



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

Grade 8 Unit 1: Forces and Energy

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

August 2024

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CASCIA Grade 8 EOU Assessment 1 Task 3: Roller Coaster Thrills

Prompt 1 Parts A & B Score Point 2

Prompt 1 Parts A & B Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 1 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 - Identifies System 2 has more gravitational potential energy AND Part B - Explains that an increase in the mass AND/OR height of the roller coaster in either system will result in an increase in potential energy	NA	NA

Score Point 2 (2/2 aspects met)

- Part A
 - Identifies that System 2 has more gravitational potential energy.
- Part B
 - Explains that an increase in the mass **AND/OR** height of the roller coaster in either system will result in an increase in potential energy.

Which sentence compares the gravitational potential energy in the two systems? (Circle one.)

- A. System 1 has more gravitational potential energy.
- B. System 2 has more gravitational potential energy.
- C. Systems 1 and 2 have equal amounts of gravitational potential energy.

Part B.

Explain how to increase the potential energy of the roller coaster in either system. Use the gravitational relationship between the roller coaster and the ground to support your answer.

to increase the potential energy you need to
increase the mass and increase the height. This
means because the system 2 has more mass
it will go faster

CASCIA Grade 8 EOU Assessment 1 Task 3: Roller Coaster Thrills

Prompt 1 Parts A & B Score Point 1

Prompt 1 Parts A & B Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 1 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 - Identifies System 2 has more gravitational potential energy AND Part B - Explains that an increase in the mass AND/OR height of the roller coaster in either system will result in an increase in potential energy	NA	NA

Score Point 1 (1/2 aspects met)

- Part A
 - Identifies that System 2 has more gravitational potential energy.
- Part B
 - Does **NOT** explain that an increase in the mass **AND/OR** height of the roller coaster in either system will result in an increase in potential energy (i.e., The student mistakenly identifies System 1 as having more gravitational potential energy.).

Which sentence compares the gravitational potential energy in the two systems? (Circle one.)

- A. System 1 has more gravitational potential energy.
☒ B. System 2 has more gravitational potential energy.
 C. Systems 1 and 2 have equal amounts of gravitational potential energy.

Part B.

Explain how to increase the potential energy of the roller coaster in either system. Use the gravitational relationship between the roller coaster and the ground to support your answer.

System 1 has more gravitational potential because
it has less mass than system 2 so it
will go faster

CASCIA Grade 8 EOU Assessment 1 Task 3: Roller Coaster Thrills

Prompt 1 Parts A & B Score Point 0

Prompt 1 Parts A & B Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 1 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 - Identifies System 2 has more gravitational potential energy AND Part B - Explains that an increase in the mass AND/OR height of the roller coaster in either system will result in an increase in potential energy	NA	NA

Score Point 0 (0/2 aspects met)

- Part A
 - Does **NOT** identify that System 2 has more gravitational potential energy.
- Part B
 - Does **NOT** explain that an increase in the mass **AND/OR** height of the roller coaster in either system will result in an increase in potential energy (i.e., The student seems to confuse gravitational “force” with gravitational potential energy.).

Which sentence compares the gravitational potential energy in the two systems? (Circle one.)

- A. System 1 has more gravitational potential energy.
 B. System 2 has more gravitational potential energy.
 Ⓒ Systems 1 and 2 have equal amounts of gravitational potential energy.

Part B.

Explain how to increase the potential energy of the roller coaster in either system. Use the gravitational relationship between the roller coaster and the ground to support your answer.

I think the more mass the coaster has the harder it will be to go up the ramp but I don't think it should matter much because with the same force it goes down with like the same force it will come up with.