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

Grade 8 Unit 1: Forces and Energy

Task 3 Prompt 1 Part C Scored and Annotated Anchor Set

August 2024

Grade 8 Unit 1: Forces and Energy, Task 3 Prompt 1 Part C 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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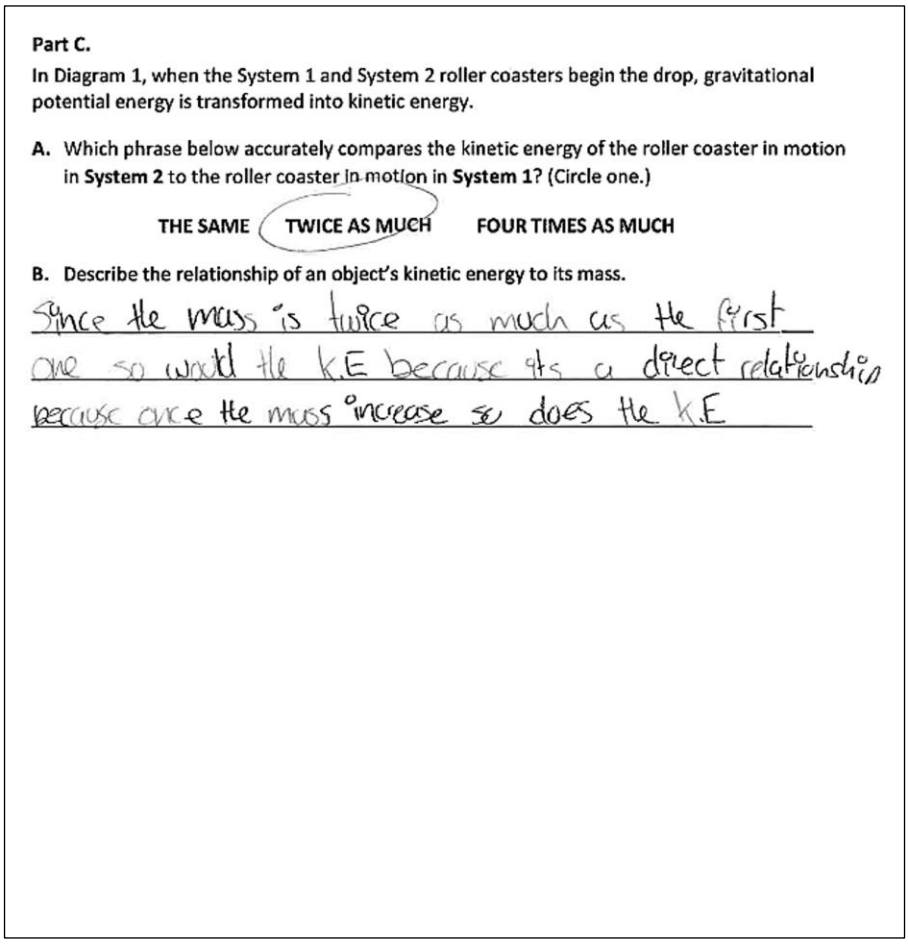
CASCIA Grade 8 EOU Assessment 1 Task 3: Roller Coaster Thrills
Prompt 1 Part C Score Point 2

Prompt 1 Part C Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 1 Part C.	No aspect of the response is correct	Response includes **one (1)** of the **two (2)** aspects	Response includes the following aspects: • Identifies System 2 has twice the kinetic energy as System 1 • Explains that as mass doubles KE doubles **OR** there is a linear/direct relationship between KE and mass	NA	NA

Score Point 2 (2/2 aspects met)

- Part C
  - Identifies that System 2 has "TWICE AS MUCH" kinetic energy as System 1.
  - Explains that as mass doubles, KE doubles **OR** that there is a linear/direct relationship between KE and mass (i.e., The student states that since mass is twice as much ". . . so would the KE because it's a direct relationship . . .").



Part C.

In Diagram 1, when the System 1 and System 2 roller coasters begin the drop, gravitational potential energy is transformed into kinetic energy.

A. Which phrase below accurately compares the kinetic energy of the roller coaster in motion in **System 2** to the roller coaster in motion in **System 1**? (Circle one.)

THE SAME TWICE AS MUCH FOUR TIMES AS MUCH

B. Describe the relationship of an object's kinetic energy to its mass.

Since the mass is twice as much as the first one so would the K.E because its a direct relationship because once the mass increase so does the K.E

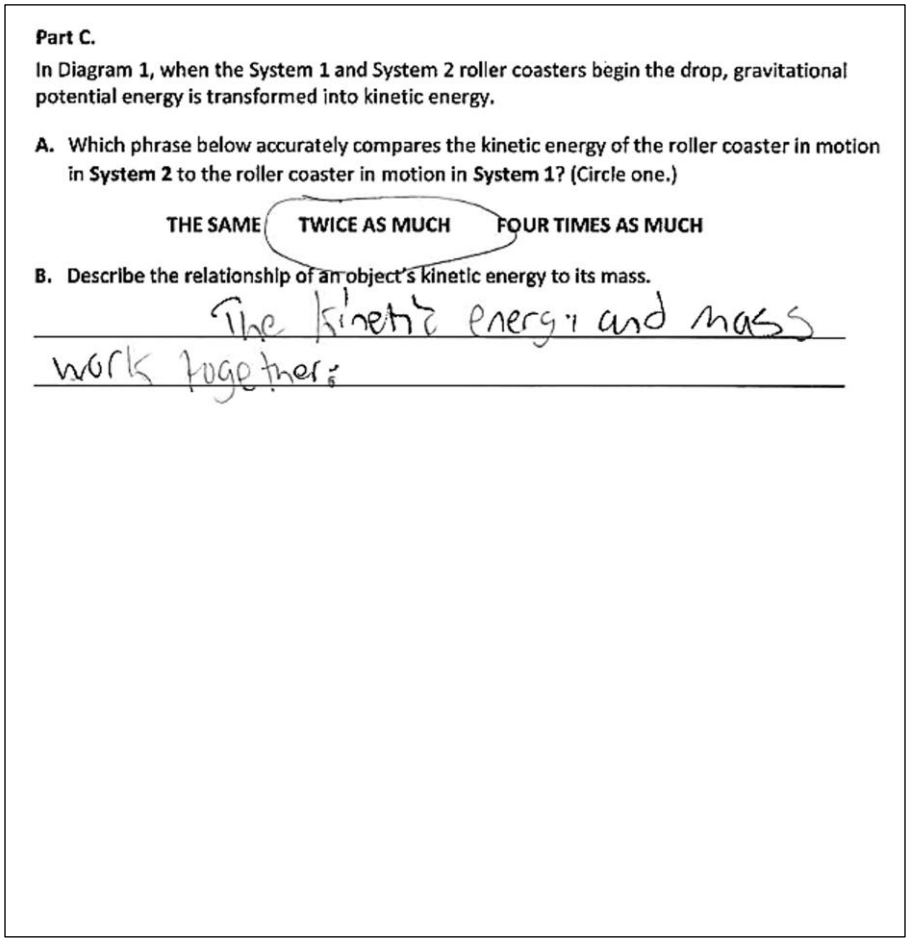
CASCIA Grade 8 EOU Assessment 1 Task 3: Roller Coaster Thrills
Prompt 1 Part C Score Point 1

Prompt 1 Part C Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 1 Part C.	No aspect of the response is correct	Response includes **one (1)** of the **two (2)** aspects	Response includes the following aspects: • Identifies System 2 has twice the kinetic energy as System 1 • Explains that as mass doubles KE doubles **OR** there is a linear/direct relationship between KE and mass	NA	NA

Score Point 1 (1/2 aspects met)

- Part C
  - Identifies that System 2 has "TWICE AS MUCH" kinetic energy as System 1.
  - Does **NOT** explain that as mass doubles, KE doubles **OR** that there is a linear/direct relationship between KE and mass (i.e., The student recognizes that there is a relationship between mass and kinetic energy but does not explain the relationship.).



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A. Which phrase below accurately compares the kinetic energy of the roller coaster in motion in **System 2** to the roller coaster in motion in **System 1**? (Circle one.)

THE SAME TWICE AS MUCH FOUR TIMES AS MUCH

B. Describe the relationship of an object's kinetic energy to its mass.

The kinetic energy and mass work together.

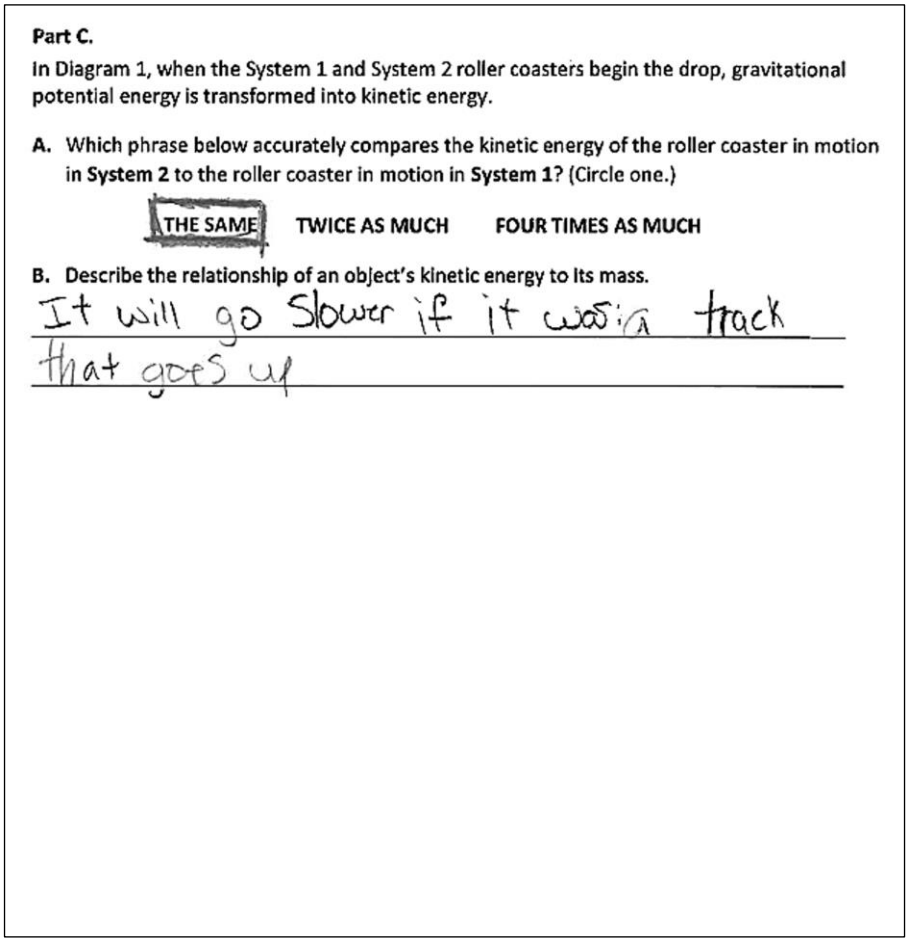
CASCIA Grade 8 EOU Assessment 1 Task 3: Roller Coaster Thrills
Prompt 1 Part C Score Point 0

Prompt 1 Part C Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 1 Part C.	No aspect of the response is correct	Response includes **one (1)** of the **two (2)** aspects	Response includes the following aspects: • Identifies System 2 has twice the kinetic energy as System 1 • Explains that as mass doubles KE doubles **OR** there is a linear/direct relationship between KE and mass	NA	NA

Score Point 0 (0/2 aspects met)

- Part C
  - Does **NOT** identify that System 2 has "TWICE AS MUCH" kinetic energy as System 1.
  - Does **NOT** explain that as mass doubles, KE doubles **OR** that there is a linear/direct relationship between KE and mass (i.e., The student instead relates speed to the incline of a track.).



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THE SAME TWICE AS MUCH FOUR TIMES AS MUCH

B. Describe the relationship of an object's kinetic energy to its mass.

It will go slower if it was a track that goes up