Task Model 1

Response Type: Graphing

DOK Level 1

8.EE.B.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.*

Evidence Required:
1. The student graphs proportional relationships.

2. The student interprets the unit rate as the slope of the graph of a proportional relationship.

Tools: None

Accessibility Note: Graphing items are not currently able to be Brailled. Minimize the number of items developed to this TM.

Prompt Features: The student is prompted to create a graph of a proportional relationship.

Stimulus Guidelines:

- Unit rates can be positive rational numbers in whole numbers, fraction, or decimal form.
- Tables should have four to six rows of data.
- If used, context must be realistic and familiar to students 13 to 15 years old.
- Coordinate graphs for real-world contexts will be limited to Quadrant I.
- x- and y-axes of graphs should be labeled with an appropriate scale and units.
- Equations should be in the form $y = mx$.
- Item difficulty can be adjusted via these example methods:
  - Students graph a proportional relationship from values in a table or an equation.
  - Students graph a proportional relationship from a verbal statement.
  - Unit rate is a whole number, fraction, or decimal.

TM1

Stimulus: The student is presented with a proportional relationship that may be represented as a verbal statement, table, or equation.

Example Stem 1: The cost *c*, in dollars, for *p* pounds of meat is shown in the table.

p	***c***
3	15
5	25
7	35
9	45
10	50

Use the Add Arrow tool to graph the proportional relationship between the number of pounds of meat and the total cost.

Example Stem 2: Meat costs $5.00 per pound at a store.

Use the Add Arrow tool to graph the proportional relationship between the number of pounds of meat and the total cost.

Example Stem 3: The cost *c*, in dollars, for *p* pounds of meat can be represented by the equation $c = 5p$.

Use the Add Arrow tool to graph the proportional relationship between the number of pounds of meat and the total cost.

Interaction: Student is given a coordinate plane with axes labeled. The Add Point, Add Arrow, and Delete tools are provided.

Rubric: (1 point) Student creates a line with the correct slope passing through the origin.

Response Type: Graphing

Task Model 2

Response Type: Multiple Choice, single correct response

DOK Level 2

8.EE.B.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.*

Evidence Required:
2. The student interprets the unit rate as the slope of the graph of a proportional relationship.

Tools: None

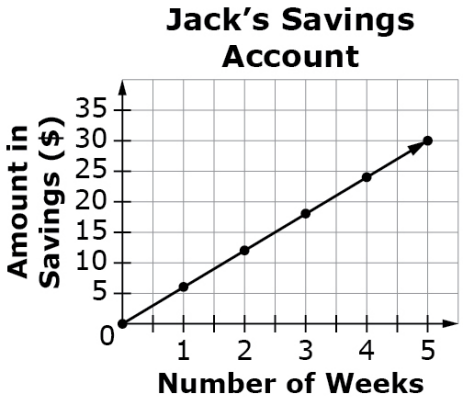
Prompt Features: The student is prompted to identify and interpret the unit rate in a proportional relationship from a graph of the relationship.

Stimulus Guidelines:

- Context must be realistic and familiar to students 13 to 15 years old.
- Graphs should contain a line through the origin.
- Item difficulty can be adjusted via these example methods:
  - Unit rates can be whole numbers, fractions, or decimals.
  - Scale on graph can be in different increments.

TM2
Stimulus: The student is presented with a graph of a proportional relationship.

Example Stem: This graph shows a proportional relationship between the amount of money in Jack's savings account and the number of weeks Jack has been saving money.



Which statement identifies the correct slope, and the correct interpretation of the slope for this situation?

A. The slope of the line is $\frac{6}{1}$, so Jack's savings rate is \$6 dollars every week.
B. The slope of the line is $\frac{6}{1}$, so Jack's savings rate is \$1 dollar every 6 weeks.
C. The slope of the line is $\frac{1}{6}$, so Jack's savings rate is \$6 dollars every week.
D. The slope of the line is $\frac{1}{6}$, so Jack's savings rate is \$1 dollars every 6 weeks.

Rubric: (1 point) Student identifies the correct statement of the slope of the graph (e.g., A).

Response Type: Multiple Choice, single correct response

Task Model 3

Response Type: Multiple Choice, single correct response

DOK Level 2

8.EE.B.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.*

Evidence Required:
3. The student will compare two different proportional relationships presented in different formats.

Tools: None

Version 3 Update: Retired TM4

Prompt Features: The student is prompted to compare two proportional relationships given in different formats.

Stimulus Guidelines:

- Equations should be in the form $y = mx$.
- Tables should have three to five rows of data.
- If used, context must be realistic and familiar to students 13 to 15 years old.
- Graphs in preamble should contain a line through the origin.
- Item difficulty can be adjusted via these example methods:
  - Unit rates can be whole numbers, fractions, or decimals
  - Students make a comparison between proportional relationships presented in a table and a graph (unit rate is a whole number).
  - Students make a comparison between proportional relationships presented in an equation and a table (unit rate is a fraction/decimal).
  - Students make a comparison between proportional relationships presented in a graph and an equation (unit rate is a fraction/decimal).

TM3a
Stimulus: The student is presented with a proportional relationship that may be represented as a graph, equation, or table.

Example Stem: The table shows the proportional relationship between the cost in dollars (c) of meat and the weight in pounds (p) at Lane Grocery Store.

p	***c***
3	15
5	25
7	35
9	45
10	50

Select the equation that shows a cost of meat per pound which is twice the cost of meat per pound at Lane Grocery Store.

A. $c = 5p$
B. $c = 6p$
C. $c = 10p$
D. $c = 30p$

Rubric: (1 point) Student correctly identifies the equation (e.g., C).

Response Type: Multiple Choice, single correct response

Task Model 5

Response Type: Equation/Numeric

DOK Level 2

8.EE.B.6
Use similar triangles to explain why the slope *m* is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at *b*.

Evidence Required:
5. The student finds the equation $y = mx$ or $y = mx + b$ for a line.

Tools: None

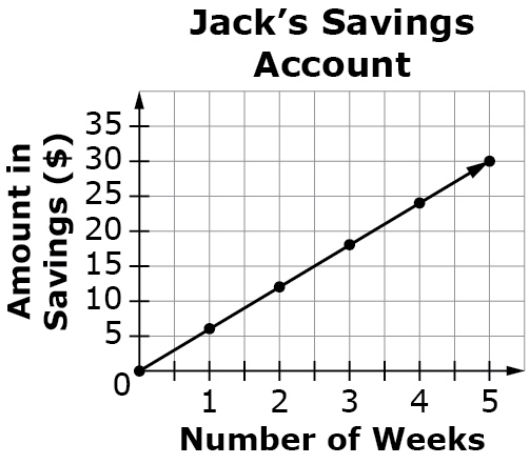
Prompt Features: The student is prompted to give the equation of a line.

Stimulus Guidelines:

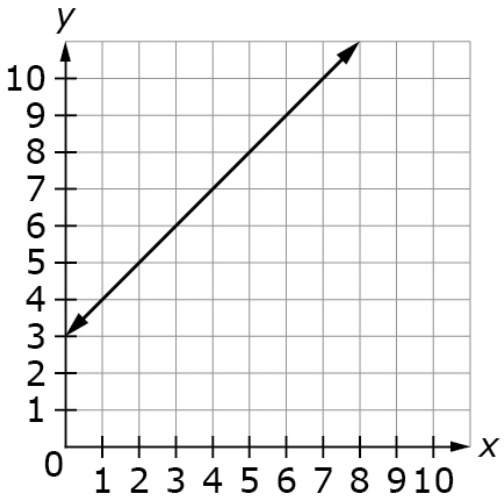
- Coordinate graphs for real-world contexts will be limited to Quadrant I.
- x- and y-axes should be labeled with an appropriate scale and units.
- Lines should be in the form $y = mx$ or $y = mx + b$ (where $b \neq 0$).
- Context must be realistic and familiar to students 13 to 15 years old.
- Item difficulty can be adjusted via these example methods:
  - y-intercept is zero.
  - y-intercept is not zero.
  - Slope should be an integer, fraction, or decimal.
  - Students select the equation for a given line.
  - Students enter the equation for a given line.

TM5
Stimulus: The student is presented with a graph of a line.

Example Stem 1: This graph shows the amount of money s, in dollars, in Jack's account after *w* weeks.



Enter an equation to represent the amount of money s, in dollars, in Jack's account after *w* weeks.

Task Model 5 **Response Type: Equation/Numeric** **DOK Level 2** **8.EE.B.6** Use similar triangles to explain why the slope *m* is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation *y* = *mx* for a line through the origin and the equation *y* = *mx* + *b* for a line intercepting the vertical axis at *b*. **Evidence Required:** 5. The student finds the equation *y* = *mx* or *y* = *mx* + *b* for a line. **Tools:** None	**Example Stem 2:** Consider the line shown on the graph.  Enter the equation of the line in the form *y* = *mx* + *b where m* is the slope and *b* is the *y*-intercept. **Rubric:** (1 point) The student gives the correct equation (e.g., $s = 6w$; $y = x + 3$). Slope may be written as an integer, fraction, or decimal. **Response Type:** Equation/Numeric