

**FSA Algebra I  
End-of-Course  
Review Packet**

**Algebra  
and  
Modeling**

## FSA Algebra 1 EOC Review

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## FSA Algebra 1 EOC Review

### MAFS.912.A-APR.1.1 EOC Practice

Level 2	Level 3	Level 4	Level 5
adds two polynomials with integral coefficients, including adding when multiplying a constant to one or both polynomials using the distributive property is required	adds and subtracts polynomials, including adding or subtracting when one or both polynomials is multiplied by a monomial or binomial, with a degree no greater than 1	completes an informal argument on closure; applies multiple operations (excluding division) when simplifying polynomials	explains closure for polynomials

1. What is the product of the following expression?

$$(3x + 6)^2$$

- A.  $6x^2 + 12$
- B.  $9x^2 + 36$
- C.  $9x^2 + 18x + 36$
- D.  $9x^2 + 36x + 36$

2. What is the product of the following expression?

$$2x(x^2 + x - 5)$$

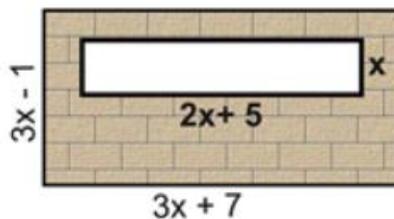
- A.  $2x^3 + x - 5$
- B.  $2x^3 + 2x - 10$
- C.  $2x^3 + 2x^2 - 5x$
- D.  $2x^3 + 2x^2 - 10x$

3. Which is the simplified form of this expression?

$$(2x + 3)(x - 6) - 2x^2 + 3x + 30$$

- E.  $4x^2 - 6x + 12$
- A.  $-2x^2 + 6x + 27$
- B.  $-6x - 12$
- C.  $-6x + 12$

4. In the diagram at the right, the dimensions of the large rectangle are  $(3x - 1)$  by  $(3x + 7)$  units. The dimensions of the cut-out rectangle are  $x$  by  $2x + 5$  units. Which choice expresses the area of the shaded region, in square units?



- A.  $x^2 + 23x - 7$
- B.  $x^2 + 13x - 7$
- C.  $7x^2 + 23x - 7$
- D.  $7x^2 + 13x - 7$

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5. Given  $ax^2 + bx + c = 2(1.2x + 0.3)(x - 0.5) + (0.5x^2 + 2.5x - 1.3)$ .

What are the values of  $a$ ,  $b$ , and  $c$ ?

$a =$

$b =$

$c =$

6. Under what operations is the system of polynomials NOT closed?

- A. Addition
- B. Subtraction
- C. Multiplication
- D. Division

## FSA Algebra 1 EOC Review

### MAFS.912.A-CED.1.1 EOC Practice

Level 2	Level 3	Level 4	Level 5
writes or chooses a one-variable linear equation or inequality in a real-world context	writes or chooses a simple exponential (no horizontal or vertical translation) or a simple quadratic equation	writes an exponential equation with a horizontal or vertical translation or a quadratic equation; identifies the meaning of the variables	employs the modeling cycle when writing an equation

1. There are 60 students going on a field trip to the chocolate factory. The students are from three different classes. Mrs. Hooper's class has 24 students and Mr. Gomez's class has 18 students. Which of the equalities correctly describes the students and could be used to solve for how many students are from Mr. Anderson's class? (Let  $A$  = the number of students in Mr. Anderson's class.)
  - A.  $A + 18 = 24$
  - B.  $A + A + A = 60$
  - C.  $60 - 18 = A - 24$
  - D.  $24 + 18 + A = 60$
  
2. The ages of three friends are consecutively one year apart. Together, their ages total 48 years. Which equation can be used to find the age of each friend (where  $a$  represents the age of the youngest friend)?
  - A.  $3a = 48$
  - B.  $a(a + 1)(a + 2) = 48$
  - C.  $a + (a - 1) + (a - 2) = 48$
  - D.  $a + (a + 1) + (a + 2) = 48$

a) What are the ages of the friends?

  - A. 16, 17, 18
  - B. 15, 16, 17
  - C. 14, 15, 16
  - D. 17, 18, 19
  
3. Student council is renting a tent for \$350 for an upcoming student fair. Each student attending the fair will pay \$0.50. All other attendees will pay \$2.25 each. If 200 students attend the fair, which inequality can be used to determine the number of "other" attendees,  $a$ , needed to cover the cost of the tent?
  - A.  $(0.50)(200) - 2.25a \geq 350.00$
  - B.  $(0.50)(200) + 2.25a \geq 350.00$
  - C.  $0.50a - (2.25)(200) \geq 350.00$
  - D.  $0.50a + (2.25)(200) \geq 350.00$

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4. A heart shaped chocolate box is composed of one square and two half circles. The total number of chocolates in the box is calculated by adding the area of a square given by  $4x^2$  and the area of a circle approximated by  $3x^2$ . The company plans to add a small additional box for a promotional campaign containing one row ( $2x$ ) of chocolates. If the total combined heart shape and small box contain 69 chocolates, which of these equations could be utilized to solve for the number of chocolates in the small box ( $2x$ )?
- A.  $4x^2 + 3x^2 + 2x = 69$   
B.  $4x^2 - 3x^2 + 2x = 69$   
C.  $4x^2 + 3x^2 - 2x = 69$   
D.  $4x^2 - 3x^2 - 2x = 69$
5. An internet business sells U.S. flags for \$16.95 each, plus \$2.50 shipping per flag. Shipping is free, however, on orders where more than \$100.00 of flags are purchased. Which correctly shows the number of flags  $f$  that must be purchased to get free shipping?
- A.  $16.95f = 100$   
B.  $16.95f > 100$   
C.  $19.45f > 100$   
D.  $16.95f + 2.50 > 100$
6. A farmer has a rectangular field that measures 100 feet by 150 feet. He plans to increase the area of the field by 20%. He will do this by increasing the length and width by the same amount,  $x$ . Which equation represents the area of the new field?
- A.  $(100 + 2x)(150 + x) = 18,000$   
B.  $2(100 + x) + 2(150 + x) = 15,000$   
C.  $(100 + x)(150 + x) = 18,000$   
D.  $(100 + x)(150 + x) = 15,000$

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### MAFS.912.A-REI.2.3 EOC Practice

Level 2	Level 3	Level 4	Level 5
solves linear equations (with variable on one side and simple benchmark fractions as the coefficient; may require the use of the distributive property and adding like terms) and inequalities (with a variable on one side and positive coefficient that may include a simple benchmark fraction as the coefficient) in one variable	solves linear equations and inequalities in one variable, where the variable is included on both sides of the equal sign or inequality, that require up to three steps to isolate the variable with rational coefficients	solves linear equations in one variable, including equations where one coefficient is represented by a letter and requires up to three steps to isolate the variable; solves compound inequalities in one variable	solves linear equations and inequalities in one variable, including equations with coefficients represented by letters that require up to four steps to isolate the variable

1. Solve for  $x$ :  $3(2x - 1) - 10 = 8 + 5x$

- A.  $-7$
- B.  $-3$
- C.  $19$
- D.  $21$

2. Solve for  $x$ :  $4(x + 5) = 3(x - 2) - 2(x + 2)$

- A.  $x = -1$
- B.  $x = -4$
- C.  $x = -6$
- D.  $x = -10$

3. Solve:  $3(x + 3) > 4(x - 4)$

- A.  $x > 25$
- B.  $x < 25$
- C.  $x > -7$
- D.  $x < -7$

4. Solve the following inequality for  $b$ , showing all of your work carefully and completely.

$$4b - 12 - 5b < 9b + 8$$

5. What is the value of  $x$  in the equation  $\frac{3}{4}x + 2 = \frac{5}{4}x - 6$ ?

- A.  $-16$
- B.  $16$
- C.  $-4$
- D.  $4$

## FSA Algebra 1 EOC Review

### MAFS.912.A-CED.1.4 EOC Practice

Level 2	Level 3	Level 4	Level 5
solves a literal linear equation in a real-world context for a variable whose coefficient is 1	solves a literal equation that requires two procedural steps	solves a literal equation that requires three procedural steps	solves a literal equation that requires four procedural steps

1. The formula for simple interest plus starting principal, where  $A$  = amount,  $P$  = principal,  $r$  = interest rate per period, and  $t$  = time, is given below.

$$A = P + Prt$$

Which could be used to find the time,  $t$ , if the amount, principal, and interest are known?

A.  $A - P - Pr = t$

B.  $\frac{A-P}{Pr} = t$

C.  $\frac{A-Pr}{P} = t$

D.  $\frac{A}{P+rt} = t$

2. A line is represented by the equation  $3x + 2y = 4$ . What is another way to represent the same line?

A.  $y = -\frac{3}{2}x + 2$

B.  $y = \frac{3}{2}x + 2$

C.  $y = \frac{3}{2}x + 4$

D.  $y = -\frac{3}{2}x + 4$

3. If  $k = am + 3mx$ , the value of  $m$  in terms of  $a$ ,  $k$  and  $x$  can be expressed as

A.  $m = \frac{k}{a+3x}$

B.  $m = \frac{k-3mx}{a}$

C.  $m = \frac{k-am}{3x}$

D.  $m = \frac{k-a}{3x}$

## FSA Algebra 1 EOC Review

4. A formula is expressed as  $D = a(2 + kt)$ . Express  $k$  in terms of  $D$ ,  $a$  and  $t$ .

A.  $k = \frac{D}{a} - 2t$

B.  $k = D - 2at$

C.  $k = \frac{D-2a}{at}$

D.  $k = \frac{D-2a}{t}$

5. Tim was asked to solve the equation for  $x$ . His solution is shown below.

Start:  $kx = my - mx$

Step 1:  $kx + mx = my$

Step 2:  $x(k + m) = my$

Step 3:  $x = \frac{my}{k+m}$

In which step did Tim make his first mistake when solving the equation?

A. Step 1

B. Step 2

C. Step 3

D. Tim did not make a mistake.

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### MAFS.912.A-CED.1.2 EOC Practice

Level 2	Level 3	Level 4	Level 5
writes or chooses a two-variable linear equation for a real-world context with integral coefficients	writes or chooses a system of linear equations or writes a single equation that has at least three variables with integral coefficients	writes a system of linear equations or writes a single equation that has at least three variables; correctly identifies the meaning of the variables	employs the modeling cycle when writing equations that have two variables

1. Kesha is planning to rent a van for her trip to Mt. Rainier. Two of her friends each rented the same type of van from the same car rental company last week. This is what they told her:

John: "The cost of my rental was \$240. The company charged me a certain amount per day and a certain amount per mile. I had the rental for five days and I drove it 200 miles."

Katie: "The cost of my rental was only \$100. I drove it for 100 miles and had it for two days."

Kesha plans to get the same type of van that John and Katie had from the same car rental company. Kesha estimated her trip would be 250 miles, and she would have the vehicle for four days.

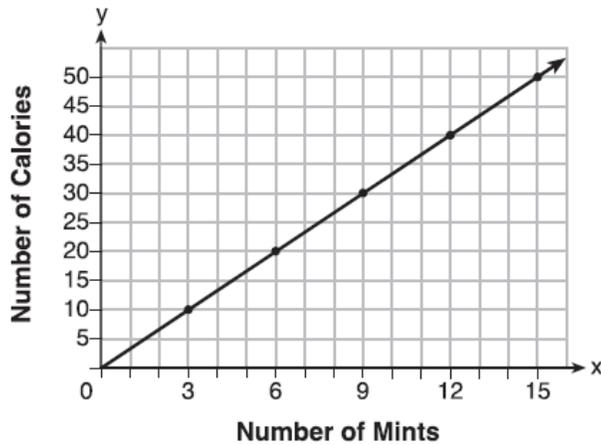
Let  $C$  = cost,  $M$  = miles, and  $D$  = days

Which equation could Kesha use to figure out how much her rental would cost?

- A.  $C = 40.00M + 0.20D$   
 B.  $C = 40.00D + 0.20M$   
 C.  $C = 20.00M + 0.40D$   
 D.  $C = 20.00D + 0.40M$
2. Eddie's Towing Company charges \$40 to hook a vehicle to the truck and \$1.70 for each mile the vehicle is towed. Which equation best represents the relationship between the number of miles towed,  $m$ , and the total charges,  $c$ ?
- A.  $c = 40 + 1.70$   
 B.  $c = 40 + 1.70m$   
 C.  $c = 40m + 1.70$   
 D.  $c = 40m + 1.70$
3. The local deli charges a fee for delivery. On Monday, they delivered two dozen bagels to an office at a total cost of \$8. On Tuesday, three dozen bagels were delivered at a total cost of \$11. Which system of equations could be used to find the cost of a dozen bagels,  $b$ , if the delivery fee is  $f$ ?
- A.  $b + 2f = 8$   
 $b + 3f = 11$   
 B.  $2b + f = 8$   
 $b + 3f = 11$   
 C.  $b + 2f = 8$   
 $3b + f = 11$   
 D.  $2b + f = 8$   
 $3b + f = 11$
4. Max purchased a box of green tea mints. The nutrition label on the box stated that a serving of three mints contains a total of 10 Calories.

## FSA Algebra 1 EOC Review

- a) On the axes below, graph the function,  $C$ , where  $C(x)$  represents the number of Calories in  $x$  mints.



- b) Write an equation that represents  $C(x)$ .

$$C(x) = \frac{10}{3}x$$

- c) A full box of mints contains 180 Calories. Use the equation to determine the total number of mints in the box.

5. A shipping company charges \$1.20 times the sum,  $s$ , of the length, width, and height of a package to be shipped. All dimensions are measured in inches. The company also charges \$3.00 for processing the package to be shipped.  
On the line below, write an equation that the shipping company can use for determining the cost,  $C$ , for shipping any package.

Equation: \_\_\_\_\_

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### MAFS.912.A-REI.3.5 EOC Practice

Level 2	Level 3	Level 4	Level 5
identifies an equivalent system of two equations in two variables that has a multiple of one of the equations of the original system	identifies an equivalent system that has a sum of the original as one of the equations and a multiple of the other	identifies systems that have the same solutions	justifies why multiple equivalent systems would have the same solution

1. The Smith Family Reunion and the Jones Family Reunion both include a visit to a family friendly amusement park in Florida. The Smith family pays \$ 882.00 for passes for 10 adults and 18 children. The Jones family pays \$ 951.00 for passes for 11 adults and 19 children. Which equation below can be used to solve for the price of the adult and child admissions?

- A.  $882 + 951 = (10A + 11A) + (18C + 19C)$
- B.  $882 - 951 = (10A - 11A) + (18C - 19C)$
- C.  $882 = 10A - 18C; 951 = 11A - 19C$
- D.  $882 = 10A + 18C; 951 = 11A + 19C$

2. Which system of equations has the same solution as the system below?

$$\begin{aligned} 2x + 2y &= 16 \\ 3x - y &= 4 \end{aligned}$$

- A.  $\begin{aligned} 2x + 2y &= 16 \\ 6x - 2y &= 4 \end{aligned}$
- B.  $\begin{aligned} x + y &= 16 \\ 3x - y &= 4 \end{aligned}$
- C.  $\begin{aligned} 2x + 2y &= 16 \\ 6x - 2y &= 8 \end{aligned}$
- D.  $\begin{aligned} 6x + 6y &= 48 \\ 6x + 2y &= 8 \end{aligned}$

3. Without solving the systems, explain why the following systems must have the same solution.

System (a):  $\begin{aligned} 4x - 5y &= 13 \\ 3x + 6y &= 11 \end{aligned}$

System (b):  $\begin{aligned} 8x - 10y &= 26 \\ x - 11y &= 2 \end{aligned}$

4. Which pair of equations could not be used to solve the following equations for x and y?

$$\begin{aligned} 4x + 2y &= 22 \\ -2x + 2y &= -8 \end{aligned}$$

- A.  $\begin{aligned} 4x + 2y &= 22 \\ 2x - 2y &= 8 \end{aligned}$
- B.  $\begin{aligned} 12x + 6y &= 66 \\ 6x - 6y &= 24 \end{aligned}$
- C.  $\begin{aligned} 4x + 2y &= 22 \\ -4x + 4y &= -16 \end{aligned}$
- D.  $\begin{aligned} 8x + 4y &= 44 \\ -8x + 8y &= -8 \end{aligned}$

## FSA Algebra 1 EOC Review

### MAFS.912.A-REI.3.6 EOC Practic

Level 2	Level 3	Level 4	Level 5
solves a system of linear equations approximately when given a graph of the system; solves a system of equations using elimination in the form of $ax + by = c$ and $dx + ey = f$ with integral coefficients, where only one equation requires multiplication; solves a simple system of equations that require substitution	explains whether a system of equations has one, infinitely many, or no solutions; solves a system of equations by graphing or substitution (manipulation of equations may be required) or elimination in the form of $ax + by = c$ and $dx + ey = f$ , where multiplication is required for both equations	solves a system of equations with rational coefficients by graphing, substitution, or elimination; interprets solutions in a real-world context	[intentionally left blank]

1. Sandy has a total of 35 coins in her money jar. If Sandy's jar contains only nickels and dimes and the value of all the coins is \$2.50, how many nickels does Sandy have?

- A. 5
- B. 15
- C. 20
- D. 30

2. The enrollment at High School R has been increasing by 20 students per year. Currently High School R has 200 students attending. High School T currently has 400 students, but its enrollment is decreasing in size by an average of 30 students per year. If the two schools continue their current enrollment trends over the next few years, how many years will it take the schools to have the same enrollment?

- A. 4 years
- B. 5 years
- C. 10 years
- D. 20 years

3. What is the solution for the system of equations?

$$y = 2x - 3$$

$$4x - 3y = 31$$

- A.  $(-11, -25)$
- B.  $(-11, -19)$
- C.  $(11, 19)$
- D.  $(14, 25)$

4. What is the y-coordinate in the solution for the system of linear equations below?

$$-3x + 2y = 6$$

$$4x - y = 2$$

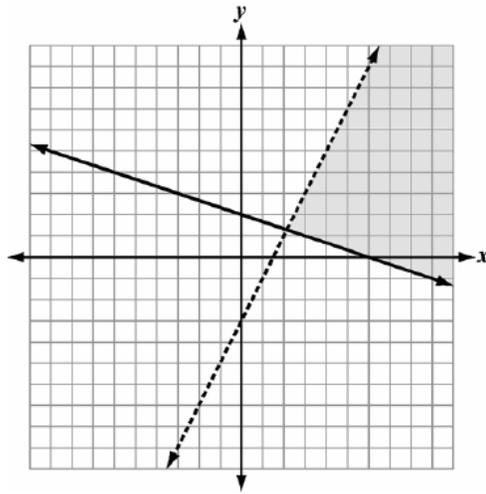
- A. -6
- B. 1
- C. 2
- D. 6

## FSA Algebra 1 EOC Review

### MAFS.912.A-REI.4.12 EOC Practice

Level 2	Level 3	Level 4	Level 5
identifies a solution region when the graph of a linear inequality is given	graphs solutions of the system of two linear inequalities and identifies the solution set as a region of the coordinate plane that satisfies both inequalities; if the form is written in $ax + by < c$ format, then $a$ , $b$ , and $c$ should be integers	verifies ordered pairs as being a part of the solution set of a system of inequalities	justifies why an ordered pair is a part of a solution set

1. Which system of inequalities describes the graph?



- A.  $y < 2x - 3$   
 $y \geq -\frac{1}{3}x + 2$
- B.  $y \leq 2x - 3$   
 $y > -\frac{1}{3}x + 2$
- C.  $y > 2x - 3$   
 $y \leq -\frac{1}{3}x + 2$
- D.  $y \geq 2x - 3$   
 $y < -\frac{1}{3}x + 2$

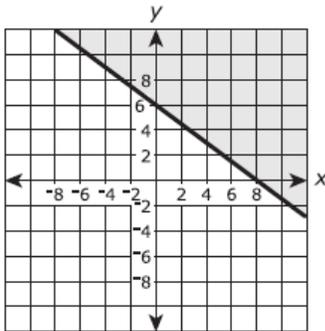
2. Which quadrant will be completely shaded by the graph of the inequality  $y < 3x$  ?

- A. Quadrant I  
 B. Quadrant II  
 C. Quadrant III  
 D. Quadrant IV

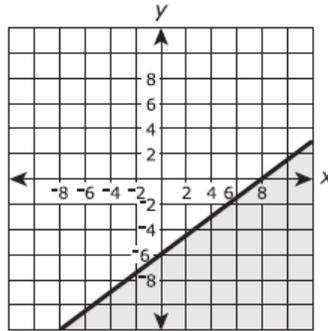
### FSA Algebra 1 EOC Review

3. Which is a graph of the solution set of the inequality  $3x - 4y \leq 24$

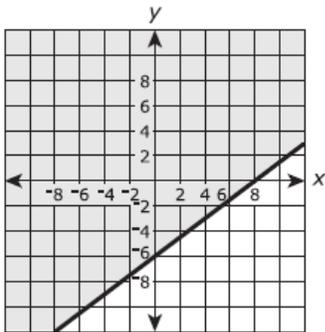
A.



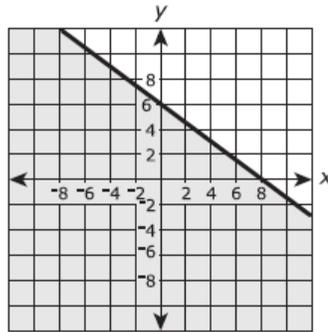
B.



C.

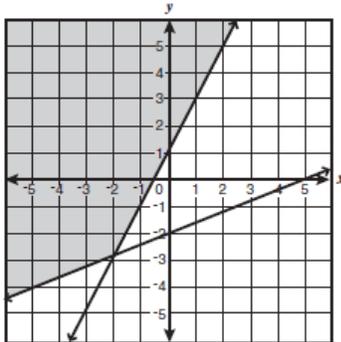


D.

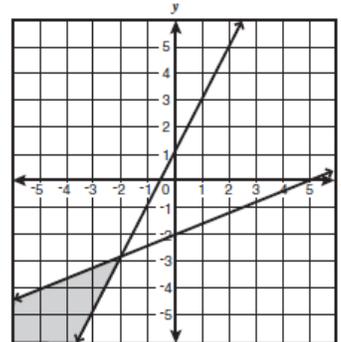


4. Which graph best represents the solution to this system of inequalities?  $\begin{cases} 2x \geq y - 1 \\ 2x - 5y \leq 10 \end{cases}$

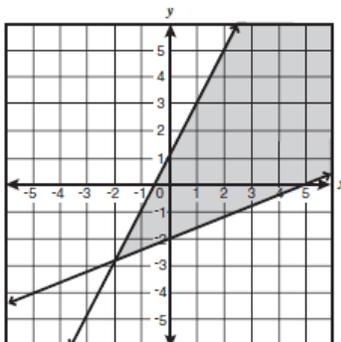
A.



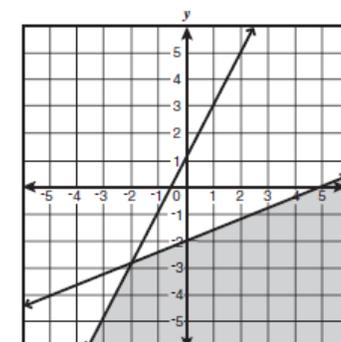
B.



C.



D.



## FSA Algebra 1 EOC Review

### MAFS.912.A-CED.1.3 EOC Practice

Level 2	Level 3	Level 4	Level 5
identifies constraints that are constant values or simple linear equations/inequalities in a real-world context	identifies variables; writes constraints as a system of linear inequalities or linear equations	models constraints using a combination of linear equations/inequalities; interprets solutions as viable or nonviable based on the context	employs the modeling cycle when writing constraints

1. On the day of the field trip, each teacher must call the parents of any student who has not returned a permission slip. All of Mr. Gomez's students returned their permission slips, so he did not have to make any calls. Mrs. Hooper and Mr. Anderson had to call a total of eight parents. Mrs. Hooper needed to call two more students than Mr. Anderson. Which set of equations correctly describes the phone calls made? (Let  $H$  = Mrs. Hooper's calls and  $A$  = Mr. Anderson's calls.)
  - A.  $H + A = 8; H = A + 2$
  - B.  $H + A = 8; A = H + 2$
  - C.  $H + A = 2; H = A + 8$
  - D.  $H + A = 2; A = H + 8$
2. In a basketball game, Marlene made 16 fields goals. Each of the field goals were worth either 2 points or 3 points, and Marlene scored a total of 39 points from field goals.

#### Part A

Let  $x$  represent the number of two-point field goals and  $y$  represent the number of three-point field goals. Which equations can be used as a system to model the situation? Select **ALL** that apply.

- $x + y = 16$
- $x + y = 39$
- $2x + 3y = 16$
- $2x + 3y = 39$
- $3x + 2y = 16$
- $3x + 2y = 39$

#### Part B

How many three-point field goals did Marlene make in the game? Enter your answer in the box.

### FSA Algebra 1 EOC Review

3. Justin plans to spend \$20 on sports cards. Regular cards cost \$3.50 per pack and foil cards cost \$4.50 per pack. Which inequality shows the relationship between the number of packs of regular cards ( $r$ ) and the number of packs of foil cards ( $f$ ) Justin can afford to buy?
- A.  $3.5f + 4.5r \leq 20$
  - B.  $3.5r + 4.5f \leq 20$
  - C.  $3.5f + 4.5r \geq 20$
  - D.  $3.5r + 4.5f \geq 20$
4. The amount of profit,  $p$ , you earn by selling knives,  $k$ , can be determined by:  $p = 200k - 500$
- a) Determine the constraints on profit and the constraints on the number of knives sold.
  - b) What happens to your profit as you sell more knives?
  - c) Is it possible to make a \$14,000 profit? Explain.

## FSA Algebra 1 EOC Review

### MAFS.912.A-REI.1.1 EOC Practice

Level 2	Level 3	Level 4	Level 5
chooses the correct justifications for the steps in a two-step equation, $ax + b = c$	chooses the correct justifications for the steps in an equation of the form $a(bx + c) = d$ or $ax + b = cx + d$ , where $a$ , $b$ , $c$ , and $d$ are integers	explains and justifies the steps in an equation of the form $a(bx + c) = d$ or $ax + b = cx + d$ , where $a$ , $b$ , $c$ , and $d$ are rational numbers	explains and justifies the steps in an equation of the form $a(bx + c) = d(ex + f)$ , where $a$ , $b$ , $c$ , $d$ , $e$ , and $f$ are rational numbers

1. State the missing steps and reasons to this solution of  $3(x + 4) = 18$ .

a)  $3(x + 4) = 18$

b) \_\_\_\_\_

c)  $3x + 12 - 12 = 18 - 12$

d)  $3x + 0 = 18 - 12$

e)  $3x = 18 - 12$

f) \_\_\_\_\_

g)  $\frac{3x}{3} = \frac{6}{3}$

h)  $1x = \frac{6}{3}$

i)  $x = \frac{6}{3}$

j)  $x = 2$

2. John's solution to an equation is shown below.

**Given:**  $x^2 + 5x + 6 = 0$

**Step 1:**  $(x + 2)(x + 3) = 0$

**Step 2:**  $x + 2 = 0$  or  $x + 3 = 0$

**Step 3:**  $x = -2$  or  $x = -3$

Which property of real numbers did John use for **Step 2**?

- A. multiplication property of equality
- B. zero product property of multiplication
- C. commutative property of multiplication
- D. distributive property of multiplication over addition

## FSA Algebra 1 EOC Review

Which equations illustrate the zero property of multiplication? Select **ALL** that apply.

$\frac{1}{3} \cdot 3 - 3 = 4$

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

$0 \cdot \frac{1}{9} \cdot 9 = 0$

$x - 5 + 5 = x$

$\frac{1}{3}(9 + 3) = 3 + 1$

For questions 4 and 5, use the solution to the equation  $3(x - 9) = 12$  below.

Start:  $3(x - 9) = 12$

Step 1:  $3x - 27 = 12$

Step 2:  $3x - 27 + 27 = 12 + 27$

Step 3:  $3x = 39$

Step 4:  $x = 13$

3. In Step 1, the multiplication property of equality was applied.

- True  
 False

4. In Step 3, the addition property of equality was applied.

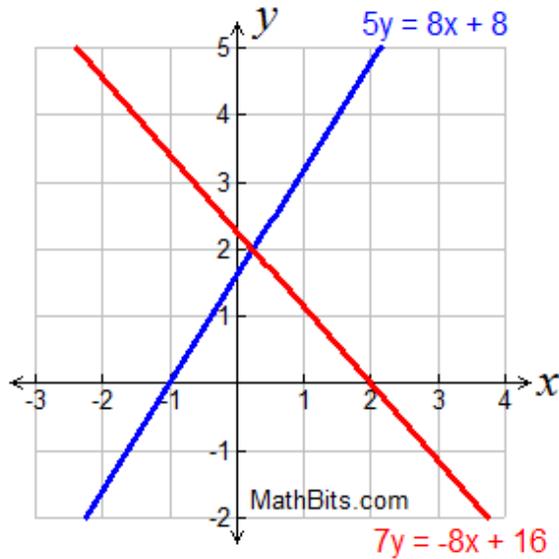
- True  
 False

## FSA Algebra 1 EOC Review

### MAFS.912.A-REI.4.11 EOC Practice

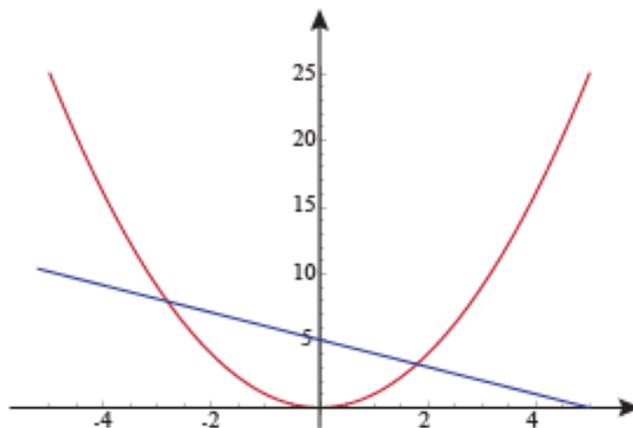
Level 2	Level 3	Level 4	Level 5
determines an integral solution for $f(x) = g(x)$ given a graph or a table of a linear, quadratic, or exponential function, in a mathematical or real-world context	determines a solution to the nearest tenth for $f(x) = g(x)$ given a graph or a table	completes an explanation on how to find an approximate solution to the nearest tenth for $f(x) = g(x)$ given a graph or a table	explains how to find an approximate solution to the nearest tenth for $f(x) = g(x)$ given a graph or a table and justifies why the intersection of two functions is a solution to $f(x) = g(x)$

1. The system  $5y = 8x + 8$  and  $7y = -8x + 16$  is graphed as shown. Which choice is the point of intersection?



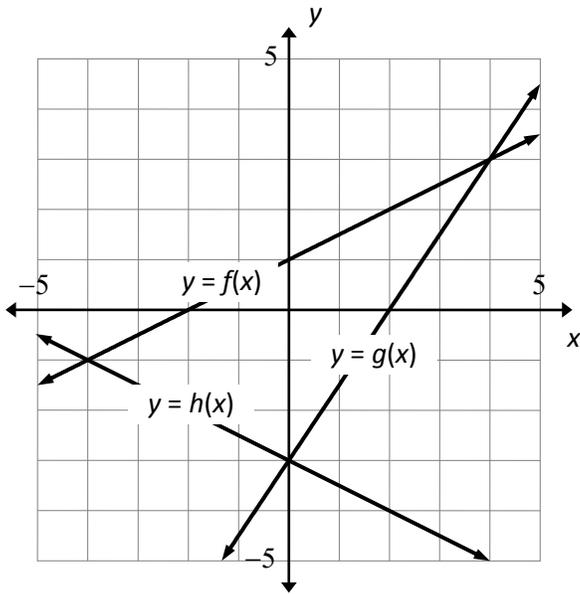
- A.  $(\frac{1}{2}, 2)$
- B.  $(\frac{1}{3}, 2)$
- C.  $(\frac{1}{4}, 2)$
- D.  $(\frac{1}{8}, 2)$

2. At which point do the two equations  $3x + 5 = y + 4x$  and  $y = x^2$  intersect?



- A.  $(1.8, 3.2)$
- B.  $(-2.8, 7.8)$
- C.  $(0, 5)$
- D. Both (A) and (B)

3. Use the graph



If  $f(x_1) = g(x_1)$  and  $g(x_2) = h(x_2)$ , what is  $f(x_1) + g(x_2)$ ?

- A. -3
- B. 0
- C. 3
- D. 4

For questions 4 and 5, use the table below.

$x$	-4	-3	-2	-1	0	1
$f(x)$	-23	-10	-3	-2	-7	-18
$g(x)$	-13	-11.5	-10	-8.5	-7	-5.58

4.  $f(x) = g(x)$  at  $(0, -7)$

- True
- False

5.  $f(x) = g(x)$  somewhere on the interval  $-3 < x < -2$ .

- True
- False

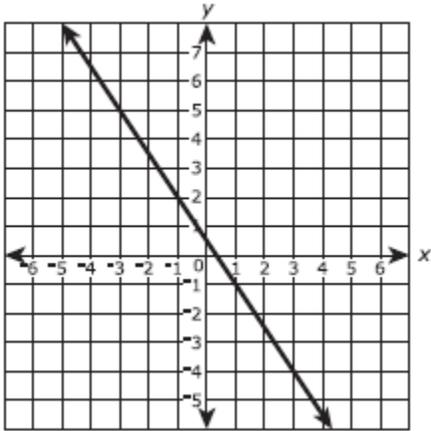
## FSA Algebra 1 EOC Review

### MAFS.912.A-REI.4.10 EOC Practice

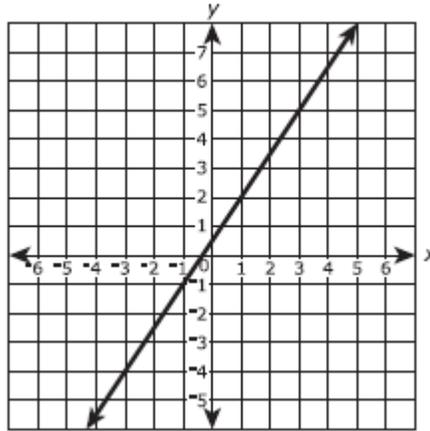
Level 2	Level 3	Level 4	Level 5
distinguishes between coordinates that are solutions to linear equations in two variables and those that are not	distinguishes between coordinates that are solutions to equations in two variables (quadratic or exponential) and those that are not	recognizes that a graph is the set of all the solutions of a given equation	justifies that a graph is the set of all the solutions of an equation

1. The ordered pairs  $(20, -29.5)$ ,  $(21, -31)$ , and  $(22, -32.5)$  are points on the graph of a linear equation. Which of the following graphs show all of the ordered pairs in the solution set of this linear equation?

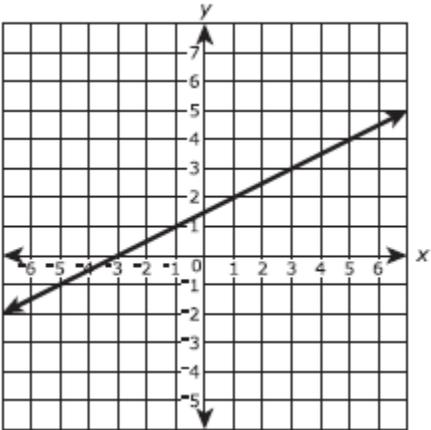
A.



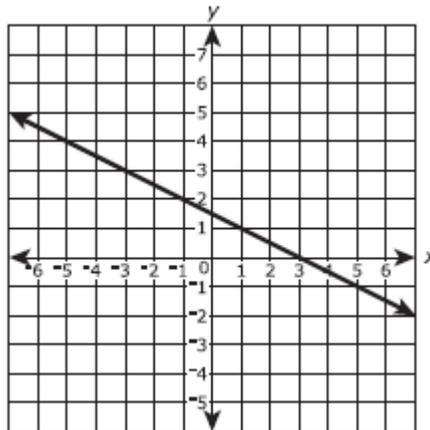
B.



C.



D.



2. Dr. Math thinks he knows more than you about what is true and false world just because he's a doctor. He says that the equation  $y = 17x + 1$  also includes the point  $(1, 8)$ . Is Dr. Math right or wrong?

- A. He's right
- B. He's wrong
- C. We need more information before we can say if he's right or wrong
- D. None of the above

### FSA Algebra 1 EOC Review

3. You talk on the phone  $y$  minutes on day  $x$  of every month according to the equation  $y = 2x + 1$ . The cell phone company claims you talked 12 minutes on the phone on the fourth day of the month. Are they right?
- A. Yes, you did talk on the phone for 12 minutes on the fourth of the month
  - B. No, you talked on the phone for 7 minutes on the fourth of the month
  - C. No, you talked on the phone for 9 minutes on the fourth of the month
  - D. No, you talked on the phone for 15 minutes on the fourth of the month
4. The speed of a snowboarder from uphill to downhill can be modeled using the equation  $y = x^2 + 1$  where  $x$  is in minutes. The snowboarder's speed at time 0 is 1 and is 2 at time 1. The snowboarder claims that this proves his speed increases linearly. Is he right?
- A. Yes, because two points are needed to define a line
  - B. No, because the equation is not linear
  - C. No, because the two points have positive values only
  - D. No, because it does not cross the x-axis
5. Which point is NOT on the graph represented by  $y = -x^2 - 2x + 8$ ?
- A. (-4, 0)
  - B. (-1, 9)
  - C. (2, 0)
  - D. (4, 0)

## FSA Algebra 1 EOC Review

### MAFS.912.A-SSE.2.3 EOC Practice

Level 2	Level 3	Level 4	Level 5
uses properties of exponents (one operation) and identifies the new base of an exponential function; explains the properties of the $a$ in $y = ab^x$ in a real-world context	factors the difference of two squares with a degree of 2 and trinomials with a degree of 2 and explains the properties of the zeros; completes the square when the leading coefficient is 1 and explains the properties of the maximum or minimum; uses the properties of exponents and names the new rate	factors the difference of two squares with a common integral factor, trinomials with a common integral factor and a leading coefficient having more than four factors and explains the properties of the zeros; completes the square when the leading coefficient is greater than 1 and explains the properties of the maximum or minimum; transforms exponential functions that have more than one operation and explains the properties of expression	explains the differences between equivalent forms and why an equivalent form would provide the required property

1. The director of a play must decide how much to charge per ticket. If tickets cost  $c$  dollars each, a total of  $(755c)$  people will attend the play. Which ticket price will generate the most income?

- A. \$1.00
- B. \$7.50
- C. \$15.00
- D. \$20.50

2. Which of these shows the following expression factored completely?

$$6x^2 + 15x - 36$$

- A.  $(2x - 3)(x + 4)$
- B.  $(6x + 9)(x - 4)$
- C.  $3(2x - 3)(x + 4)$
- D.  $3(2x + 3)(x - 4)$

3. If  $f(x) = 2x^2 - 8x + 9$ , which statement regarding the vertex form of  $f(x)$  is true?

- A. In vertex form,  $f(x) = 2(x - 2)^2 + 1$  and therefore has a minimum value of 1.
- B. In vertex form,  $f(x) = 2(x - 2)^2 + 1$  and therefore has a minimum value of 2.
- C. In vertex form,  $f(x) = 2(x - 2)^2 + 4.5$  and therefore has a minimum value of 4.5.
- D. In vertex form,  $f(x) = 2(x - 2)^2 + 4.5$  and therefore has a minimum value of 2.

4. Which expression is equivalent to  $x^4 - 12x^2 + 36$ ?

- A.  $(x^2 - 6)(x^2 - 6)$
- B.  $(6 - x^2)(6 + x^2)$
- C.  $(x^2 + 6)(x^2 + 6)$
- D.  $(x^2 + 6)(x^2 - 6)$

## FSA Algebra 1 EOC Review

5. What number should be added to both sides of the equation to complete the square in  $x^2 + 8x = 17$ ?
- A. 4
  - B. 16
  - C. 29
  - D. 49
6. If  $(x - 7)$  is a factor of  $2x^2 - 11x + k$ , what is the value of  $k$ ?
- A. -21
  - B. -7
  - C. 7
  - D. 28
7. In the equation  $y = (x - 2)^2$ , the minimum value occurs when  $x$  is
- A. -2
  - B. 2
  - C. -4
  - D. 4

## FSA Algebra 1 EOC Review

### MAFS.912.A-SSE.1.1 EOC Practice

Level 2	Level 3	Level 4	Level 5
interprets coefficients or terms of exponential and quadratic expressions in a real-world context	interprets factors of exponential and quadratic expressions	interprets more than one part of an expression	given an interpretation, chooses the correct part of the expression

1. Combined estimates for Etosha National Park and the Northwestern Population

Year	Base Year	Estimated Number of Elephants
1998	3	3,218
2000	5	3,628
2002	7	3,721
2004	9	3,571

The elephant population in northwestern Namibia and Etosha National Park can be predicted by the expression  $2,649(1.045)^b$ , where  $b$  is the number of years since 1995.

What does the value 2,649 represent?

- the predicted increase in the number of elephants in the region each year
  - the predicted number of elephants in the region in 1995
  - the year when the elephant population is predicted to stop increasing
  - the percentage the elephant population is predicted to increase each year
2. A store manager begins each shift with the same total amount of money. She keeps \$200 in a safe and distributes the rest equally to the 5 cashiers in the store. This situation can be represented by the function  $y = \frac{(x-200)}{5}$ . What does the variable  $x$  represent in this situation?
- The total amount of money the manager has at the beginning of a shift
  - The total amount of money the manager has at the end of a shift
  - The amount of money each cashier has at the beginning of a shift
  - The amount of money each cashier has at the end of a shift
3. A satellite television company charges a one-time installation fee and a monthly service charge. The total cost is modeled by the function  $y = 40 + 90x$ . Which statement represents the meaning of each part of the function?
- $y$  is the total cost,  $x$  is the number of months of service, \$90 is the installation fee, and \$40 is the service charge per month.
  - $y$  is the total cost,  $x$  is the number of months of service, \$40 is the installation fee, and \$90 is the service charge per month.
  - $x$  is the total cost,  $y$  is the number of months of service, \$40 is the installation fee, and \$90 is the service charge per month.
  - $x$  is the total cost,  $y$  is the number of months of service, \$90 is the installation fee, and \$40 is the service charge per month.

## FSA Algebra 1 EOC Review

A ball was thrown upward into the air. The height, in feet, of the ball above the ground  $t$  seconds after being thrown can be determined by the expression  $-16t^2 + 40t + 3$ . What is the meaning of the 3 in the expression? Select the correct answer.

- A. The ball takes 3 seconds to reach its maximum height.
  - B. The ball takes 3 seconds to reach the ground.
  - C. The ball was thrown from a height of 3 feet.
  - D. The ball reaches a maximum height of 3 feet.
4. Is the equation  $A = 21000(1 - 0.12)^t$  a model of exponential growth or exponential decay, and what is the rate (percent) of change per time period?
- A. exponential growth and 12%
  - B. exponential growth and 88%
  - C. exponential decay and 12%
  - D. exponential decay and 88%

## FSA Algebra 1 EOC Review

### MAFS.912.A-SSE.1.2 EOC Practice

Level 2	Level 3	Level 4	Level 5
works with expressions with only monomial factors and chooses the correct equivalent forms of a trinomial whose leading coefficient is 1	factors the difference of two squares with a degree of 2, trinomials with a degree of 2 whose leading coefficient has no more than 4 factors	factors the difference of two squares with a common integral factor, trinomials with a common integral factor and a leading coefficient with more than four factors	factors the difference of two squares with a degree of 4 with or without a common integral factor, and a polynomial with a degree of 3 and a leading coefficient of 1

1. Students were asked to write a trinomial that could not be factored using integers.

**Pat Wrote:  $x^2 + 3x - 10$**

**Sam wrote:  $x^2 + x - 12$**

**Mel wrote:  $x^2 + 2x - 1$**

**Lee wrote:  $x^2 + 2x - 3$**

Which student followed the given directions?

- A. Pat
- B. Sam
- C. Mel
- D. Lee

Identify **ALL** the factors of this polynomial when it is factored completely.

$$27x^2 - 153x - 90$$

- 3
- 9
- $x - 5$
- $x + 5$
- $3x - 2$
- $3x + 2$
- $3x - 15$
- $9x + 6$

## FSA Algebra 1 EOC Review

2. Four expressions are shown below.

I  $2(2x^2 - 2x - 60)$

II  $4(x^2 - x - 30)$

III  $2(x + 6)(x - 5)$

IV  $4x(x - 1) - 120$

The expression  $4x^2 - 4x - 120$  is equivalent to

- A. I and II, only
- B. II and IV, only
- C. I, II, and IV
- D. II, III, and IV

3. Which of these shows the following expression factored completely?

$$6x^2 - 13x + 5$$

- A.  $(3x - 1)(2x + 5)$
- B.  $(3x - 5)(2x - 1)$
- C.  $(3x - 1)(2x - 5)$
- D.  $(3x - 5)(2x + 1)$