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

Grade 8 Unit 1: Forces and Energy

Task 2 Prompt 1 Scored and Annotated Anchor Set

July 2024

Grade 8 Unit 1: Forces and Energy, Task 2 Prompt 1 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.

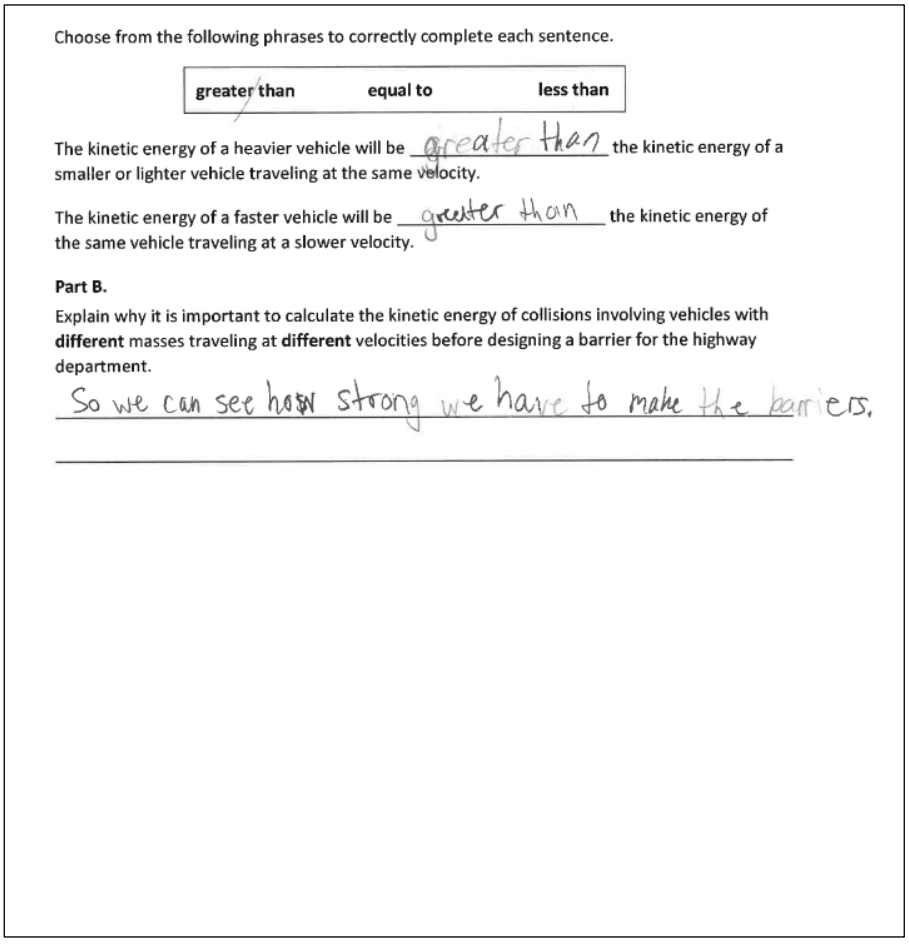
CASCIA Grade 8 EOU Assessment 1 Task 2: Barriers on the Highway
Prompt 1 Score Point 2

Prompt 1 Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 1	No aspect of the response is correct	Response includes **one (1)** of the **two (2)** aspects	Response includes the following aspects: **Part A** • Selects greater than for both statements **Part B** • Support for collecting different values of velocities and masses of vehicles	NA	NA

Score Point 2 (2/2 aspects met)

- Part A
  - Selects "greater than" for both statements.
- Part B
  - Supports that collecting different values of velocities and masses of vehicles is necessary to determine how strong the barrier needs to be (i.e., The student's answer states that it is important to know how strong to make the barrier.)



Choose from the following phrases to correctly complete each sentence.

greater than	equal to	less than

The kinetic energy of a heavier vehicle will be greater than the kinetic energy of a smaller or lighter vehicle traveling at the same velocity.

The kinetic energy of a faster vehicle will be greater than the kinetic energy of the same vehicle traveling at a slower velocity.

Part B.

Explain why it is important to calculate the kinetic energy of collisions involving vehicles with **different** masses traveling at **different** velocities before designing a barrier for the highway department.

So we can see how strong we have to make the barriers.

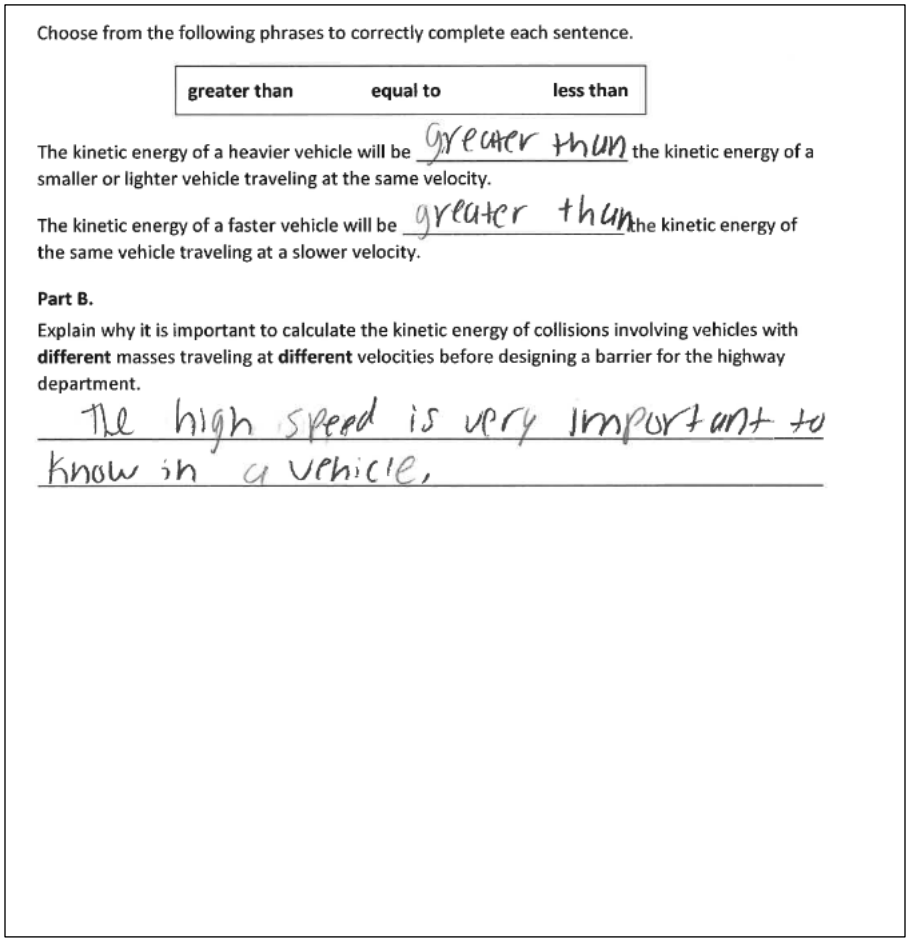
CASCIA Grade 8 EOU Assessment 1 Task 2: Barriers on the Highway
Prompt 1 Score Point 1

Prompt 1 Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 1	No aspect of the response is correct	Response includes **one (1)** of the **two (2)** aspects	Response includes the following aspects: **Part A** • Selects greater than for both statements **Part B** • Support for collecting different values of velocities and masses of vehicles	NA	NA

Score Point 1 (1/2 aspects met)

- Part A
  - Selects "greater than" for both statements.
- Part B
  - Does **NOT** support that collecting different values of velocities and masses of vehicles is necessary to determine how strong the barrier needs to be.



Choose from the following phrases to correctly complete each sentence.

greater than	equal to	less than

The kinetic energy of a heavier vehicle will be greater than the kinetic energy of a smaller or lighter vehicle traveling at the same velocity.

The kinetic energy of a faster vehicle will be greater than the kinetic energy of the same vehicle traveling at a slower velocity.

Part B.

Explain why it is important to calculate the kinetic energy of collisions involving vehicles with **different** masses traveling at **different** velocities before designing a barrier for the highway department.

The high speed is very important to know in a vehicle.

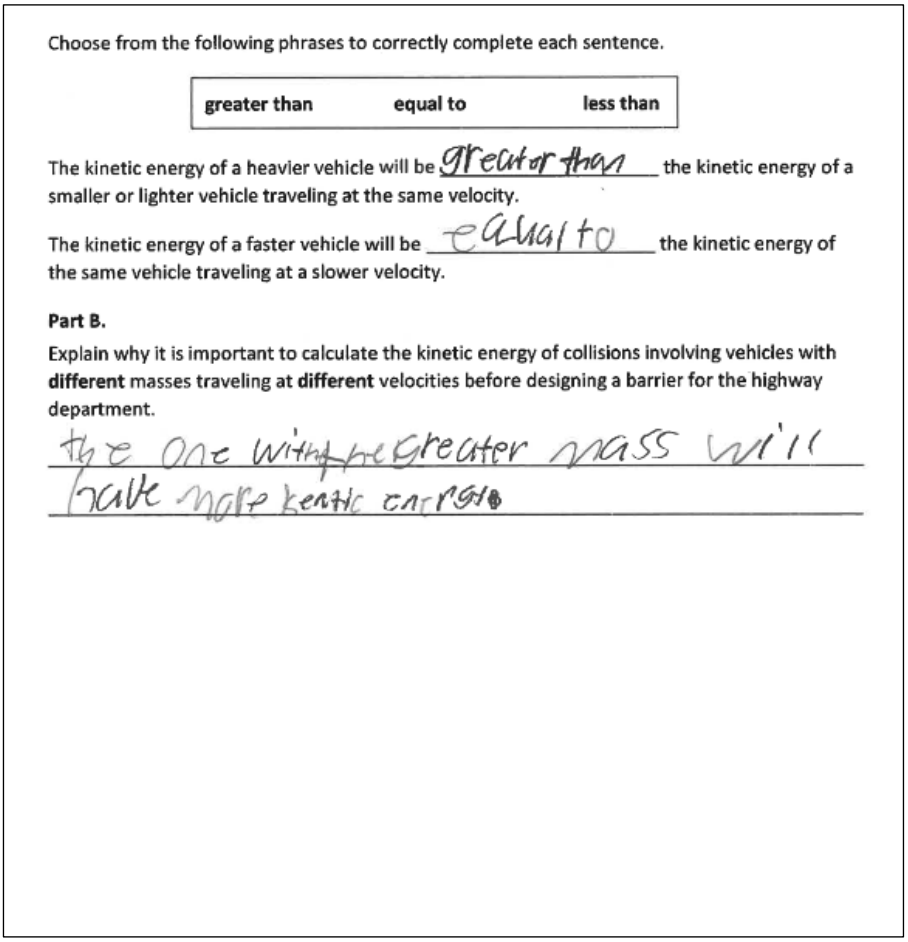
CASCIA Grade 8 EOU Assessment 1 Task 2: Barriers on the Highway
Prompt 1 Score Point 0

Prompt 1 Rubric

Prompt	Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Prompt 1	No aspect of the response is correct	Response includes **one (1)** of the **two (2)** aspects	Response includes the following aspects: **Part A** • Selects greater than for both statements **Part B** • Support for collecting different values of velocities and masses of vehicles	NA	NA

Score Point 0 (0/2 aspects met)

- Part A
  - Does **NOT** select "greater than" for both statements.
- Part B
  - Does **NOT** support collecting values of velocity and mass of vehicles for the strength of the barrier (i.e., While the student is correct, the student response does not relate KE values to the strength of the wall.).



Choose from the following phrases to correctly complete each sentence.

greater than	equal to	less than

The kinetic energy of a heavier vehicle will be greater than the kinetic energy of a smaller or lighter vehicle traveling at the same velocity.

The kinetic energy of a faster vehicle will be equal to the kinetic energy of the same vehicle traveling at a slower velocity.

Part B.

Explain why it is important to calculate the kinetic energy of collisions involving vehicles with **different** masses traveling at **different** velocities before designing a barrier for the highway department.

the one with the greater mass will
have more kentic energy