MAFS.912.A-APR.1.1

Adding Polynomials   http://www.cpalms.org/Public/PreviewResource/Preview/63905

1. Find the sum of the two polynomials: $x^2 - 1$ and $x + 1$

2. Find the sum of the two polynomials: $2t^2 + 3t - 4$ and $3t^2 - 3t + 4$

3. Did the addition process result in a polynomial in both #1 and #2? Explain.

4. Will the sum of two polynomials <u>always</u> be a polynomial? Explain.

Subtracting Polynomials   http://www.cpalms.org/Public/PreviewResource/Preview/63966

1. Perform the subtraction of the two polynomials: $(x^2 + x + 3) - (2x^2 + x + 3)$.

2. Perform the subtraction of the two polynomials: $(2t^3 + 3t - 4) - (4t^2 - 6t)$.

3. Did the subtraction process result in a polynomial in both questions 1 and 2? Explain.

4. Will the difference of two polynomials *always* be a polynomial? Explain.

Multiplying Polynomials – 1   http://www.cpalms.org/Public/PreviewResource/Preview/63976

1. Multiply the two polynomials and write your answer in standard form.

   $-3x \cdot (4x - 2)$

2. Multiply the two polynomials and write your answer in standard form.

   $(2t - 3)(t^2 - 4t - 5)$

3. Are the products you obtained in #1 and #2 polynomials? Explain why or why not.

4. Will the product of two polynomials *always* be a polynomial? Explain.

Multiplying Polynomials – 2   http://www.cpalms.org/Public/PreviewResource/Preview/64026

In each problem, perform the indicated operation and write your answer in standard form.

1. $(2x + 1) \cdot (x - 5)$

2. $(t + 4)^2$

3. Are the products you obtained in #1 and #2 polynomials? Explain why or why not.

MAFS.912.A-APR.1.1 EOC Practice

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?

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

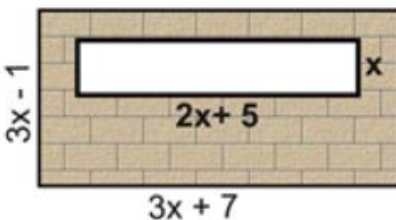A. $2x^3 + x - 5$
B. $2x^3 + 2x - 10$
C. $2x^3 + 2x^2 - 5x$
D. $2x^3 + 2x^2 - 10x$

3. Which is the simplified form of this expression?
$$(2x + 3)(x - 6) - 2x^2 + 3x + 30$$

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

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. $7x^2 + 13x - 7$

MAFS.912.A-CED.1.1

State Fair   http://www.cpalms.org/Public/PreviewResource/Preview/55558
1. The freshman Spirit Club took a trip to the state fair. There were 59 students and 6 chaperones, and the total admission cost for the group was $508. Student tickets cost $2 more than chaperone tickets.
   Write and solve an equation to find the cost of a student ticket. Show your work and explain the meaning of your variable.

Music Club

http://www.cpalms.org/Public/PreviewResource/Preview/55560
2. Kerry wants to use the $250 he has saved to buy a new music player and join a music club. The music player costs $79. The club has a $25 membership fee and then charges $14.95 per month for 30 downloads per month. Write and solve an inequality to determine the number of months of membership that Kerry can afford. Show your work and explain what any variable you use represents.

Quilts

http://www.cpalms.org/Public/PreviewResource/Preview/70667
3. Regina has started making baby quilts to sell at a craft fair. The inside of each quilt will measure four feet by five feet and will be surrounded by a border of uniform width. She wants each quilt to have a total area (including the border) of 30 square feet.
   Write and solve an equation to find the width of the border. Show your work and define any variable(s) used.

Follow Me   http://www.cpalms.org/Public/PreviewResource/Preview/70668
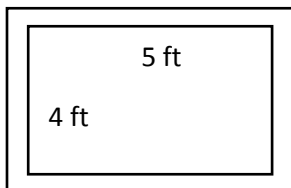
4. Bay Side High School created a new Twitter account. On the first day they had four followers. Suppose they triple the number of followers each day.
   Write and solve an equation to find the number of followers on the tenth day. Show your work and explain what any variables you use represent.

MAFS.912.A-CED.1.1 EOC Practice

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. $0.50a + (2.25)(200) \geq 350.00$

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. $4x^2 - 3x^2 - 2x = 69$

MAFS.912.A-REI.2.3

Solving a Multistep Inequality   http://www.cpalms.org/Public/PreviewResource/Preview/55561

1.   Solve the following inequality. Show and explain your work.
$$3(x - 6) + 2 \geq 5x - 4$$

Solve for X   http://www.cpalms.org/Public/PreviewResource/Preview/56521

2.   Solve the equation for x, showing all of your work carefully and completely.

$$4x - 5(x - 2) = 12x + 4 - x$$

Solve for N   http://www.cpalms.org/Public/PreviewResource/Preview/56522

3.   Solve the equation for n, showing all of your work carefully and completely.

$$\frac{1}{3}(n + 1) + 2 = \frac{1}{6}(3n - 5)$$

Solving a Literal Linear Equation   http://www.cpalms.org/Public/PreviewResource/Preview/56525

4.   Solve the following equation for y. Assume that b and y are non-zero real numbers. Show and explain your work.
$$6 - by = 19$$

Solve for M   http://www.cpalms.org/Public/PreviewResource/Preview/58784

5. Solve the following equation for *m*, showing all of your work carefully and completely.

$$\frac{m-2}{5} = \frac{m-4}{3}$$

Solve for Y   http://www.cpalms.org/Public/PreviewResource/Preview/58785

6. Solve the following inequality for *y*, showing all of your work carefully and completely.

$$5(y+6) + 2y < 4(y+2) - 5$$

MAFS.912.A-REI.2.3 EOC Practice

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

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

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

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

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

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

$-2 < b \text{ or } b > -2$

MAFS.912.A-CED.1.4

Solving Formulas for a Variable   http://www.cpalms.org/Public/PreviewResource/Preview/55015

Solve each formula for the indicated variable. Show all of your work.

1. Solve for *x*: $y = mx + b$

2. Solve for *d*: $k = 5(d - 6)$

3. Solve for y_2: $m = \dfrac{y_2 - y_1}{x_2 - x_1}$

Solving Literal Equations   http://www.cpalms.org/Public/PreviewResource/Preview/55564

Solve each formula for the indicated variable. Show all of your work.

1. Solve for y_2: $d = y_2 - y_1$

2. Solve for *b*: $a = b + c$

3. Solve for y_1: $d = y_2 - y_1$

Literal Equations   http://www.cpalms.org/Public/PreviewResource/Preview/55565

Solve each formula for the indicated variable. Show all of your work.

1. Solve for t: $d = rt$

2. Solve for m: $d = \dfrac{m}{v}$

3. Solve for v: $d = \dfrac{m}{v}$

Rewriting Equations   http://www.cpalms.org/Public/PreviewResource/Preview/58767

1. Solve the following equation for v. Show all of your work.

$$T = b + \frac{v^2}{2d}$$

MAFS.912.A-CED.1.4 EOC Practice

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

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

MAFS.912.A-CED.1.2

Tech Repairs   http://www.cpalms.org/Public/PreviewResource/Preview/56278

Mary runs a computer repair business. She charges a flat rate of $50 plus $25 per hour of service. Write an equation to represent the cost, C, of h hours of service.

Tee it Up   http://www.cpalms.org/Public/PreviewResource/Preview/56279

Kevin bought a membership to a golf club. He pays $250 per month and $18 every time he plays a round of golf. Write an equation to represent C, the cost of m months of membership during which Kevin plays golf g times.

Tech Repairs Graph   http://www.cpalms.org/Public/PreviewResource/Preview/56281

Mary runs a computer repair business. She charges a flat rate of $50 per visit plus $25 per hour of service. The equation $C = 50 + 25h$ represents the cost, C, to hire Mary for h hours.

Title the graph and label the axes appropriately. Then graph the equation.

Hotel Swimming Pool   http://www.cpalms.org/Public/PreviewResource/Preview/66568
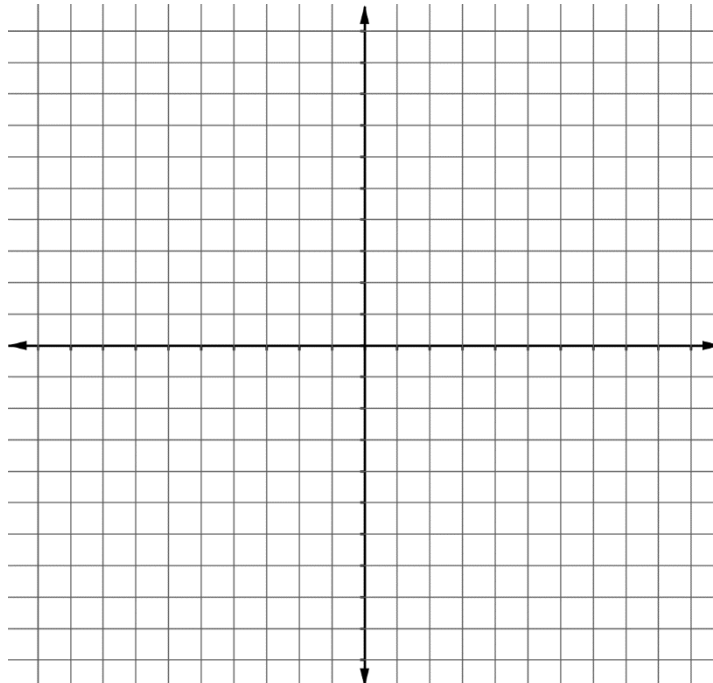
A swimming pool measuring 24 feet by 48 feet is being built for a new hotel in town. The pool will have a uniform concrete border surrounding it.
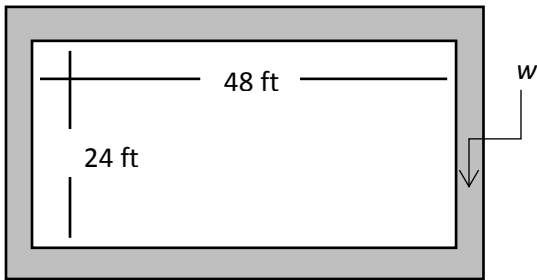
Write an equation that represents the area, A, of the pool region (pool and border) in terms of the width of the border, w.

Loss of Fir Trees   http://www.cpalms.org/Public/PreviewResource/Preview/66569

A forester has determined that the number of fir trees, N, in a forest can be modeled by the equation $N = 8000(0.5)^{\frac{t}{5}}$ where 8000 is the estimated number of trees in 2010 and t is the number of years since 2010. Label and scale the axes appropriately. Then, sketch a graph of this equation for the period 2010-2030. Indicate clearly the coordinates of the points you used to construct the graph.

MAFS.912.A-CED.1.2 EOC Practice

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. 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.

a) On the axes below, graph the function, C, where $C(x)$ represents the number of Calories in x mints.
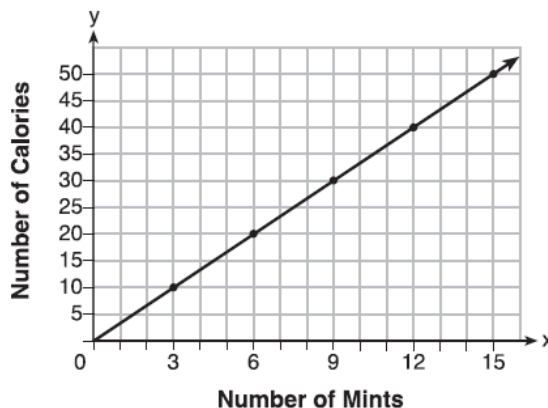
b) Write an equation that represents $C(x)$.
$$C(x) = \frac{10}{3}x$$

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

54 mints

4. 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: $C(x) = 1.2s + 3$

MAFS.912.A-REI.3.5

Solving Systems   http://www.cpalms.org/Public/PreviewResource/Preview/68556

Let a, b, c, d, e, and f be real numbers.

Consider equations A, B, and C:

A. $ax + by = c$
B. $dx + ey = f$
C. $(a + 7d)x + (b + 7e)y = (c + 7f)$

1. Given that x and y satisfy both (A) and (B), demonstrate that (the same) x and y also satisfy (C).

2. What does the above demonstration indicate about solutions of the system of equations containing (B) and (C)?

Solution Sets of Systems   http://www.cpalms.org/Public/PreviewResource/Preview/68582

Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other, produces a system with the same solutions.

To prove this statement, let P and Q be expressions involving variables x and y, and let k be a nonzero real number.

1. If (a, b) is a solution of the system of equations $\{P = 0$ and $Q = 0\}$, show that it must also be a solution of the system of equations $\{P = 0$ and $Q + kP = 0\}$.

2. If (a, b) is a solution of the system of equations $\{P = 0$ and $Q + kP = 0\}$, show that it must also be a solution of the system of equations $\{P = 0$ and $Q = 0\}$.

3. Explain why both of the above parts of this exercise are required to prove the statement.

MAFS.912.A-REI.3.5 EOC Practice

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?
$$2x + 2y = 16$$
$$3x - y = 4$$

A. $2x + 2y = 16$
$6x - 2y = 4$

B. $x + y = 16$
$3x - y = 4$

C. $2x + 2y = 16$
$6x - 2y = 8$

D. $6x + 6y = 48$
$6x + 2y = 8$

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

System (a): $4x - 5y = 13$
$3x + 6y = 11$

System (b): $8x - 10y = 26$
$x - 11y = 2$

All terms of system B are two times the terms of system A.

MAFS.912.A-REI.3.6

Solving a System of Equations – 1   http://www.cpalms.org/Public/PreviewResource/Preview/59145

1. Solve the system of equations both algebraically and by graphing. Be sure to show all of your work and clearly state the solution.
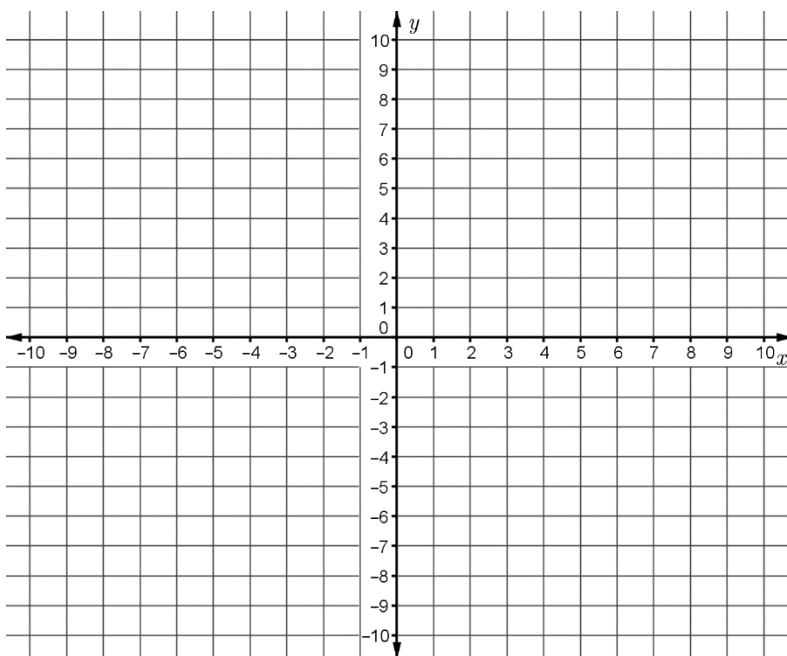
$2y + 4 = 2 + 3x$

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

Solving a System of Equations – 2   http://www.cpalms.org/Public/PreviewResource/Preview/57035
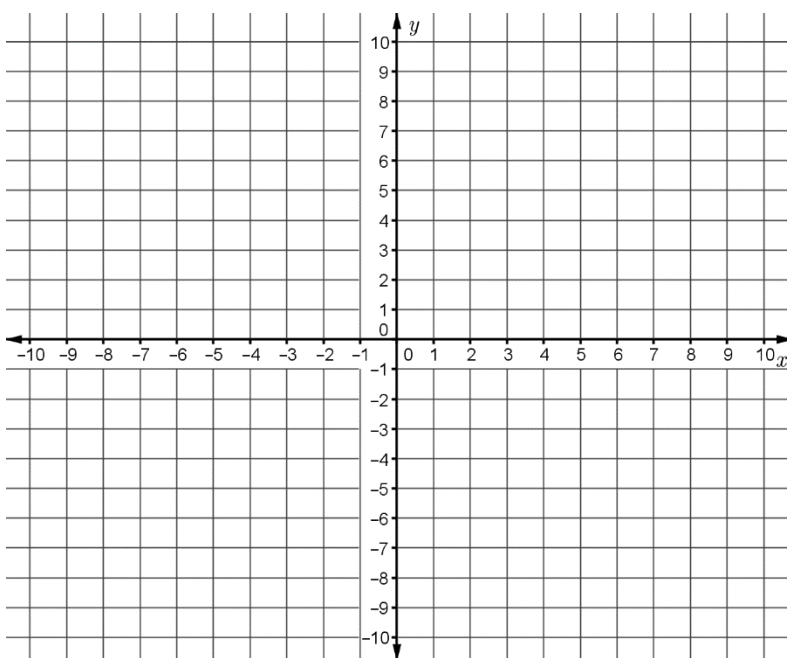
1. Solve the system of equations both algebraically and by graphing. Be sure to show all of your work and clearly state the solution.
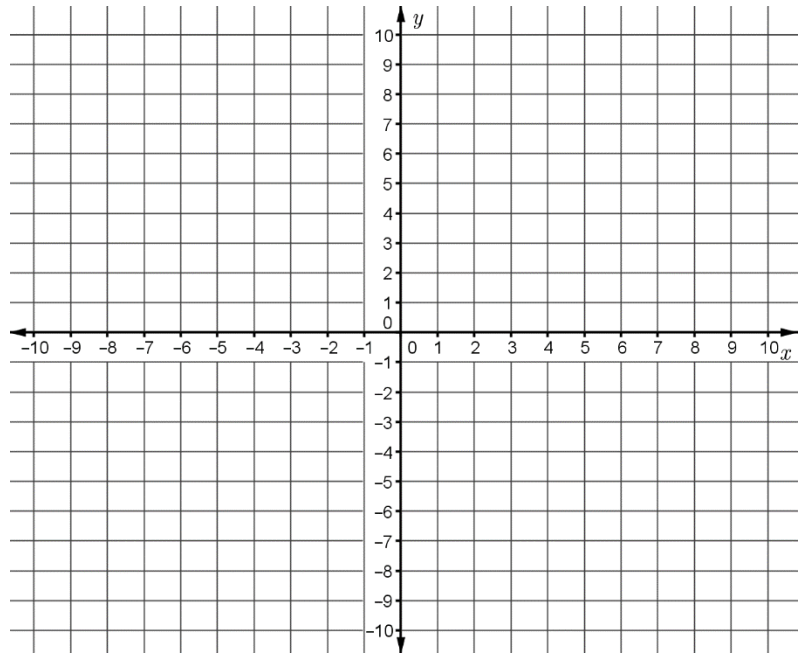
$x + 6 = y + 13$

$5 - x = y - 4$

Solving a System of Equations – 3   http://www.cpalms.org/Public/PreviewResource/Preview/57039

1. Solve the system of equations both algebraically and by graphing. Be sure to show all of your work and clearly state the solution.

$$y = -3x + \frac{1}{2}$$
$$6x + 2y = 1$$

Apples and Peaches   http://www.cpalms.org/Public/PreviewResource/Preview/59144

1. Carla volunteered to make pies for a bake sale. She bought two pounds of apples and six pounds of peaches and spent $19. After baking the pies, she decided they looked so good she would make more. She went back to the store and bought another pound of apples and five more pounds of peaches and spent $15. Her purchases can be represented by the following system of equations where a represents the cost per pound of the apples and p represents the cost per pound of the peaches.

$$2a + 6p = 19$$
$$a + 5p = 15$$

Solve the system either algebraically **or** by graphing and explain why you chose that method. (Note: The solution will contain fractions.)

MAFS.912.A-REI.3.6 EOC Practice Test

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
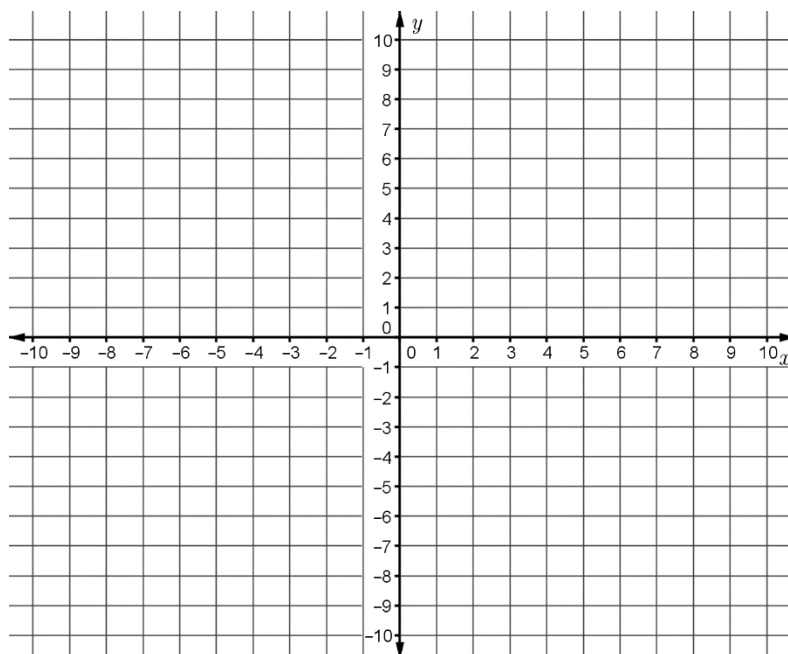
MAFS.912.A-REI.4.12

Graphing Linear Inequalities   http://www.cpalms.org/Public/PreviewResource/Preview/59159

1. Graph all solutions of the inequality $y < -\frac{1}{3}x + 2$.
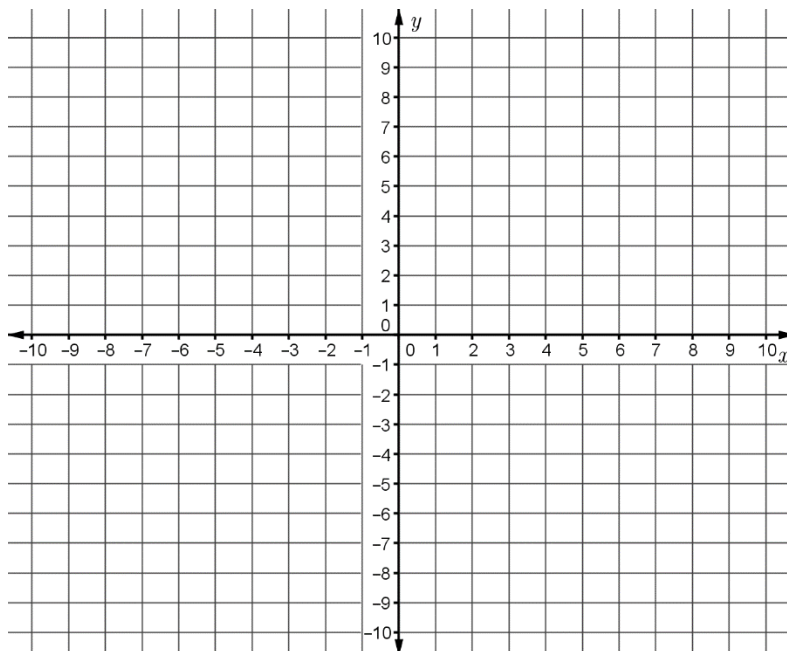
Linear Inequalities in the Half-Plane   http://www.cpalms.org/Public/PreviewResource/Preview/59160

2. Use the coordinate plane below to graph all solutions of the inequality $y \geq \frac{2}{3}x - 4$.
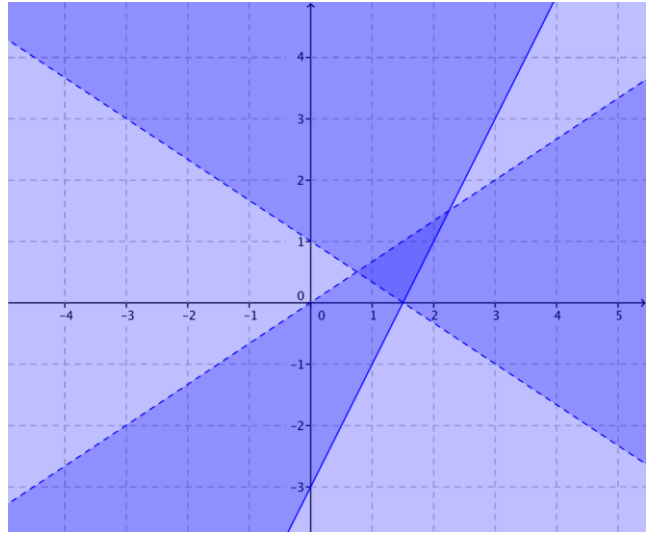
Which Graph?

3. Select the graph that corresponds to the system of inequalities. Explain/justify your choice.
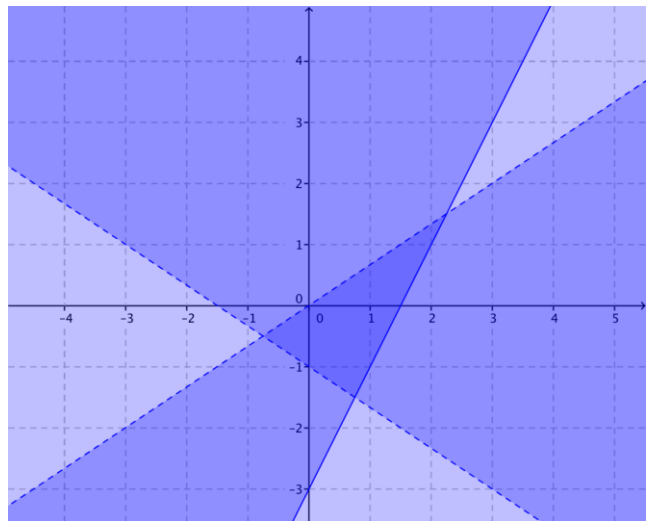
$$\begin{cases} y > -\frac{2}{3}x + 1 \\ \quad y < \frac{2}{3}x \\ \quad y \geq 2x - 3 \end{cases}$$
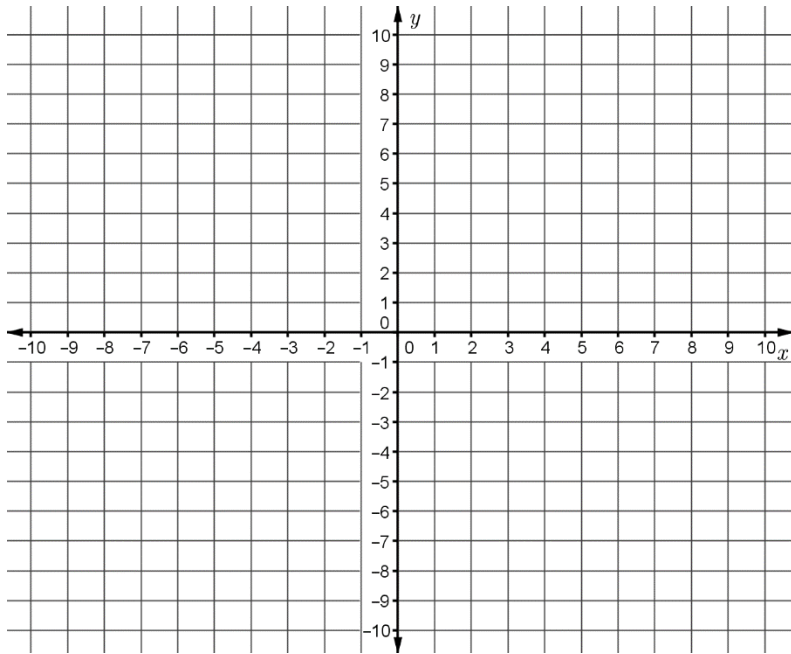
A.

B.

C.

D.
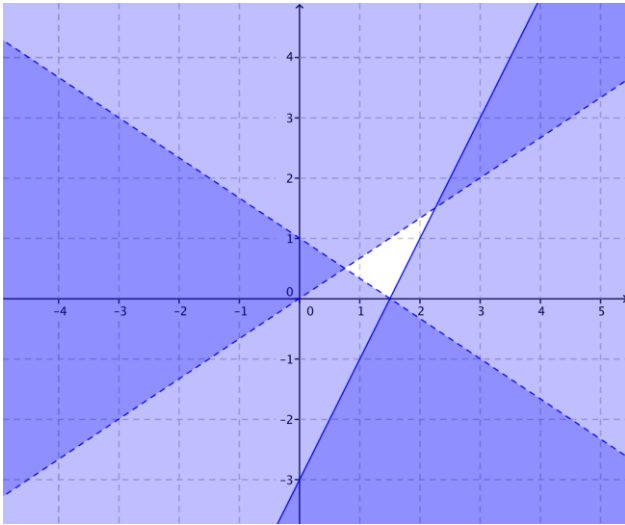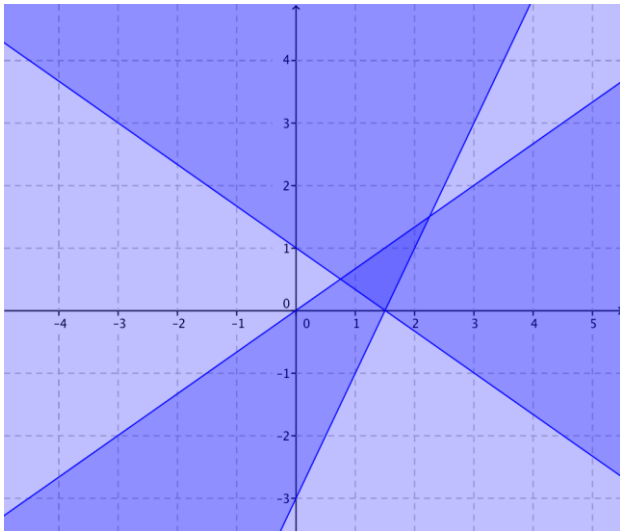
Graph a System of Inequalities   http://www.cpalms.org/Public/PreviewResource/Preview/60567

4. Graph the system of inequalities.
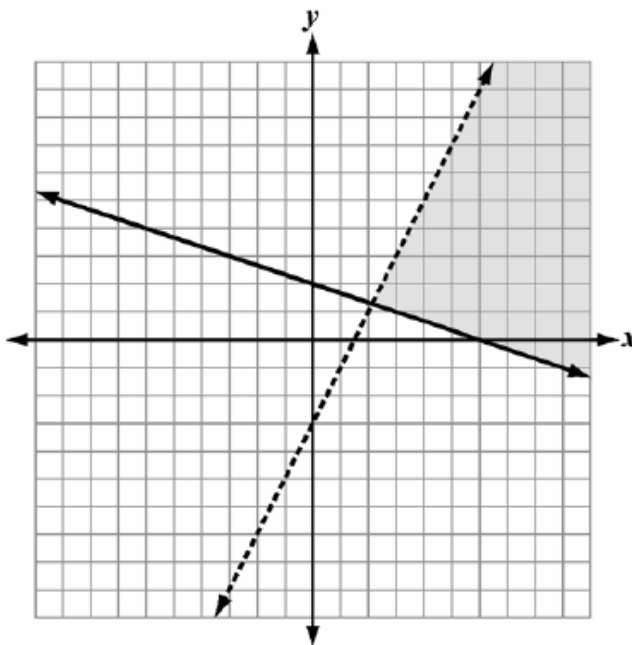
$$\begin{cases} y > \dfrac{1}{4}x - 2 \\ \quad y \geq 3x \\ y < -x + 2 \end{cases}$$

MAFS.912.A-REI.4.12 EOC Practice

1. Which system of inequalities describes the graph?

A. $y < 2x - 3$
   $y \geq -\dfrac{1}{3}x + 2$

B. $y \leq 2x - 3$
   $y > -\dfrac{1}{3}x + 2$

C. $y > 2x - 3$
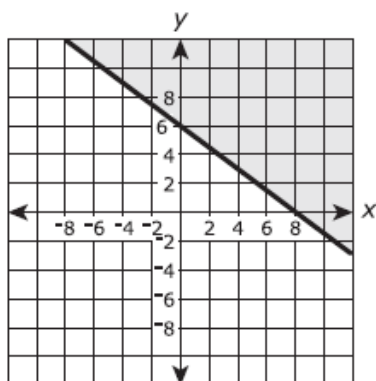 $y \leq -\dfrac{1}{3}x + 2$

D. $y \geq 2x - 3$
   $y < -\dfrac{1}{3}x + 2$

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

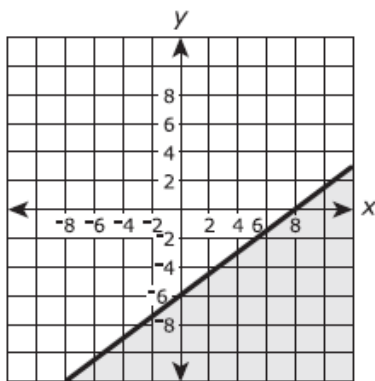A. Quadrant I
B. Quadrant II
C. Quadrant III
D. Quadrant IV

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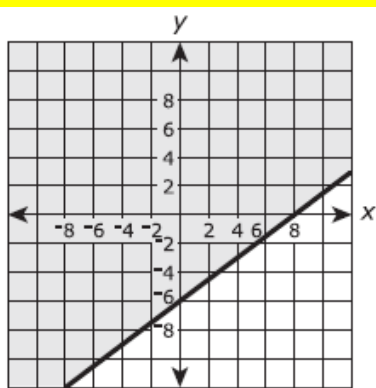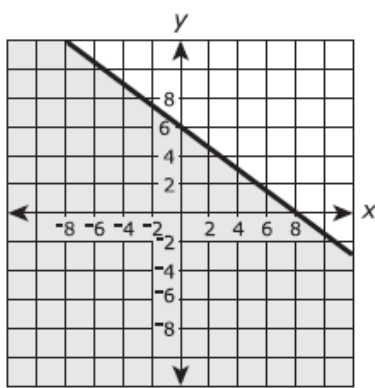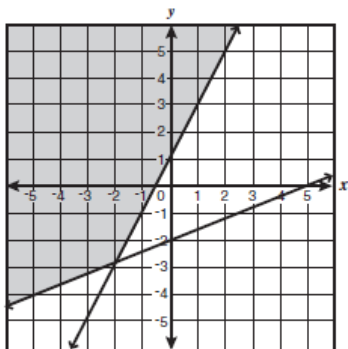
A.

B.

C.

D.

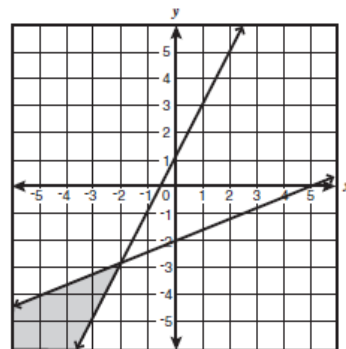4. Which graph best represents the solution to this system of inequalities? $\begin{cases} 2x \geq y - 1 \\ 2x - 5y \leq 10 \end{cases}$
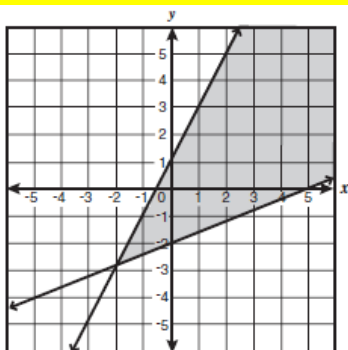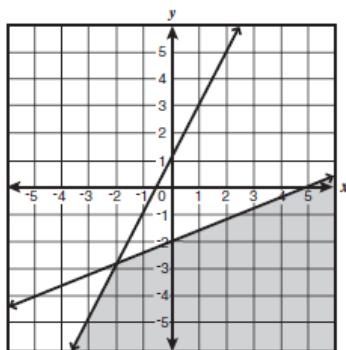
A.

B.

C.

D.

MAFS.912.A-CED.1.3

Constraints on Equations   http://www.cpalms.org/Public/PreviewResource/Preview/56358

The homecoming committee bought 500 plastic souvenir footballs to sell at the homecoming game to raise money for a local charity. The profit (in dollars), *p*, from the sale of *s* footballs can be represented by the following equation.

$$p = 5s - 128$$

1. Since the homecoming committee bought only 500 footballs, they can sell no more than this. Represent this constraint with an inequality.

2. Is it possible for the profit to be exactly $1500? Show your work and justify your answer.

3. Is it possible for the profit to be at least $2400? Show your work and justify your answer.

Sugar and Protein   http://www.cpalms.org/Public/PreviewResource/Preview/68246

The manager of the school cafeteria is planning a plate lunch. She can spend no more than $2.00 per lunch and can choose servings from selections A and B. The table indicates the cost and the quantity of sugar and protein (in grams) per serving of each food choice.

Food	Cost per Serving	Amount of Sugar	Amount of Protein
A	20 cents	7	6
B	40 cents	3	9

It is recommended that the lunch contain at most 30 grams of sugar and at least 50 grams of protein. Note: Fractional servings of each of the food choices can be prepared.

1. Is it possible to prepare a lunch that contains four servings of Food A and three servings of Food B and still satisfy the constraints on cost, amount of sugar, and amount of protein? Explain.

2. Let *a* represent the number of servings of food A and let *b* represent the number of servings of food B. Write a set of inequalities that model the constraints on cost, amount of sugar, and amount of protein.

The New School

Springfield will be opening a new high school in the fall. The number of underclassmen (9th and 10th graders) must fall between 600 and 700 (inclusive), the number of upperclassmen (11th and 12th graders) must fall between 500 and 600 (inclusive), and the number of students cannot exceed 1200.

Let a represent the number of underclassmen and let b represent the number of upperclassmen. Write a set of inequalities that models the constraints on the composition of the student body.

MAFS.912.A-CED.1.3 EOC Practice

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.

7

3. 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.
   $p > 500.$

b) What happens to your profit as you sell more knives?
   Your profit will increase.

c) Is it possible to make a $14,000 profit? Explain.
   No. You cannot sell half of a knife, 72.5.

MAFS.912.A-REI.1.1

Justify the Process – 1   http://www.cpalms.org/Public/PreviewResource/Preview/58779

1. A student solved the equation $3x + 2 = 9 - x$ as shown below. Assume there is a value of x that satisfies the equation.
    Provide the definition, property, or theorem that justifies each step of the solution process.

    $3x + 2 = 9 - x$

    a) $4x + 2 = 9$ Justification:

    b) $4x = 7$ Justification:

    c) $x = \dfrac{7}{4}$ Justification:

Does It Follow?   http://www.cpalms.org/Public/PreviewResource/Preview/58782

1. Suppose x is a number such that $2x = \dfrac{x}{2} - 6$. Must it then be true that $3x = 12$? Explain your reasoning.

Justify the Process – 2   http://www.cpalms.org/Public/PreviewResource/Preview/60552

1. A student solved the equation $7 = 3(t - 1) - 2(t - 3)$ as shown below. Assume there is a value of t for that satisfies the equation.
    Provide a justification for each step of the solution process.

    $7 = 3(t - 1) - 2(t - 3)$

    a) $7 = 3t - 3 - 2t + 6$ Justification:

    b) $7 = t + 3$ Justification:

    c) $4 = t$ Justification:

Equation Logic   http://www.cpalms.org/Public/PreviewResource/Preview/60554

1. Solve the equation $\dfrac{5x+3}{4} = 7$. Explain and justify each step in your solution process.

2. How confident are you that you solved the equation correctly? Explain.

MAFS.912.A-REI.1.1 EOC Practice

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

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

b) <mark>Distributive Property</mark>

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

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

e) $3x = 18 - 12$

f) <mark>Simplify</mark>

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.

$$\begin{array}{ll} \textbf{Given:} & x^2 + 5x + 6 = 0 \\ \textbf{Step 1:} & (x+2)(x+3) = 0 \\ \textbf{Step 2:} & x+2 = 0 \ \text{or} \ x+3 = 0 \\ \textbf{Step 3:} & x = -2 \ \text{or} \ x = -3 \end{array}$$

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

A. multiplication property of equality
B. <mark>zero product property of multiplication</mark>
C. commutative property of multiplication
D. distributive property of multiplication over addition

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

☐ $\frac{1}{3} \cdot 3 - 3 = 4$

☐ $\frac{1}{2} + 2 - 2 = \frac{1}{2}$

☐ <mark>$0 \cdot \frac{1}{9} \cdot 9 = 0$</mark>

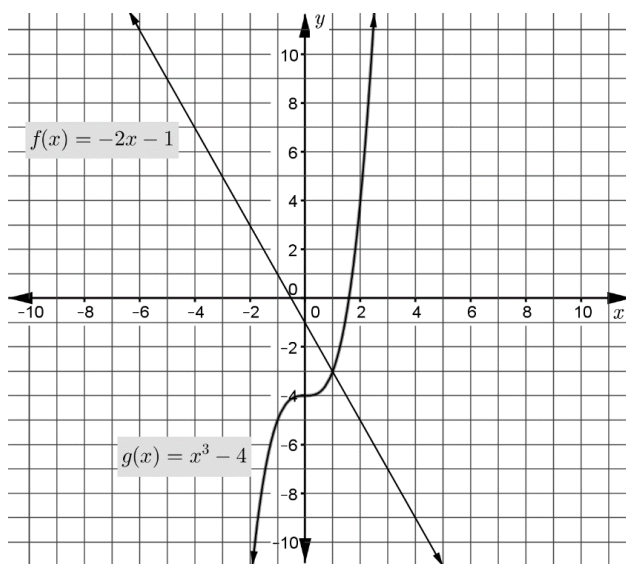☐ $x - 5 + 5 = x$

☐ $\frac{1}{3}(9 + 3) = 3 + 1$

MAFS.912.A-REI.4.11

Graphs and Solutions -1   http://www.cpalms.org/Public/PreviewResource/Preview/59835

The functions $f(x) = -2x - 1$ and $g(x) = x^3 - 4$ are graphed below.

1.   Identify the *x*-coordinate of the point where the graphs intersect.

2.   Show that the *x*-coordinate of the point of intersection is a solution of the equation $-2x - 1 = x^3 - 4$.

3.   Explain, in general, why the *x*-coordinate of the point of intersection is a solution of the equation $f(x) = g(x)$.

Using Tables   http://www.cpalms.org/Public/PreviewResource/Preview/60538

1.   Let $f(x) = x^3$ and $g(x) = 3x + 2$. Find solutions of the equation $f(x) = g(x)$ by creating a table of integer values of x for $-2 \leq x \leq 3$ and finding the corresponding values of f and g. Be sure to clearly indicate all values from the table that are solutions of $f(x) = g(x)$.

Graphs and Solutions – 2   http://www.cpalms.org/Public/PreviewResource/Preview/59838

Functions f and g are graphed below.
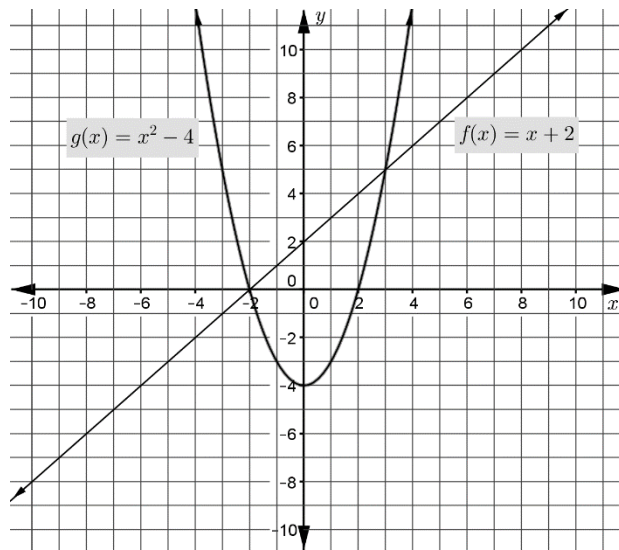
Use the graph to find the solution(s) of the equation $f(x) = g(x)$. Explain how you found the solution(s).

Using Technology   http://www.cpalms.org/Public/PreviewResource/Preview/68597

1. Use technology (e.g., a spreadsheet, graphing calculator, or dynamic geometry software) to estimate all solutions of $f(x) = g(x)$, where $f(x) = x + 4$ and $g(x) = 2^x$. Include a sketch of the graphs as well your estimates of the solutions.
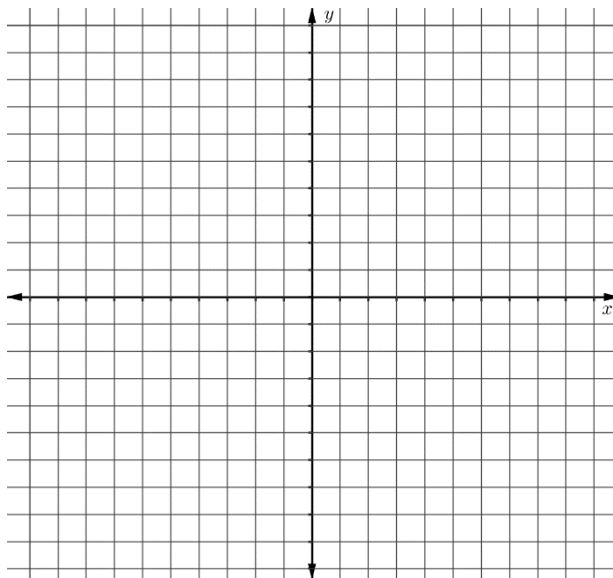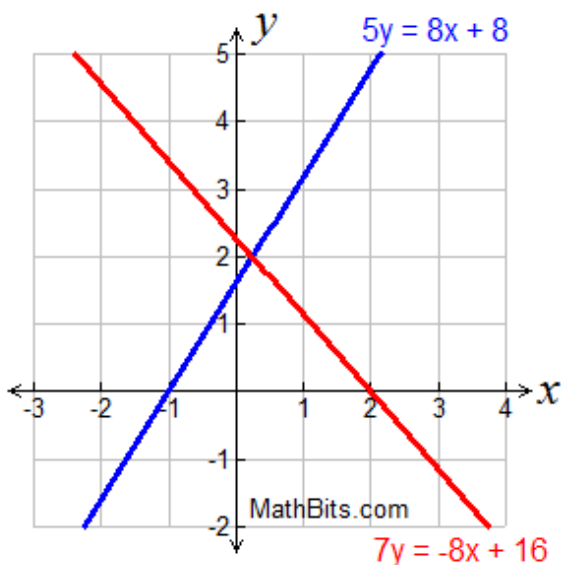

a) How can you check your estimates of the solutions found by graphing? Show or explain.
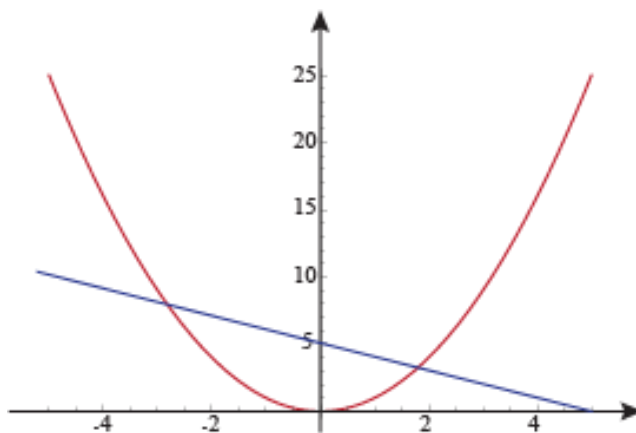
MAFS.912.A-REI.4.11 EOC Practice

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

A. $\left(\frac{1}{2}, 2\right)$

B. $\left(\frac{1}{3}, 2\right)$

C. $\left(\frac{1}{4}, 2\right)$

D. $\left(\frac{1}{8}, 2\right)$

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)*
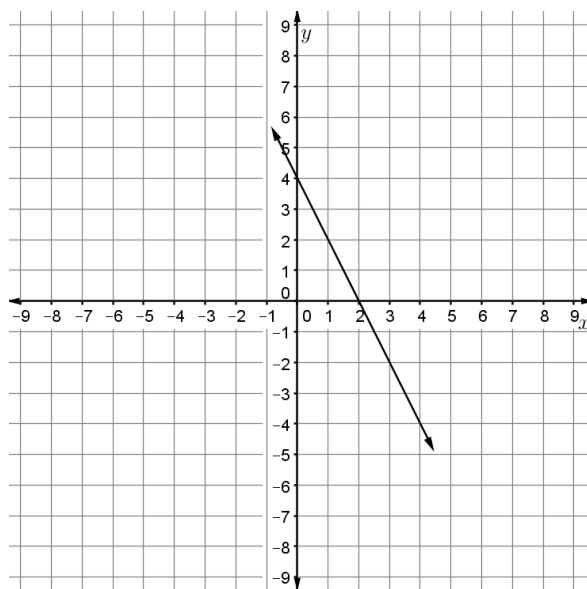
MAFS.912.A-REI.4.10

Finding Solutions   http://www.cpalms.org/Public/PreviewResource/Preview/66771

The graph of the equation $y = -2x + 4$ is shown below.

1. Suppose (a, b) is a solution of the equation $y = -2x + 4$. Explain the relationship between the point (a, b) and the graph of the equation. Graph a point that represents a solution of this equation and give its coordinates.

2. Suppose (c, d) is *not* a solution of the equation $y = -2x + 4$. Explain the relationship between the point (c, d) and the graph of the equation. Graph a point that does *not* represent a solution of this equation and give its coordinates.

Case In Point   http://www.cpalms.org/Public/PreviewResource/Preview/66777

1. Identify four solutions of the equation $y = 2^x$.

2. What is the relationship between the set of *all* solutions of the equation $y = 2^x$ and the graph of $y = 2^x$?

3. Explain whether or not there are any points on the graph of $y = 2^x$ that would not be included in the solution set.

What Is the Point?   http://www.cpalms.org/Public/PreviewResource/Preview/66775

The graph of the equation $y = 3x - 6$ is shown below.
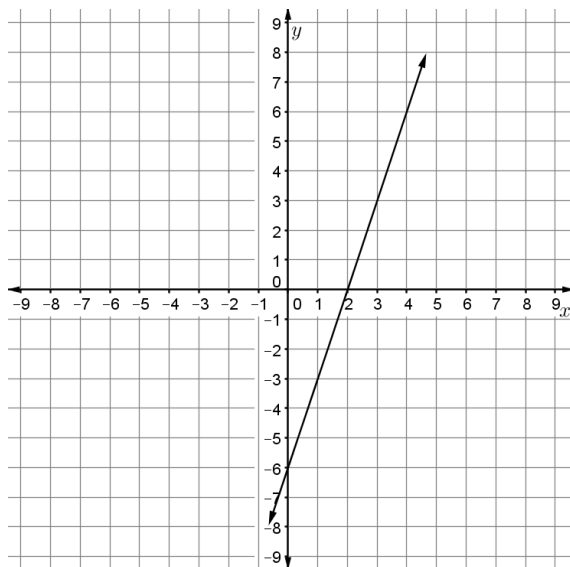
3. A point on the graph of $y = 3x - 6$ has coordinates (4, 6). Explain the relationship between the ordered pair (4, 6) and the equation $y = 3x - 6$.

4. A point not on the graph of $y = 3x - 6$ has coordinates (1, 2). Explain the relationship between the ordered pair (1, 2) and the equation.

5. Could there be a point on the graph of the line for which the relationship you described in problem one would not hold true? Why or why not?
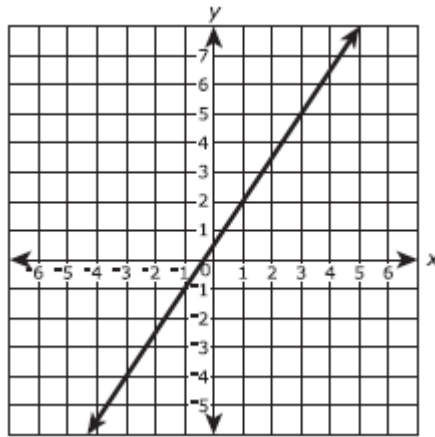
MAFS.912.A-REI.4.10 EOC Practice

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?
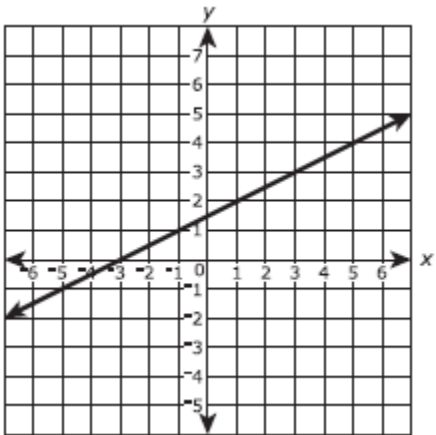
A.
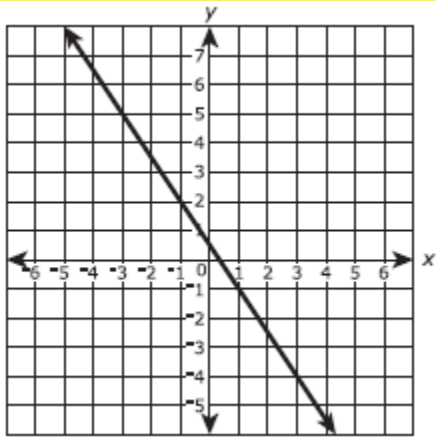
B.

C.

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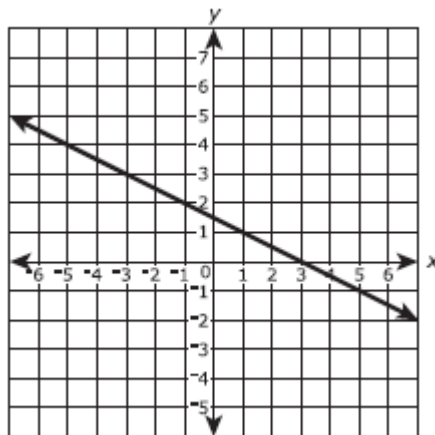
2. Dr. Math thinks he knows more than you about what is true and false world just because he's a doctor. He says that the equation $y = 17x + 1$ also includes the point $(1, 8)$. Is Dr. Math right or wrong?

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

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 changes from uphill to downhill at a speed of $y = x^2 + 1$ 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

MAFS.912.A-SSE.2.3

Jumping Dolphin   http://www.cpalms.org/Public/PreviewResource/Preview/66577

1. Micah is writing a function that models the height a dolphin reaches when it propels itself from underwater to the surface, leaps through the air, and reenters the water. The model is represented by the equation $h = -16t^2 + 96t - 128$ where h is the height in feet above the surface of the water and t is the time in seconds. According to Micah's model, how long will the dolphin be above the surface of the water?

Rocket Town   http://www.cpalms.org/Public/PreviewResource/Preview/66641

The engineers at Rocket Town have designed a toy rocket with an all-new wing design. The cost in dollars, *C*, for manufacturing *x* number of parts can be modeled by the following function.

$$C = x^2 - 400x + 40100$$

1. Rewrite the expression $x^2 - 400x + 40100$ in vertex form. Show your work below.

2. Is the vertex of the graph of this function a maximum or minimum value? Justify your answer.

3. What is the maximum or minimum value written as an ordered pair?

4. What do the *x*- and *y*-coordinates of the vertex represent in the context of this problem? Explain your answer.

Population Drop   http://www.cpalms.org/Public/PreviewResource/Preview/66642

The population of Littleburg has been declining since the year 2000. The function, $P = 10000(0.9)^t$, models the population t years after 2000.

1. Show that the function $P = 10000(1 - 0.1)^t$ is equivalent to $P = 10000(0.9)^t$ and compare the two functions in terms of what aspect of the population decline each function reveals.

2. Show that the function $P = 10000(.9913)^{12t}$ is equivalent (within rounding) to $P = 10000(0.9)^t$ and compare the two functions in terms of what aspect of the population decline each function reveals.

College Costs   http://www.cpalms.org/Public/PreviewResource/Preview/66645

1. The function $P = 1.03^t$ describes the percent increase, P, in the cost of college tuition in the state of Florida each year. Transform the expression 1.03^t so that it can be used to calculate the percent increase in the cost of college tuition each **decade**. Show your work and explain your reasoning.

MAFS.912.A-SSE.2.3 EOC Practice

1. The director of a play must decide how much to charge per ticket. If tickets cost c dollars each, a total of (75-5c) 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. $(x^2 + 6)(x^2 - 6)$

MAFS.912.A-SSE.1.1

Dot Expressions   http://www.cpalms.org/Public/PreviewResource/Preview/58789

1. The algebraic expression $(n − 1)^2 + (2n − 1)$ can be used to calculate the number of symbols in each diagram. Explain what n likely represents, how the parts of this expression relate to the diagrams, and why the expression results in the number of symbols in each diagram.

What Happens?   http://www.cpalms.org/Public/PreviewResource/Preview/58791

The volume formula for a cone is $V = \frac{1}{3}\pi r^2 h$, where r is the radius of the base of the cone and h is the height of the cone.

1. If the height of a cone is doubled, what happens to the volume of the cone? Explain.

2. If the radius is doubled, what happens to the volume of the cone? Explain.

3. If both the radius and the height are doubled, what happens to the volume of the cone? Explain.

Interpreting Basic Tax   http://www.cpalms.org/Public/PreviewResource/Preview/62602

Last weekend, Cindy purchased two tops, a pair of pants, and a skirt at her favorite store. The equation $T = 1.075x$ can be used to calculate her total cost where x represents the pretax subtotal cost of her purchase.

1. In the equation $T = 1.075x$, what does the number "1" represent? Explain below using the context of Cindy's situation.

2. In the equation $T = 1.075x$, what does the number "0.075" represent? Explain below using the context of Cindy's situation.

FS Algebra 1 EOC Review

MAFS.912.A-SSE.1.1 EOC Practice

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?

A. the predicted increase in the number of elephants in the region each year
B. the predicted number of elephants in the region in 1995
C. the year when the elephant population is predicted to stop increasing
D. 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?

A. The total amount of money the manager has at the beginning of a shift
B. The total amount of money the manager has at the end of a shift
C. The amount of money each cashier has at the beginning of a shift
D. 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?

A. 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.
B. 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.
C. 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.
D. 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.

MAFS.912.A-SSE.1.2

Finding Missing Values   http://www.cpalms.org/Public/PreviewResource/Preview/64228

1.   Find the values of f, g, and h such that $(2x - 3)(3x + 1) = fx^2 + gx + h$. Show your work.

2.   Find the values of m and n such that $x^2 + 2x - 24 = (x + m)(x + n)$. Show your work.

Quadratic Expressions   http://www.cpalms.org/Public/PreviewResource/Preview/64230

1.   Three of the following expressions are equivalent. Circle the three equivalent expressions and name the form in which each is written.

A. $(x + 3)(x + 7)$

B. $(x - 5)^2 - 4$

C. $2x^2 - 20x + 42$

D. $(x - 5)^2 + 4$

E. $(x - 3)(x - 7)$

F. $x^2 - 10x + 21$

Determine the Width   http://www.cpalms.org/Public/PreviewResource/Preview/64356

1.   Write the expression for the width of a rectangle whose area is given by $x^2 + 5x - 24$ and whose length is given by $x + 8$. Explain and justify your work.

$x + 8$
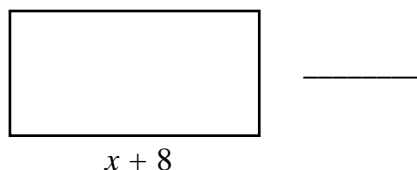
Rewriting Numerical Expressions http://www.cpalms.org/Public/PreviewResource/Preview/64360

Look at each problem carefully. Each computation can be completed more efficiently by using an algebraic strategy rather than direct calculation. Try to identify that strategy and use it to complete each problem. Show and explain your work.

1. $(42)(38)$

2. $\dfrac{543^2 - 321^2}{543 + 321}$

3. $75^2 + 2(75)(25) + 25^2$

MAFS.912.A-SSE.1.2 EOC Practice

1. **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.

2. 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

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

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

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