Grade 8
Embedded Performance Task
“Kinetic Energy”

California Alternate Assessment (CAA) for Science
2018 Sample Task
What Is an Embedded Performance Task?

Embedded performance tasks (PTs) are activities assessing the California Next Generation Science Standards (CA NGSS) for students eligible to take an alternate assessment for CAASPP. The CA NGSS are accessed through Core Content Connectors. The results of the PT are intended to provide information about the student’s degree of mastery of the Focal Knowledge, Skills, and Abilities being assessed and to identify where additional instruction is needed.

What Information Is Included with the Embedded Performance Task?

Each PT includes the following:

- Task Standard Table
- Task Materials List
- Student Response Check
- Activities
- Student Survey (questions answered by the student and entered by the test examiner)
- Student Engagement Survey (completed by test examiner after testing)
- Answer Recording Document
- Related Graphics and Tables

When Do I Administer the Embedded Performance Task?

The embedded PTs are designed to be administered to students following the normal course of instruction related to the Connector being assessed. The Connector being assessed can be found on the Content of Instruction page. The test examiner (TE) should administer the embedded PT immediately after the student has received instruction aligned to the Connector.

How Do I Administer the Embedded Performance Task?

1. Decide on an administration date that falls shortly after the normal course of instruction.

2. Review the activities associated with the embedded PT. Based on this review of the task activities, including needed materials, activity setup, and activity processes, determine if the Exemplar Activity will be presented or if an Individualized Activity will be presented.

   - If an Individualized Activity will be presented, the test examiner also should individualize and document designated activity directions where indicated.

   - If a task contains an activity that is not easily repeatable in multiple one-on-one administrations, a test examiner may present that activity in a group setting or use a video of that activity to present to students. The video can then be used in the one-on-one administration of the performance task.
G8 Embedded PT – Kinetic Energy
Administering this Performance Task

- Each activity has Preparation and Administration instructions.

3. Gather and/or print necessary activity materials.

4. Print an Answer Recording Document for each student to whom the task will be administered. You will use this document later to enter results in the online Data Entry Interface (DEI).

5. Complete the Preparation Instructions.

6. Administer the activity according to the Administration Instructions.

- Statements for the test examiner to say are marked: Say.
- Actions for the test examiner to do are marked: Do.

How Do I Record the Results of the Embedded Performance Task?

Test examiners will record task administration data for each student on the task Answer Recording Documents. As the task is administered to the student, information to be placed on the answer recording document is marked by a shaded diamond. The number in the shaded diamond matches the number on the Answer Recording Document.

After the embedded PT is administered, the test examiner should save the Answer Recording Document in a secure location. At a designated time, the test examiner or CAASPP coordinator will input embedded PT results into the DEI. The DEI can be found at http://www.caaspp.org/dei/. Instructions for using the DEI and other CAA resources can be found at http://www.caaspp.org/administration/about/caa/.

NOTE: Use the DEI with the operational CAA for Science only. It is not necessary to enter results for sample embedded performance tasks.
### Overall Content of Instruction

<table>
<thead>
<tr>
<th>Performance Expectation</th>
<th>How mastery is demonstrated:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS-PS3-1</td>
<td></td>
</tr>
<tr>
<td>Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.</td>
<td></td>
</tr>
</tbody>
</table>

### Connector

- Describe the relationships of kinetic energy to the mass of an object and to the speed of an object by interpreting graphical displays of data.

### Essential Understanding

- Identify that moving objects of different masses (e.g., balls) can have different energy.

### Focal Knowledge, Skills, and Abilities

<table>
<thead>
<tr>
<th>Ability to describe the relationships of kinetic energy to the weight of an object and to the speed of an object by interpreting graphical displays of data. (FKSA 1)</th>
<th>How mastery is demonstrated:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observe and recognize the relationships of kinetic energy to the weight of an object and interpret graphical displays. Observe and recognize the relationships of kinetic energy to the speed of an object and interpret graphical displays.</td>
<td></td>
</tr>
</tbody>
</table>

### Essential Understanding

- Identify that moving objects of different weights have different energy.

### Focused Content of Instruction

<table>
<thead>
<tr>
<th>Activity</th>
<th>Instructional Focus</th>
<th>Skill Assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The student can recognize the relationships of kinetic energy to the weight of an object by observing physical demonstrations and interpreting graphical displays of data.</td>
<td>To assess whether the student can recognize that the kinetic energy of an object changes as the weight of an object changes and identify these changes using graphical displays.</td>
</tr>
<tr>
<td>2</td>
<td>The student can recognize the relationships of kinetic energy to the speed of an object by observing physical demonstrations and interpreting graphical displays of data.</td>
<td>To assess whether the student can recognize that the kinetic energy of an object changes as the speed of an object changes and identify these changes using graphical displays.</td>
</tr>
</tbody>
</table>
Grade 8 Embedded PT – Kinetic Energy
Student Response Check

Prior to beginning the embedded performance task, the test examiner should conduct a Student Response Check with the student. The purpose of the Student Response Check is for the test examiner to check if the student has a consistent and observable way of indicating responses to test questions. Student response modes may include indicating an answer with a mouse or keyboard, verbalizations, pointing, and/or gesturing. Students also may respond using eye gaze and an assistive communication device.

Administer the Student Response Check by selecting three of the objects from the Materials List on page 6 of this task. Show the objects to the student. Direct the student to identify one familiar object in the set of objects, using the student’s mode of communication. For example, “show me the book.”

If the student does communicate an observable response, even if the selection is incorrect, administer the embedded PT.

If the student does not communicate an observable response, do not administer the embedded PT. However, the TE must still respond to the question below in the Data Entry Interface (DEI).

Did the student orient and respond during the Student Response Check?
A. Yes (Administer the PT)
B. No (End administration)

NOTE: Use the DEI with the operational CAA for Science only. It is not necessary to enter results for sample embedded performance tasks.
## Materials List

<table>
<thead>
<tr>
<th>Activity 1</th>
<th>Type of Material</th>
<th>Exemplar Activity</th>
<th>Individualized Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Data Table</td>
<td>□ Data Table 1</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Graphics</td>
<td>□ Graphics 2 and 3</td>
<td>NA</td>
</tr>
<tr>
<td>Ramp materials</td>
<td>□ Textbooks to raise the end of each ramp about 8 inches</td>
<td>□ 2– Index cards</td>
<td>□ 2– pieces of card stock to use instead of index cards</td>
</tr>
<tr>
<td></td>
<td>□ Tape to fasten washers to car</td>
<td>□ 2–Sheets of heavy cardboard between 2 and 3 feet long</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ 2–Sheets of heavy cardboard between 2 and 3 feet long</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Racers</td>
<td>□ 2–Small toy cars</td>
<td>□ Small marble and larger, heavier marble or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ 2–Washers</td>
<td>□ Light plastic ball and golf ball</td>
<td></td>
</tr>
<tr>
<td>Scale</td>
<td>□ Electronic balance (from science lab)</td>
<td>□ Small kitchen scale □ Triple beam balance (from science lab)</td>
<td></td>
</tr>
</tbody>
</table>
## G8 Embedded PT – Kinetic Energy

### Materials List

<table>
<thead>
<tr>
<th>Type of Material</th>
<th>Exemplar Activity</th>
<th>Individualized Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Table</td>
<td>☐ Data Table 2</td>
<td>NA</td>
</tr>
<tr>
<td>Graphics</td>
<td>☐ Graphics 4–6</td>
<td>NA</td>
</tr>
<tr>
<td>Ramp materials</td>
<td>☐ Textbooks to raise the end of each ramp—one ramp by 3 inches, the other by 9 inches</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>☐ Tape to mark finish line</td>
<td></td>
</tr>
<tr>
<td></td>
<td>☐ 2–Sheets of heavy cardboard between 2 and 3 feet long</td>
<td></td>
</tr>
<tr>
<td>Racers</td>
<td>☐ 2–Small identical toy cars</td>
<td>☐ 2–Identical marbles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>☐ 2–Identical golf balls</td>
</tr>
<tr>
<td>Scale</td>
<td>☐ Electronic balance (from science lab)</td>
<td>☐ Small kitchen scale</td>
</tr>
<tr>
<td></td>
<td></td>
<td>☐ Triple beam balance (from science lab)</td>
</tr>
</tbody>
</table>
G8 Embedded PT – Kinetic Energy
Activity 1

Preparation

1. Print Data Table 1 and Graphics 2 and 3.

2. Set up the ramps.
   a. Set up two ramps of the same length at the same height (about 8 inches) using textbooks for the base of the ramps and cardboard for the ramps.
   b. Fold the 2 index cards to form a hollow triangle and tape the edges to maintain the shape. See the diagram in the graphics section for an example.
   c. Place the folded index cards at the end of each ramp, directly against the end of the ramp. The racers should strike the sides of the folded index cards when they reach the end of the ramp, pushing the cards forward.
   d. If using toy cars, tape the two washers to one of the cars to make the weights of the two cars different. The weight of the heavier racer should be increased by about half the weight of the lighter racer.

3. Practice rolling the racers down the ramp to make sure there is enough weight difference to make the difference in the distance moved by the index cards noticeable.

4. (If needed) Individualize the Exemplar Script.

Exemplar Script:

We are going to roll a light racer and a heavy racer down a ramp. The one that pushes the card the farthest has the most energy.

Individualized Script:

____________________________________________________________
____________________________________________________________
____________________________________________________________

5. For each question or prompt, allow the students to communicate their answer in their preferred method.
Administration

**Do**
Provide the student an opportunity to feel/observe the difference in the weights of the racers. The racers can be weighed on a scale if the weights are not easy to tell by holding them. State that one racer weighs more than the other.

**Say**
Which one of these is heavier?

**Do**
- Circle “Heavier” or “Lighter” in Data Table 1 to record which racer is heavier and which is lighter.
- Place the racers at the top of each ramp.
- Release the racers without pushing them.
- Observe which racer pushes the index card the farthest.
- Repeat two more times. Have the student mark Data Table 1 with a check mark to show which racer pushed the index card the farthest each time, or mark the table for the student.

**Say**
Which of these had the most energy?

A The heavy racer

B The light racer

**Do**
- Correct answer is “A—the heavy racer.”
- Record score on Answer Recording Document.
Show the student Graphic 2.

The dogs are running at the same speed. Which one has more energy?

A The light dog
B The heavy dog

Correct answer is “B—the heavy dog.”
Record score on Answer Recording Document.
Remove Graphic 2.

Show the student Graphic 3.
Describe the graph to the student and explain that the squirrel weighs the least and the horse weighs the most.

The animals are all running at the same speed. Choose the animal that would have the least energy.

A Horse
B Dog
C Squirrel

Correct answer is “C—squirrel.”
Record score on Answer Recording Document.
Preparation

1. Print Data Table 2 and Graphics 4-6.

2. Set up the ramps.
   a. Set up two ramps of the same length (2 to 3 feet). Raise the end of one ramp to about 3 inches. Raise the end of the other ramp to about 9 inches. Use the textbooks for the base of ramps and the cardboard for the ramps.
   b. Mark the finish line, starting from the end of each ramp (measure the same distance from the end of each ramp).
   c. Practice rolling the racers to ensure the ramp heights significantly affect the speed. Adjust ramp heights if necessary.

3. (If needed) Individualize the Exemplar Script.

   Exemplar Script:
   
   Two racers with the same weight will go down different ramps. The one that finishes first has the most energy.

   Individualized Script:
   
   _______________________________________________________________
   _______________________________________________________________
   _______________________________________________________________

4. For each question or prompt, allow the students to communicate their answer in their preferred method.

Administration

- Provide the student an opportunity to feel/observe that the racers are the same. They can be weighed on the scale if necessary. State that the racers weigh the same.
- Place the racers at the top of each ramp. Racer 1 is on the ramp with the steep incline and Racer 2 is on the ramp with the gentle incline.
- Release the racers without pushing them.
- Observe which racer reaches the finish line first.
- Repeat two more times.
- Have the student mark Data Table 2 with a check mark in the table to record which racer went faster in each trial, or mark the table for the student.
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Activity 2

Do

• Point to the racer in Data Table 2 that won the most races.

Say

Who won the races?

Say

Which racer has the most energy?

A Racer 1
B Racer 2

Do

• Correct answer is “A–Racer 1.”
• Record score on Answer Recording Document.

Do

• Show the student Graphic 4.

Say

The two cars weigh the same. The car in the front is faster. Which car has the most energy?

A The faster car
B The slower car

Do

• Correct answer is “A–the faster car.”
• Record score on Answer Recording Document.
• Remove Graphic 4.

Do

• Show the student Graphic 5.
• State that the two students are racing.
The two children weigh the same. Which child has the least energy?

A The faster child
B The slower child

- Correct answer is “B–the slower child.”
- Record score on Answer Recording Document.
- Remove Graphic 5.

Do

- Show the student Graphic 6.
- Describe the graph to the student and explain that the snail moves the slowest and the cheetah moves the fastest.

Choose the animal that would have the most energy.

A Turtle
B Cheetah
C Snail

- Correct answer is “B–cheetah.”
- Record score on Answer Recording Document.
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Student Survey

Do

- Direct student’s attention to the questions below. Read each question and then read the answer choices.
- The students can indicate their answer by pointing or communicating in the mode appropriate for them.
- Record the student’s response on the Answer Recording Document.

Say

How did you feel about taking this test?

A. Happy  B. Sad  C. Confused

Did you have enough time to complete the test?

A. Yes  B. No
G8 Embedded PT – Kinetic Energy
Student Engagement Survey

Select the mode(s) of communication used by the student on this performance task.
(Select all that apply)

☐ Mouse, touchscreen, and/or computer keyboard
☐ Verbal response
☐ Gestures or pointing
☐ Written response
☐ Assistive/augmentative communication device
☐ Eye gaze
☐ Other – please specify

How engaged was the student with this performance task you just administered?

A. Fully engaged
B. Moderately engaged
C. Minimally engaged
Activity 1
Index Card Setup

After folding, tape edges here
### Activity 1

**Data Table 1**

<table>
<thead>
<tr>
<th></th>
<th>Racer 1</th>
<th>Racer 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>circle one</td>
<td>Heavier</td>
</tr>
<tr>
<td>Trial 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trial 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trial 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Activity 2

**Data Table 2**

<table>
<thead>
<tr>
<th>Racer #</th>
<th>Trial 1</th>
<th>Trial 2</th>
<th>Trial 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Racer 1 – 9 inch ramp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Racer 2 – 3 inch ramp</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Activity 1
Graphic 2

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Heavier

Lighter
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Activity 1
Graphic 3

Heavy

Weight

Light

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Activity 2
Graphic 4
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Activity 2
Graphic 6

Speed

Fast

Slow

Snail  Turtle  Cheetah
1. Did the student orient and respond during the Student Response Check?

A. Yes
B. No

ACTIVITY 1

2a. Did you administer an Individualized Activity?

A. Yes
B. No

2b. If you administered an Individualized Activity, please list the materials used. If you did not administer an Individualized Activity, please skip.

- Card stock or other heavy paper
- Small marble and larger, heavier marble
- Light plastic ball and golf ball
- Small kitchen scale
- Triple beam balance (from science lab)

3a. Did you use an Individualized Script?

A. Yes
B. No

3b. If you delivered an Individualized Script, please enter it below. If you did not deliver an Individualized Script, please skip.

Individualized Script (If used):
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
4. Points scored by student.
   A. 1 point, Correct
   B. 0 points, Incorrect
   C. NR, No Response

5. Points scored by student.
   A. 1 point, Correct
   B. 0 points, Incorrect
   C. NR, No Response

6. Points scored by student.
   A. 1 point, Correct
   B. 0 points, Incorrect
   C. NR, No Response

ACTIVITY 2

7a. Did you administer an Individualized Activity?
   A. Yes
   B. No

7b. If you administered an Individualized Activity, please list the materials used. If you did not administer an Individualized Activity, please skip.

   □ 2–Identical marbles
   □ 2–Identical golf balls
   □ Small kitchen scale
   □ Triple beam balance
     (from science lab)

8a. Did you use an Individualized Script?
   A. Yes
   B. No
8b. If you delivered an Individualized Script, please enter it below. If you did not deliver an Individualized Script, please skip.

Individualized Script (If used):
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

9. Points scored by student.
A. 1 point, Correct
B. 0 points, Incorrect
C. NR, No Response

10. Points scored by student.
A. 1 point, Correct
B. 0 points, Incorrect
C. NR, No Response

11. Points scored by student.
A. 1 point, Correct
B. 0 points, Incorrect
C. NR, No Response

12. Points scored by student.
A. 1 point, Correct
B. 0 points, Incorrect
C. NR, No Response

STUDENT SURVEY

13. How did the student feel about taking this performance task?
A. Happy
B. Sad
C. Confused
D. No Response
14. Did the student have enough time to complete this performance task?

A. Yes
B. No
C. No Response

STUDENT ENGAGEMENT

15a. Select the mode(s) of communication used by the student on this performance task. (Select all that apply)

- Mouse, touchscreen, and/or computer keyboard
- Verbal response
- Gestures or pointing
- Written response
- Assistive/augmentative communication device
- Eye gaze
- Other

15b. If the student used a mode of communication that is not listed, please indicate it below.

__________________________________________________________________________________

16. How engaged was the student with this performance task you just administered?

A. Fully engaged
B. Moderately engaged
C. Minimally engaged

This student scored a total of __ / 7 points on this task.