



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

Grade 8 Unit 4: Providing Solutions to Problems Using Simple Wave Properties

Task 3 Prompt 2 Parts A & B Scored and Annotated Anchor Set

May 2025

Grade 8 Unit 4: Providing Solutions to Problems Using Simple Wave Properties, Task 3 Prompt 2 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 4 Task 3: Sounds of Silence

Prompt 2 Parts A & B Score Point 2

Prompt 2 Parts A & B Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 2 Part A. & Part B.	No aspect of the response is correct	Response includes one (1) of the two (2) aspects	Response includes the following aspects: Part A - Three correct data point approximations for three (3) locations (i.e., Location B: 14, 15, 16, 17, or 18; Location D: 7 or 8; Location E: 79, 80, 81, 82, or 83) Part B - Describes the relationship between amplitude and energy	NA	NA

Score Point 2 (2/2 aspects met)

- Part A
 - Includes three correct data point approximations for three (3) locations (e.g., Location B, 16; Location D, 8; Location E, 81).
- Part B
 - Describes the relationship between amplitude and energy (i.e., the answer does not have to note this as exponential but does describe the direct or proportional relationship between energy and amplitude).

Table 1. Amount of Energy Transmitted vs. the Amplitude

Location	Amplitude of Sound Wave (in mm)	Amount of Energy Transmitted (in energy units)
A	2	4
B	4	<u>16</u>
C	5	25
D	<u>8</u>	64
E	9	<u>81</u>
F	10	100

Part B.

Describe the relationship between the amount of energy and the amplitude of the sound produced by plucking the guitar string using information from Graph 2 and Table 1.

The amount of energy is found by squaring the amplitude of the sound wave on the table. On the graph the line goes up at an exponential rate. As the amplitude goes up, the energy goes up as well.

CASCIA Grade 8 EOU Assessment 4 Task 3: Sounds of Silence

Prompt 2 Parts A & B Score Point 1

Prompt 2 Parts A & B Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 2 Part A. & Part B.	No aspect of the response is correct	Response includes one (1) of the two (2) aspects	Response includes the following aspects: Part A - Three correct data point approximations for three (3) locations (i.e., Location B: 14, 15, 16, 17, or 18; Location D: 7 or 8; Location E: 79, 80, 81, 82, or 83) Part B - Describes the relationship between amplitude and energy	NA	NA

Score Point 1 (1/2 aspects met)

- Part A
 - Includes three correct data point approximations for three (3) locations.
- Part B
 - Does **NOT** describe the relationship between amplitude and energy.

Table 1. Amount of Energy Transmitted vs. the Amplitude

Location	Amplitude of Sound Wave (in mm)	Amount of Energy Transmitted (in energy units)
A	2	4
B	4	<u>16</u>
C	5	25
D	<u>8</u>	64
E	9	<u>79</u>
F	10	100

Part B.

Describe the relationship between the amount of energy and the amplitude of the sound produced by plucking the guitar string using information from **Graph 2** and **Table 1**.

There are 2 waves from plucking the guitar and table 1 shows the amplitude and energy from the wave

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Prompt 2 Parts A & B Score Point 0

Prompt 2 Parts A & B Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 2 Part A. & Part B.	No aspect of the response is correct	Response includes one (1) of the two (2) aspects	Response includes the following aspects: Part A - Three correct data point approximations for three (3) locations (i.e., Location B: 14, 15, 16, 17, or 18; Location D: 7 or 8; Location E: 79, 80, 81, 82, or 83) Part B - Describes the relationship between amplitude and energy	NA	NA

Score Point 0 (0/2 aspects met)

- Part A
 - Does **NOT** include three correct data point approximations for three (3) locations (e.g., Location B, 16; Location D, 8; Location E, 81).
- Part B
 - Does **NOT** describe the relationship between amplitude and energy.

Table 1. Amount of Energy Transmitted vs. the Amplitude

Location	Amplitude of Sound Wave (in mm)	Amount of Energy Transmitted (in energy units)
A	2	4
B	4	<u>15</u>
C	5	25
D	<u>7.5</u>	64
E	9	<u>5</u>
F	10	100

Part B.

Describe the relationship between the amount of energy and the amplitude of the sound produced by plucking the guitar string using information from Graph 2 and Table 1.

They are similar because they are all almost at the same rate or almost the same.