A.REI.D.10: Writing Linear Equations 2

1   What is an equation of the line that passes through the points $(3,-3)$ and $(-3,-3)$?
   1) $y = 3$
   2) $x = -3$
   3) $y = -3$
   4) $x = y$

2   Which equation represents the line whose slope is 2 and whose y-intercept is 6?
   1) $y = 2x + 6$
   2) $y = 6x + 2$
   3) $2y + 6x = 0$
   4) $y + 2x = 6$

3   An equation of the line that has a slope of 3 and a y-intercept of -2 is
   1) $x = 3y - 2$
   2) $y = 3x - 2$
   3) $y = -\dfrac{2}{3}x$
   4) $y = -2x + 3$

4   Which equation represents a line that has a slope of $\dfrac{3}{4}$ and passes through the point $(2,1)$?
   1) $3y = 4x - 5$
   2) $3y = 4x + 2$
   3) $4y = 3x - 2$
   4) $4y = 3x + 5$

5   What is the equation of the line that passes through the point $(6,-3)$ and has a slope of $-\dfrac{4}{3}$?
   1) $3y = -4x + 15$
   2) $3y = -4x + 6$
   3) $-3y = 4x + 15$
   4) $-3y = 4x + 6$

6   What is an equation of the line that passes through $(3,7)$ and has a slope of 2?
   1) $y - 7 = 2(x - 3)$
   2) $y - 3 = 2(x - 7)$
   3) $y + 7 = 2(x + 3)$
   4) $y + 3 = 2(x + 7)$

7   What is an equation of the line that passes through the points $(1,3)$ and $(8,5)$?
   1) $y + 1 = \dfrac{2}{7}(x + 3)$
   2) $y - 5 = \dfrac{2}{7}(x - 8)$
   3) $y - 1 = \dfrac{2}{7}(x + 3)$
   4) $y + 5 = \dfrac{2}{7}(x - 8)$

8 What is an equation of the line that passes through the points $(2,7)$ and $(-1,3)$?

1) $y - 2 = \dfrac{3}{4}(x - 7)$

2) $y - 2 = \dfrac{4}{3}(x - 7)$

3) $y - 7 = \dfrac{3}{4}(x - 2)$

4) $y - 7 = \dfrac{4}{3}(x - 2)$

9 How many of the equations listed below represent the line passing through the points $(2,3)$ and $(4,-7)$?

$$5x + y = 13$$

$$y + 7 = -5(x - 4)$$

$$y = -5x + 13$$

$$y - 7 = 5(x - 4)$$

1) 1
2) 2
3) 3
4) 4

10 Write an equation that represents the line that passes through the points $(5,4)$ and $(-5,0)$.

11 Sue and Kathy were doing their algebra homework. They were asked to write the equation of the line that passes through the points $(-3,4)$ and $(6,1)$. Sue wrote $y - 4 = -\dfrac{1}{3}(x + 3)$ and Kathy wrote $y = -\dfrac{1}{3}x + 3$. Justify why both students are correct.

12 The graph of a linear equation contains the points $(3,11)$ and $(-2,1)$. Which point also lies on the graph?
1) $(2,1)$
2) $(2,4)$
3) $(2,6)$
4) $(2,9)$

13 Line ℓ contains the points $(0,4)$ and $(2,0)$. Show that the point $(-25,81)$ does *or* does not lie on line ℓ.

14 The accompanying graph represents the yearly cost of playing 0 to 5 games of golf at the Shadybrook Golf Course. What is the total cost of joining the club and playing 10 games during the year?

Yearly Total Cost
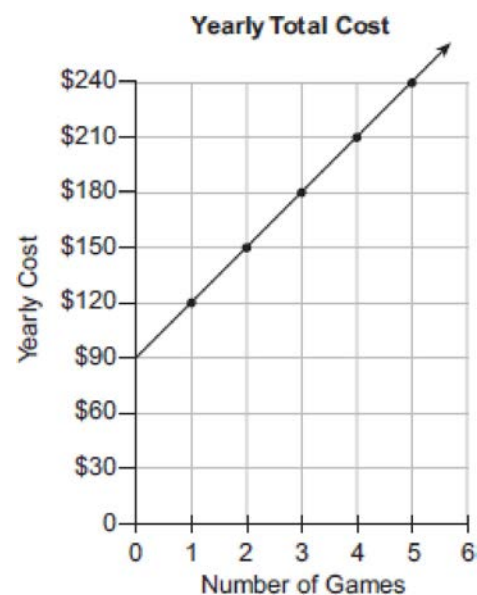
A.REI.D.10: Writing Linear Equations 2
Answer Section

1 ANS: 3   REF: 010910ia
2 ANS: 1   REF: 010905a
3 ANS: 2   REF: 010408a
4 ANS: 3

$$y = mx + b \qquad y = \frac{3}{4}x - \frac{1}{2}$$

$$1 = \left(\frac{3}{4}\right)(2) + b \quad 4y = 3x - 2$$

$$1 = \frac{3}{2} + b$$

$$b = -\frac{1}{2}$$

REF: 081219ia

5 ANS: 1

$$y + 3 = -\frac{4}{3}(x - 6)$$

$$3y + 9 = -4x + 24$$

$$3y = -4x + 15$$

REF: 082321ai

6 ANS: 1   REF: 082418ai
7 ANS: 2

$$m = \frac{5 - 3}{8 - 1} = \frac{2}{7} \quad y - y_1 = m(x - x_i)$$

$$y - 5 = \frac{2}{7}(x - 8)$$

REF: 081029ia

8 ANS: 4

$$m = \frac{7 - 3}{2 - -1} = \frac{4}{3}$$

REF: fall2302ai

9 ANS: 3

$$m = \frac{3 - -7}{2 - 4} = -5 \quad 3 = (-5)(2) + b \quad y = -5x + 13$$ represents the line passing through the points $(2,3)$ and $(4,-7)$. The

$$b = 13$$

fourth equation may be rewritten as $y = 5x - 13$, so is a different line.

REF: 081720ai

10 ANS:

$y = \dfrac{2}{5}x + 2.$ $m = \dfrac{4-0}{5-(-5)} = \dfrac{2}{5}.$ $y = mx + b$.

$$4 = \dfrac{2}{5}(5) + b$$

$$b = 2$$

REF: 080836ia

11 ANS:

$m = \dfrac{4-1}{-3-6} = \dfrac{3}{-9} = -\dfrac{1}{3}$ $y - y_1 = m(x - x_1)$

$4 = -\dfrac{1}{3}(-3) + b$ $\qquad$ $y - 4 = -\dfrac{1}{3}(x + 3)$

$4 = 1 + b$

$3 = b$

$y = -\dfrac{1}{3}x + 3$

REF: 061629ai

12 ANS: 4

$m = \dfrac{11-1}{3-(-2)} = \dfrac{10}{5} = 2$ $y = mx + b$ $y = 2x + 5$

$\qquad\qquad\qquad\qquad 11 = 2(3) + b$ $9 = 2(2) + 5$

$\qquad\qquad\qquad\qquad\quad 5 = b$

REF: 011511ai

13 ANS:

Find the slope: m $= \dfrac{4-0}{0-2} = -2$; use the given y-intercept $(0,4)$ to write an equation of the line, and substitute into the equation to show that $(-25, 81)$ does not lie on line ℓ: $y = -2x + 4$

$$81 \neq -2(-25) + 4$$

REF: 089929a

14 ANS:

390. The cost of joining the club is the y-intercept, \$90, and each game costs \$30. This function may be written as $y = 30x + 90$, and used to find the total cost of joining the club and playing 10 games during the year.

$y = 30x + 90$

$\quad = 30(10) + 90$

$\quad = 390$

REF: 060025a