

Common Core Standards Practice

Week 12

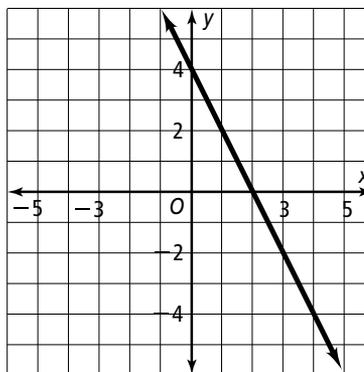
Selected Response

1. Which is an equation of a line in point-slope form that has slope 7 and passes through $(-2, 6)$?

- A $y - 6 = 7(x + 2)$
- B $y - 6 = 7(x - 2)$
- C $y + 2 = 7(x - 6)$
- D $y - 6 = -2(x - 7)$

Constructed Response

2. a. Draw a line on the graph below that has the same slope as the line drawn and that passes through $(0, -4)$.



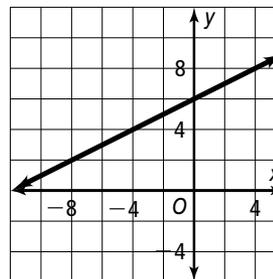
b. What is an equation of the line you drew?

Extended Response

3. Refer to the graph at the right. Write each equation in the correct column.

- $y - 4 = \frac{1}{2}(x - 8)$
- $y - 8 = \frac{1}{2}(x - 4)$
- $y - 1 = \frac{1}{2}(x + 10)$
- $y + 10 = 2(x - 1)$
- $y + 10 = \frac{1}{2}(x - 1)$

Possible Equation of the Line Drawn	NOT an Equation of the Line drawn





OVERVIEW

Looking Back	Mathematics of the Week	Looking Ahead
Earlier in chapter 5, students found slope and wrote equations for direct variations and linear functions. They also graphed linear equations using y -intercept and slope (A.CED.2, F.IF.4, F.IF.6, F.IF.7.a).	Students graph equations in point-slope form. Students use two points or information in a table, identifying two points, to write an equation in point-slope form.	Later this chapter, students will use equations in various forms to identify parallel and perpendicular lines (G.GPE.5). Also, students use the point-slope form to write equations for trend lines (S.ID.6.c)

COMMON CORE CONTENT STANDARDS

A.SSE.2 Use the structure of an expression to identify ways to rewrite it.

A.CED.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

F.IF.4 For a function that models a relationship between two quantities, interpret key features of graphs . . . and sketch graphs showing key features given a verbal description of the relationship.

F.IF.7.a Graph linear and quadratic functions and show intercepts, maxima, and minima.

F.BF.1.a Determine an explicit expression, . . . or steps for calculation from a context.

F.LE.2 Construct linear and exponential functions, . . . given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

Mathematical Practice Standards: 1, 4, 7

TEACHING NOTES

Selected Response

1. *Error Analysis:* Students write a linear equation in a given form. If a student selects answer choice B, he or she does not understand that for an x coordinate of -2 , he or she must simplify $(x - (-2))$, which is $(x + 2)$, for $(x - x_1)$ in point-slope form. If a student selects answer choice C, he or she has substituted the x -coordinate for y_1 and the y -coordinate for x_1 . If a student selects answer choice D, he or she is probably guessing and does not understand what to substitute for slope and the correct placement of the x and y coordinates in point-slope form.

Constructed Response

2. Students show understanding of parallel lines on a coordinate plane. For part (a), remind students to first determine what the slope of the line is and ask what that looks like to the left of $(0, -4)$ as well as to the right. For part (b), have students check their equation by substituting the coordinates of two points from their graph in the equation.

Extended Response

3. Students match equations to the graph of a line. Encourage students to determine the slope of the line, and eliminate any equation that does not have that slope. Then encourage students to identify the point that is indicated by each equation and determine if that point is on the line. Students may want to add a line for $x = 8$ and extend the line to find the value of y when $x = 8$.

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Performance Task: Choosing a Movie-Rental Plan

Complete this performance task in the space provided. Fully answer all parts of the performance task with detailed responses. You should provide sound mathematical reasoning to support your work.

You are considering three different ways to rent movies.

Plan A: Rent DVDs from a kiosk in a nearby grocery store for \$1.50 each. The selection of movies is limited.

Plan B: Stream unlimited movies to your computer or TV for \$10 per month. The selection of movies is good.

Plan C: Rent DVDs by mail for a \$5 monthly fee plus \$2 per movie. The selection of movies is outstanding.

Task Description

Choose the movie-rental plan that you think is best. Consider the cost of each plan, the selection offered, and how you like to receive and watch movies.

- a. Write functions $A(x)$, $B(x)$, and $C(x)$ that give the cost to rent x movies per month for Plans A, B, and C, respectively.

Performance Task: Choosing a Movie-Rental Plan (continued)

- b. If you consider only cost, under what condition does it make sense to choose Plan B over Plan A?
- c. If you consider only cost, under what condition does it make sense to choose Plan C over Plan B?
- d. Show that Plan A is always more cost-effective than Plan C. Does that mean that Plan A is a better choice than Plan C for everyone? Explain.
- e. Which movie-rental plan would you choose? Justify your answer.

Performance Task 1 Scoring Rubric

Choosing a Movie-Rental Plan

The Scoring Rubric proposes a maximum number of points for each of the parts that make up the Performance Task. The maximum number of points is based on the complexity and difficulty level of the sub-task. For some parts, you may decide to award partial credit to students who may have shown some understanding of the concepts assessed, but may not have responded fully or correctly to the question posed.

Task Parts	Maximum Points
a. $A(x) = 1.50x$; $B(x) = 10$; $C(x) = 5 + 2x$	2
b. It makes sense to choose Plan B over Plan A only if you rent 7 or more movies per month. Note that $A(1) = \$1.50$ while $B(1) = \$10$, $A(2) = \$1.50(2) = \3 while $B(2) = \$10$, etc. Plan A is less expensive until you rent 7 movies: $A(7) = \$1.50(7) = \10.50 while $B(7) = \$10$, $A(8) = \$1.50(8) = \12 while $B(8) = \$10$, etc.	4
c. It makes sense to choose Plan C over Plan B only if you rent 2 or fewer movies per month. Note that $C(0) = \$5 + \$2(0) = \$5$ while $B(0) = \$10$; also $C(1) = \$5 + \$2(1) = \$7$ while $B(1) = \$10$; also $C(2) = \$5 + \$2(2) = \$9$ while $B(2) = \$10$. So Plan C is less expensive until you rent 3 movies: $C(3) = \$5 + \$2(3) = \$11$ while $B(3) = \$10$.	4
d. Plan A is always more cost-effective than Plan C, because each movie costs \$1.50 rather than \$2. This does not mean that Plan A is a better choice than Plan C for everyone, because someone might value convenience and selection more than cost.	4
e. Sample Answer: I would choose Plan A, because I rent only a few movies per year. The cost is the least with this plan, and there would be plenty of selection for me.	4
Total points	18