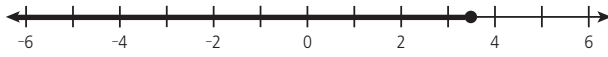


Empire State Mathematics March to May 2010 Supplement Grade 8 Answer Key

Lesson 1 Solving and Graphing Inequalities pp. 4–7

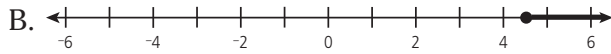
1. D [8.A.13]
2. C [8.A.13; 8.G.19]
3. A [8.A.13]
4. A [8.A.13; 8.G.19]
5. Short-response [8.A.13; 8.G.19]



Explanations may vary but should say something like the following: First I subtracted 3 from each side to get $2c \leq 7$. Then I divided both sides by 2 for $c \leq 3.5$. Since the solution set includes 3.5, I drew a solid dot on 3.5. Since it includes numbers less than 3.5, I drew the arrow to the left of 3.5.

6. Extended-response [8.A.13; 8.G.19]

A. $64 + 8m \geq 100$
 $64 + 8m - 64 \geq 100 - 64$
 $8m \geq 36$
 $8m \div 8 \geq 36 \div 8$
 $m \geq 4.5$



Explanations may vary but should say something like the following: The solution includes 4.5 and a solid dot shows that. The solution includes numbers greater than 4.5 and the arrow to the right of 4.5 shows that.

Lesson 2 More Solving Linear Inequalities pp. 8–11

1. C [8.A.14]
2. B [8.A.14]
3. A [8.A.14]
4. D [8.A.14]
5. B [8.A.14]
6. Short-response [8.A.14]
 $t < 3$; $10t - 6t + 24 > 9t + 9$
 $4t + 24 > 9t + 9$
 $-5t + 24 > 9$
 $-5t > -15$
 $t < 3$

7. Extended-response [8.A.14]

A. $x \leq 12$; $9 - \frac{3}{4}x \geq 0$
 $9 - \frac{3}{4}x - 9 \geq 0 - 9$
 $-\frac{3}{4}x \geq -9$
 $-\frac{4}{3} \cdot -\frac{3}{4}x \geq -\frac{4}{3} \cdot -9$
 $x \leq 12$

B. $9 - \frac{3}{4}(12) \geq 0$
 $9 - 9 \geq 0$
 $0 \geq 0$

Lesson 3 Understanding Slope and Intercepts pp. 12–15

1. A [8.G.13]
2. B [8.G.13]
3. D [8.G.14]
4. C [8.G.13]
5. Short-response [8.G.13]

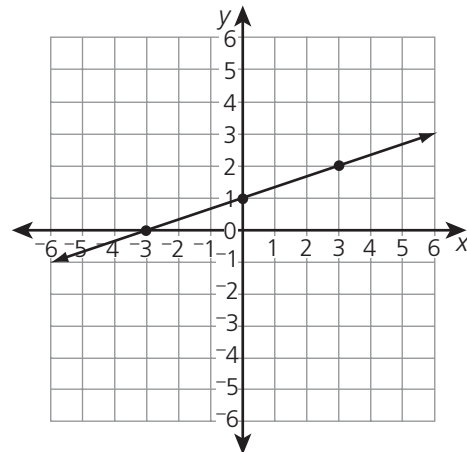
Slope: -2; *y-intercept:* (0, 2)

Explanations may vary but should say something like the following: The line contains the points (0, 2) and (1, 0). So the line goes down 2 units for every 1 unit it moves from left to right. In other words, the rise over run is -2 over 1, and the slope is -2. The y-intercept is the point where the line crosses the y-axis, which is the point (0, 2).

6. Extended-response [8.G.14, 15]

A.

x	y
0	1
3	2
-3	0



B. Slope: $\frac{1}{3}$; y-intercept: (0, 1)

Explanations may vary but should say something like the following: The line contains the points (0, 1) and (3, 2). So the line rises 1 unit for every 3 units it runs from left to right. So the rise over run, or slope, is 1 over 3, or $\frac{1}{3}$. The y-intercept is the point where the line crosses the y-axis, which is the point (0, 1).

Lesson 4 Equations in Slope-Intercept Form pp. 16–19

1. B [8.G.16]
3. B [8.G.16]
2. D [8.G.17]
4. Short-response [8.G.16]

$$y = 0.25x - 1.5$$

Explanations may vary but should say something like the following: The slope-intercept form is $y = mx + b$. The variable m is the slope and the variable b is the y-intercept, so I substituted $m = 0.25$ and $b = -1.5$ into this equation.

5. Extended-response [8.G.16, 17]

A. $y = -\frac{3}{4}x + 3$; $3x + 4y - 3x = 12 - 3x$

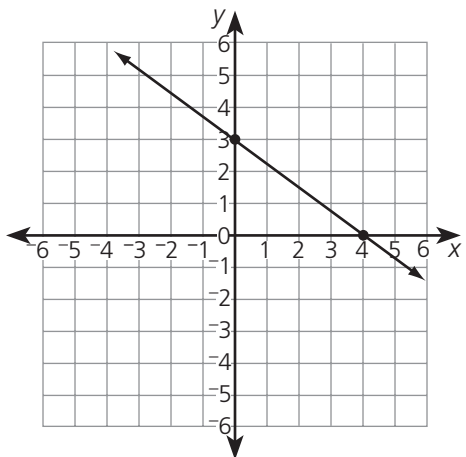
$$4y = 12 - 3x$$

$$4y \div 4 = (12 - 3x) \div 4$$

$$y = 3 - \frac{3}{4}x$$

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

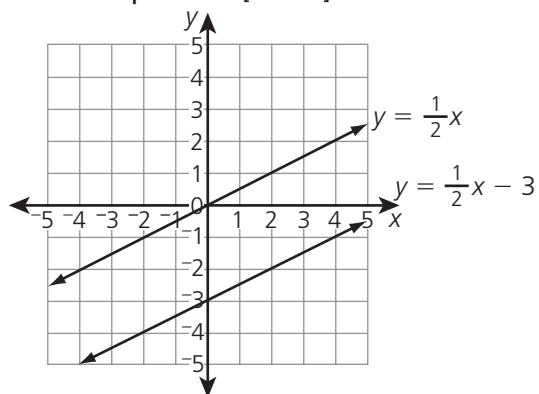
B. Slope: $-\frac{3}{4}$; y-intercept: (0, 3)



Lesson 5 Systems of Equations pp. 20–23

1. D [8.G.18]
2. D [8.G.18]
3. A [8.G.18]

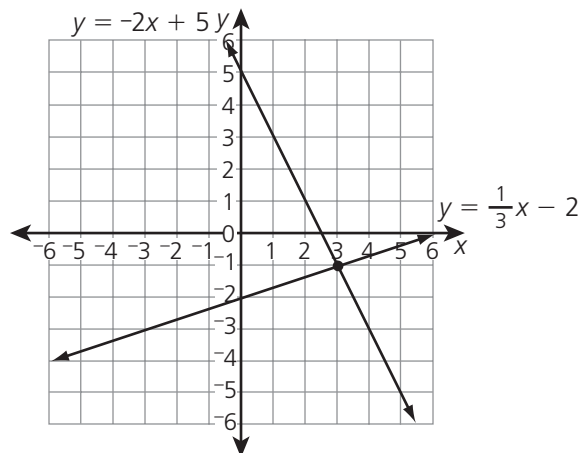
4. Short-response [8.G.18]



Explanations may vary but should say something like the following: There is no solution to this system of equations. I graphed the lines and found out they were parallel. So there is no point that lies on both lines.

5. Extended-response [8.G.18]

A.



B. (3, -1)

$$y = \left(\frac{1}{3}\right)x - 2 \quad y = -2x + 5$$

$$-1 = \left(\frac{1}{3}\right)(3) - 2 \quad -1 = -2(3) + 5$$

$$-1 = 1 - 2 \quad -1 = -6 + 5$$

$$-1 = -1 \quad -1 = -1$$

So (3, -1) satisfies both equations.

Lesson 6 Linear and Nonlinear Equations pp. 24–27

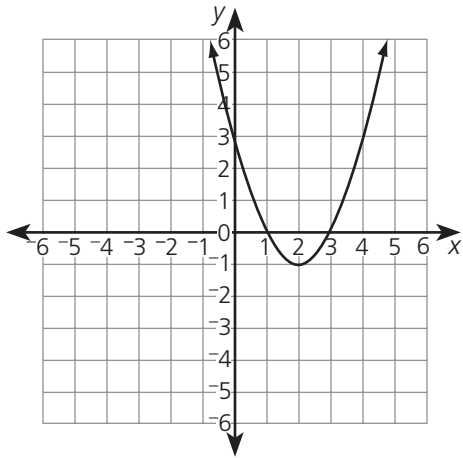
1. A [8.G.20]
2. B [8.G.21]
3. D [8.G.20]
4. Short-response [8.G.20]
nonlinear; *Explanations may vary but should say something like the following:* The graph is a parabola, not a straight line. So it is a nonlinear equation.

5. Extended-response [8.G.21]

A.

x	y
0	3
1	0
2	-1
3	0
4	3

B.



Vertex: $(2, -1)$

x-intercepts: $(1, 0)$ and $(3, 0)$

y-intercept: $(0, 3)$