference in size (e.g., either that the NEO (or moon) would be too small to be seen, or that the model would be too large to fit in the provided space)	NA

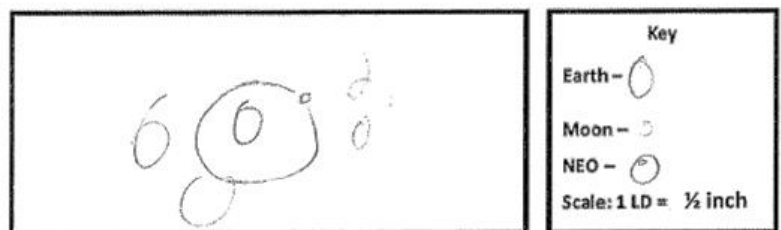
Score Point 0 (0/3 aspects met)

- Part A
 - Does **NOT** accurately draw distances using the scale of $\frac{1}{2}$ in = 1LD.
 - Does **NOT** correctly label the model with the symbols in their key.

NOTE: The circles in the model are not clearly delineated.

- Part B
 - Does **NOT** identify at least one limitation of using the scale of Part A for both data sets.

Figure 2. Scale Model of Earth, Moon, NEO System



Part B.

Consider if the same scale model you used in Figure 2, which compares the distance between the objects in the Earth, moon, and NEO system, also needs to represent the diameter of each object drawn to scale. Table 2 shows the diameters of the Earth, moon, and NEO.

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cause it has limited space