

Topic #5: Translating Equations & Inequalities

Translate using an equation or an inequality. Do not solve.

29. The quotient of twice a number and 7 is 20.

$$\frac{2x}{7} = 20$$

30. Five less than the product of a number and 3 is 14.

$$3x - 5 = 14$$

31. Seven times the difference of a number and 4 is no more than 10.

$$7(x - 4) \leq 10$$

32. The product of a number and four, increased by one, is at least 7.

$$4x + 1 \geq 7$$

Topic #6: Solving Equations

Solve each equation.

33. $18 = 3 - 3a$

$$\begin{array}{r} -3 \quad -3 \\ 18 = 3 - 3a \\ -3 \quad -3 \\ \hline 15 = -3a \\ -3 \quad -3 \\ \hline \end{array}$$

$$\boxed{a = -5}$$

34. $4 - \frac{1}{2}n = -12$

$$\begin{array}{r} -4 \quad -4 \\ 4 - \frac{1}{2}n = -12 \\ -2 \cdot -\frac{1}{2}n = -16 \cdot -2 \end{array}$$

$$\boxed{n = 32}$$

35. $\frac{3}{4}x + 17 = 23$

$$\frac{4}{3} \cdot \frac{3}{4}x = 6 \cdot \frac{4}{3}$$

$$\boxed{x = 8}$$

36. $9y - 4(y + 1) = 31$

$$9y - 4y - 4 = 31$$

$$\begin{array}{r} 5y - 4 = 31 \\ +4 \quad +4 \\ \hline \end{array}$$

$$\frac{5y}{5} = \frac{35}{5}$$

$$\boxed{y = 7}$$

37. $-6(w - 4) + 8w = 2(w + 9)$

$$-6w + 24 + 8w = 2w + 18$$

$$2w + 24 = 2w + 18$$

$$\begin{array}{r} -2w \quad -2w \\ \hline \end{array}$$

$$24 \neq 18$$

$\boxed{\text{No Solution}}$

38. $3m - (7m + 12) = 2(m - 3)$

$$3m - 7m - 12 = 2m - 6$$

$$\begin{array}{r} -4m - 12 = 2m - 6 \\ +4m \quad +4m \\ \hline \end{array}$$

$$-12 = 6m - 6$$

$$\begin{array}{r} +6 \quad +6 \\ \hline \end{array}$$

$$\frac{-6}{6} = \frac{6m}{6}$$

$$\boxed{m = -1}$$

39. $2x - 2(4x - 3) = 6 - 6x$

$$2x - 8x + 6 = 6 - 6x$$

$$-6x + 6 = 6 - 6x$$

$$\begin{array}{r} +6x \qquad \qquad +6x \\ \hline 6 = 6 \end{array}$$

$$\boxed{\infty}$$

40. $\frac{7}{x-8} = \frac{3}{x}$

$$7 \cdot x = 3(x - 8)$$

$$7x = 3x - 24$$

$$\begin{array}{r} -3x \quad -3x \\ \hline 4x = -24 \\ \frac{4x}{4} = \frac{-24}{4} \end{array}$$

$$\boxed{x = -6}$$

41. Solve $A = \frac{1}{2}bh$ for h .

$$\frac{2A}{b} = \frac{bh}{b}$$

$$\boxed{\frac{2A}{b} = h}$$

42. Solve $c = \frac{a^2 + 3b}{4}$ for b .

$$4c = a^2 + 3b$$

$$-a^2 \quad -a^2$$

$$\frac{4c - a^2}{3} = \frac{3b}{3}$$

$$\boxed{\frac{4c - a^2}{3} = b}$$

Topic #7: Solving & Graphing Inequalities

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Solve and graph each inequality.

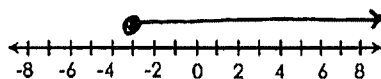
43. $11x + 13 \geq -20$

$$-13 \quad -13$$

$$\frac{11x}{11} \geq \frac{-33}{11}$$

$$\boxed{x \geq -3}$$

$$\boxed{[-3, \infty)}$$



44. $-2x + 6 > 3x - 34$

$$-3x \quad -3x$$

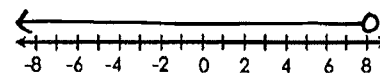
$$-5x + 6 > -34$$

$$-6 \quad -6$$

$$\frac{-5x}{-5} > \frac{-40}{-5}$$

$$\boxed{x < 8}$$

$$\boxed{(-\infty, 8)}$$



45. $3x - 7(x + 3) \geq -13$

$$3x - 7x - 21 \geq -13$$

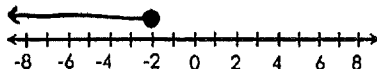
$$-4x - 21 \geq -13$$

$$+21 \quad +21$$

$$\frac{-4x}{-4} \geq \frac{8}{-4}$$

$$\boxed{x \leq -2}$$

$$\boxed{(-\infty, -2]}$$



46. $4 - 8x < 2(5 - 3x)$

$$4 - 8x < 10 - 6x$$

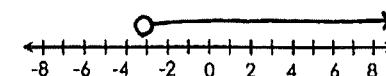
$$+6x \quad +6x$$

$$\frac{4 - 2x}{-4} < \frac{10}{-4}$$

$$\frac{-2x}{-2} < \frac{6}{-2}$$

$$\boxed{x > -3}$$

$$\boxed{(-3, \infty)}$$



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Name: _____

Algebra 1 Review: Packet #2**Topic #1: Relations & Functions**

- A **relation** is a set of ordered pairs.
- The **domain** is the set of x-values and the **range** is the set of y-values.
- A **function** is a relation with no repeating x-values.
- To check if a graph is a function, use the Vertical line test.

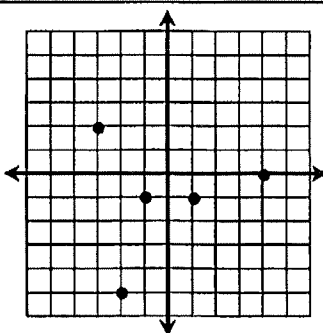
1.

x	-1	2	5	-1
y	7	3	0	2

Domain: $\{-1, 2, 5\}$ Range: $\{0, 2, 3, 7\}$

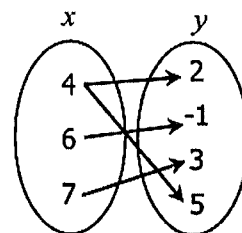
Function? No

2.

Domain: $\{-3, -2, -1, 1, 4\}$ Range: $\{-4, -1, 0, 2\}$

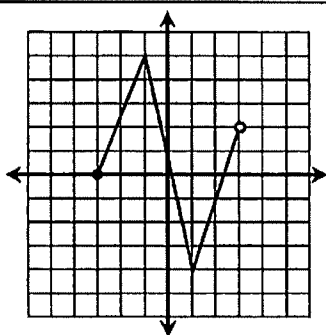
Function? Yes

3.

Domain: $\{4, 6, 7\}$ Range: $\{-1, 2, 3, 5\}$

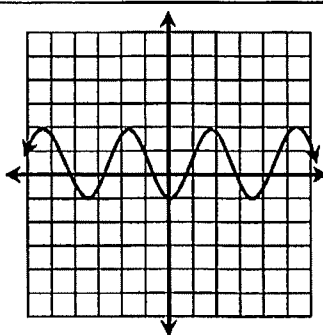
Function? No

4.

Domain: $-3 \leq x < 3$ Range: $-4 \leq y \leq 5$

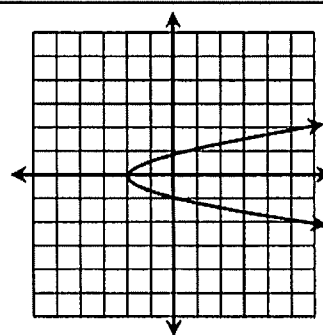
Function? Yes

5.

Domain: \mathbb{R} Range: $-1 \leq y \leq 2$

Function? Yes

6.

Domain: $x \geq -2$ Range: \mathbb{R}

Function? No

Topic #2: Function Notation & Evaluating Functions7. If $f(x) = -x - 7$, find $f(-5)$.

$$f(-5) = -(-5) - 7$$

$$= 5 - 7 = \boxed{-2}$$

8. If $g(x) = x^2 - 2x + 11$, find $g(-2)$.

$$g(-2) = (-2)^2 - 2(-2) + 11$$

$$= 4 + 4 + 11 = \boxed{19}$$

9. If $f(x) = 2x^2 - x$, find $f(-4) - f(9)$.

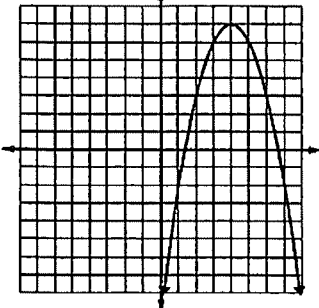
$$f(-4) = 2(-4)^2 - (-4) = 36$$

$$f(9) = 2(9)^2 - 9 = 153$$

$$36 - 153 = \boxed{-117}$$

10. If $h(x) = 1 - \frac{2}{3}x$, find $h(-6)$.

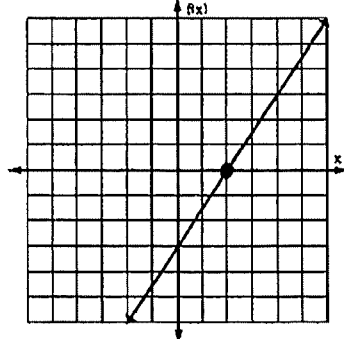
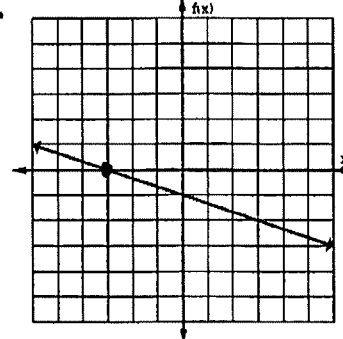
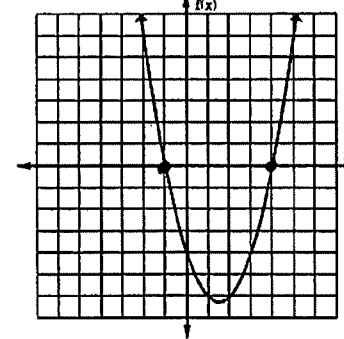
$$h(-6) = 1 - \frac{2}{3}(-6) = 1 + 4 = \boxed{5}$$

<p>11. Find the range of the function $f(x) = 3x - 8$ if the domain is $\{-4, 2, 7\}$.</p> <p>$f(-4) = 3(-4) - 8 = -20$</p> <p>$f(2) = 3(2) - 8 = -2$</p> <p>$f(7) = 3(7) - 8 = 13$</p> <p>$\{-20, -2, 13\}$</p>	<p>12. Find the range of the function $f(x) = -x^2 + 4x$ if the domain is $\{-2, 0, 1\}$.</p> <p>$f(-2) = -(-2)^2 + 4(-2) = -12$</p> <p>$f(0) = -(0)^2 + 4(0) = 0$</p> <p>$f(1) = -(1)^2 + 4(1) = 3$</p> <p>$\{-12, 0, 3\}$</p>
<p>13. Given the graph of $f(x)$ below, find $f(3)$.</p>  <p>6</p>	<p>14. Given $f(x) = \frac{5}{2}x + 7$, if $f(x) = -13$, find x.</p> $-13 = \frac{5}{2}x + 7$ $\begin{array}{r} -13 \\ -7 \\ \hline -20 \end{array} \quad \begin{array}{r} \frac{5}{2}x + 7 \\ -7 \\ \hline \frac{5}{2}x \end{array}$ $\frac{2}{5} \cdot -20 = \frac{5}{2}x \cdot \frac{2}{5}$ <p>$x = -8$</p>

Topic #3: Zeros of Functions

- The zeros of a function are where it passes through the x - axis.
- To find the zeros, set the equation equal to 0, and solve for x !

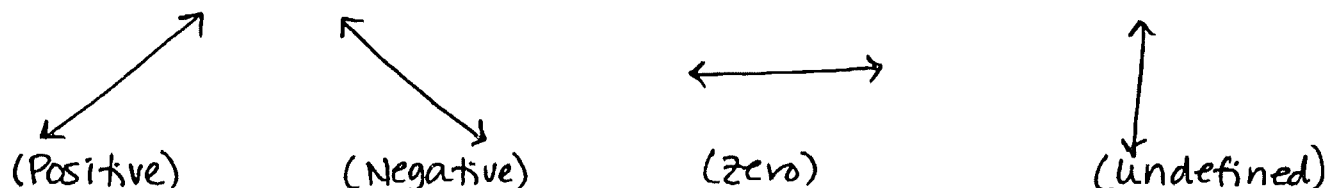
Find the zeros of each function graphed below.

<p>15.</p>  <p>$x = 2$</p>	<p>16.</p>  <p>$x = -3$</p>	<p>17.</p>  <p>$x = \{-8, 5\}$</p>		
<p>18. $f(x) = 2x + 2$</p> $0 = 2x + 2$ $-2 = 2x$ <div style="border: 1px solid black; padding: 5px; display: inline-block;"> $-1 = x$ </div>	<p>19. $f(x) = \frac{2}{5}x - 4$</p> $0 = \frac{2}{5}x - 4$ $4 = \frac{2}{5}x$ <div style="border: 1px solid black; padding: 5px; display: inline-block;"> $x = 10$ </div>	<p>20. $f(x) = x^2 + 3x - 40$</p> $0 = x^2 + 3x - 40$ $0 = (x + 8)(x - 5)$ <table style="border-collapse: collapse; margin: 10px auto;"> <tr> <td style="border-right: 1px solid black; padding: 5px; text-align: center;"> $x + 8 = 0$ $x = -8$ </td> <td style="padding: 5px; text-align: center;"> $x - 5 = 0$ $x = 5$ </td> </tr> </table> <div style="border: 1px solid black; padding: 5px; display: inline-block;"> $x = \{-8, 5\}$ </div>	$x + 8 = 0$ $x = -8$	$x - 5 = 0$ $x = 5$
$x + 8 = 0$ $x = -8$	$x - 5 = 0$ $x = 5$			

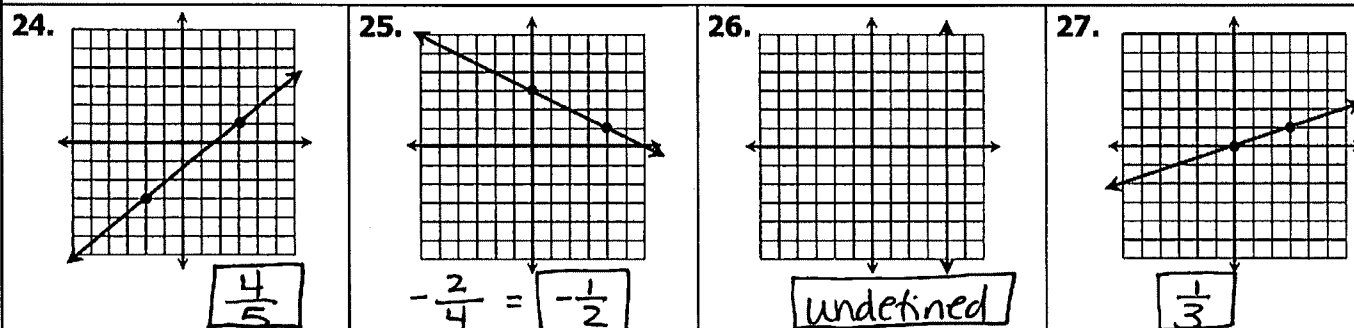
21. $f(x) = 2x^2 - 72$ $2x^2 - 72 = 0$ $2(x^2 - 36) = 0$ $2(x+6)(x-6) = 0$ $2 \neq 0 \quad \begin{array}{l l} x+6=0 & x-6=0 \\ \hline x=-6 & x=6 \end{array}$ $x = \{-6, 6\}$	22. $f(x) = x^2 - 10x + 25$ $x^2 - 10x + 25 = 0$ $(x-5)(x-5) = 0$ $\begin{array}{l l} x-5=0 & x-5=0 \\ \hline x=5 & x=5 \end{array}$ $x = 5$	23. $f(x) = 5x^2 + 5x - 30$ $5x^2 + 5x - 30 = 0$ $5(x^2 + x - 6) = 0$ $5(x+3)(x-2) = 0$ $5 \neq 0 \quad \begin{array}{l l} x+3=0 & x-2=0 \\ \hline x=-3 & x=2 \end{array}$ $x = \{-3, 2\}$
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Topic #4: Slope

There are 4 types of slope. Sketch them below:



Find the slope of each line graphed below.



To find the slope formula given two points (x_1, y_1) and (x_2, y_2) , use the **SLOPE FORMULA**:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Find the slope of the line passing through the given two points.

28. $(-12, -1)$ and $(-3, -4)$ $m = \frac{-4 - (-1)}{-3 - (-12)} = \frac{-3}{9} = -\frac{1}{3}$	29. $(-11, 7)$ and $(-11, -2)$ $m = \frac{-2 - 7}{-11 - (-11)} = \frac{-9}{0} = \text{undefined}$
30. $(9, -3)$ and $(11, -7)$ $m = \frac{-7 - (-3)}{11 - 9} = \frac{-4}{2} = -2$	31. $(12, 11)$ and $(-9, 11)$ $m = \frac{11 - 11}{-9 - 12} = \frac{0}{-21} = 0$

Topic #5: Slope-Intercept Form & Standard Form

Slope-Intercept Form: $y = mx + b$	Standard Form: $Ax + By = C$
32. Write a linear equation in slope-intercept form with a slope of -1 and a y-intercept of 4. $y = -x + 4$	33. Write a linear equation in slope-intercept form with a slope of $\frac{3}{4}$ and a y-intercept of -5. $y = \frac{3}{4}x - 5$
For each of the following equations, write the equation in slope-intercept form, then identify the slope and y-intercept.	
34. $x - y = 3$ $\frac{-y}{-1} = \frac{-x+3}{-1} \frac{-1}{-1}$ Slope-Intercept Form: $y = x - 3$ Slope: <u>1</u> y-int: <u>-3</u>	35. $4x + 10y = -10$ $\frac{10y}{10} = \frac{-4x-10}{10} \frac{10}{10}$ Slope-Intercept Form: $y = -\frac{2}{5}x - 1$ Slope: <u>$-\frac{2}{5}$</u> y-int: <u>-1</u>
36. $4x + y = 8$ Slope-Intercept Form: $y = -4x + 8$ Slope: <u>-4</u> y-int: <u>8</u>	37. $x - 3y = 6$ $\frac{-3y}{-3} = \frac{-x+6}{-3} \frac{-3}{-3}$ Slope-Intercept Form: $y = \frac{1}{3}x - 2$ Slope: <u>$\frac{1}{3}$</u> y-int: <u>-2</u>

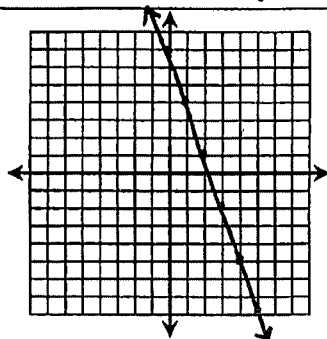
Topic #6: x- and y-Intercepts

<ul style="list-style-type: none"> To find the x-intercept of a line, set <u>y</u> equal to <u>0</u> and solve for <u>x</u>. To find the y-intercept of a line, set <u>x</u> equal to <u>0</u> and solve for <u>y</u>. 			
Find the x-intercept and y-intercept of each linear equation.			
38. $y = 2x - 10$ $0 = 2x - 10$ $10 = 2x$ $5 = x$ $y = 2(0) - 10$ $y = 0 - 10$ $y = -10$	x-intercept: <u>5; (5, 0)</u> y-intercept: <u>-10; (0, -10)</u>	39. $y = -\frac{3}{2}x + 9$ $0 = -\frac{3}{2}x + 9$ $-9 = -\frac{3}{2}x$ $6 = x$ $y = -\frac{3}{2}(0) + 9$ $y = 0 + 9$ $y = 9$	x-intercept: <u>6; (6, 0)</u> y-intercept: <u>9; (0, 9)</u>
40. $2x + y = -2$ $2x + 0 = -2$ $2x = -2$ $x = -1$ $2(0) + y = -2$ $0 + y = -2$ $y = -2$	x-intercept: <u>-1; (-1, 0)</u> y-intercept: <u>-2; (0, -2)</u>	41. $3x - 4y = 24$ $3x - 4(0) = 24$ $3x - 0 = 24$ $3x = 24$ $x = 8$ $3(0) - 4y = 24$ $0 - 4y = 24$ $-4y = 24$ $y = -6$	x-intercept: <u>8; (8, 0)</u> y-intercept: <u>-6; (0, -6)</u>

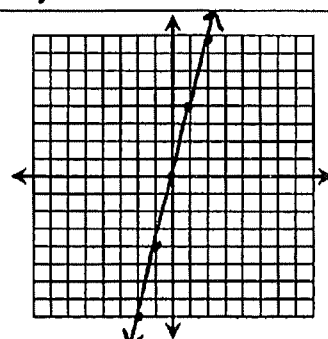
Topic #7: Graphing Linear Equations

Graph each linear equation. Convert to slope-intercept form when necessary.

42. $y = -3x + 7$



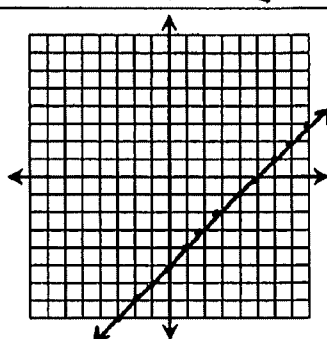
43. $y = 4x$



44. $x - y = 5$

$-y = -x + 5$

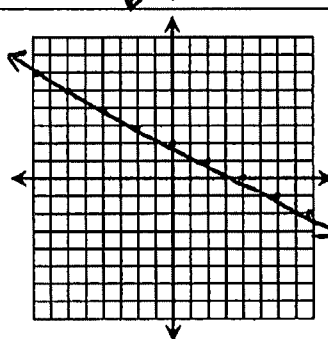
$y = x - 5$



45. $x + 2y = 4$

$2y = -x + 4$

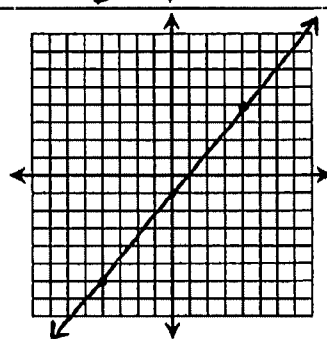
$y = -\frac{1}{2}x + 2$



46. $-10x + 8y = -8$

$8y = 10x - 8$

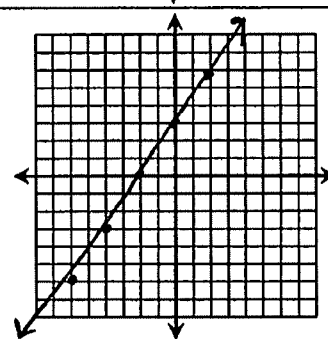
$y = \frac{5}{4}x - 1$



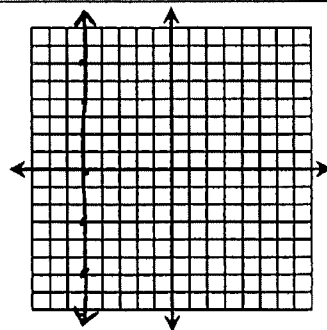
47. $3x - 2y = -6$

$-2y = -3x - 6$

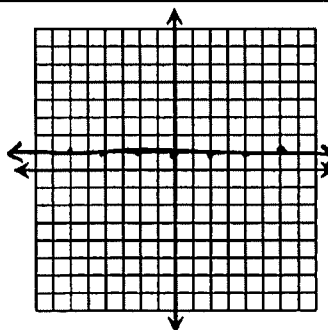
$y = \frac{3}{2}x + 3$



48. $x = -5$

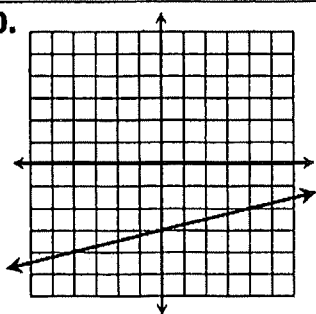


49. $y = 1$



Determine which line best represents the line shown on the graph.

50.



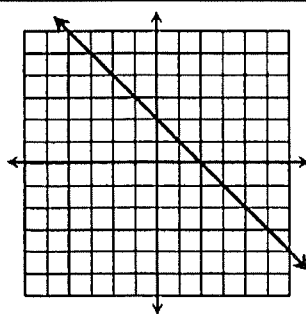
A. $x + 4y = -12$

☒ B. $x - 4y = 12$

C. $4x + y = -3$

D. $4x - y = 3$

51.



A. $x - y = 2$

B. $x - y = -2$

☒ C. $x + y = 2$

D. $x + y = -2$

Name: _____

Algebra 1 Review: Packet #3**Topic #1: Writing Linear Equations Given a Point and a Slope****When given a point (x_1, y_1) and the slope, m , use the point-slope formula:**

$$y - y_1 = m(x - x_1)$$

Write a linear equation in slope-intercept form using the given point and slope.1. $(2, 7)$; slope = 3

$$y - 7 = 3(x - 2)$$

$$y - 7 = 3x - 6$$

$$\begin{array}{r} +7 \qquad \qquad +7 \end{array}$$

$$y = 3x + 1$$

2. $(1, 4)$; slope = -1

$$y - 4 = -1(x - 1)$$

$$y - 4 = -x + 1$$

$$\begin{array}{r} +4 \qquad \qquad +4 \end{array}$$

$$y = -x + 5$$

3. $(4, -2)$; slope = $-\frac{1}{2}$

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

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

$$\begin{array}{r} -2 \qquad \qquad -2 \end{array}$$

$$y = -\frac{1}{2}x$$

4. $(6, -1)$; slope = $\frac{2}{3}$

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

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

$$\begin{array}{r} -1 \qquad \qquad -1 \end{array}$$

$$y = \frac{2}{3}x - 5$$

Topic #2: Writing Linear Equations Given Two Points**When given two ordered pairs (x_1, y_1) and (x_2, y_2) , use the slope formula followed by point-slope formula:**

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$



$$y - y_1 = m(x - x_1)$$

Write a linear equation in slope-intercept form using the given two points.5. $(-1, 1)$ and $(-3, -7)$

$$m = \frac{-7 - 1}{-3 - (-1)}$$

$$m = \frac{-8}{-2}$$

$$m = 4$$

$$y - 1 = 4(x + 1)$$

$$y - 1 = 4x + 4$$

$$\begin{array}{r} +1 \qquad \qquad +1 \end{array}$$

$$y = 4x + 5$$

6. $(0, 3)$ and $(5, 1)$

$$m = \frac{1 - 3}{5 - 0}$$

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

$$y - 3 = -\frac{2}{5}(x - 0)$$

$$y - 3 = -\frac{2}{5}x$$

$$y = -\frac{2}{5}x + 3$$

7. $(-2, -3)$ and $(1, 2)$

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

$$m = \frac{5}{3}$$

$$y + 3 = \frac{5}{3}(x + 2)$$

$$y + 3 = \frac{5}{3}x + \frac{10}{3}$$

$$y = \frac{5}{3}x + \frac{4}{3}$$

8. $(4, 1)$ and $(-6, -4)$

$$m = \frac{-4 - 1}{-6 - 4}$$

$$m = \frac{-5}{-10}$$

$$m = \frac{1}{2}$$

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

$$y - 1 = \frac{1}{2}x - 2$$

$$y = \frac{1}{2}x - 1$$

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Algebra 1 Review: Packet #4

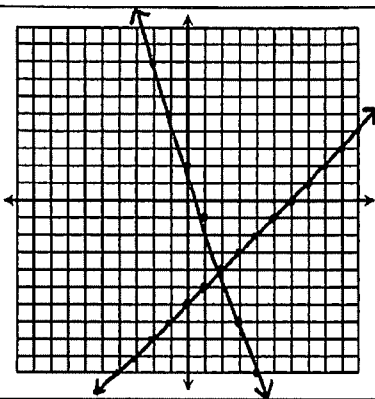
Topic #1: Systems of Equations

1. What is a system of equations? Two linear equations on the same graph2. The possible solutions are one solution (x,y) for intersecting lines;
no solution (\emptyset) for parallel lines; infinite solutions (∞)
for identical lines

Topic #2: Solving Systems Graphically

Solve each system of equations by graphing.

3.
$$\begin{cases} y = -3x + 2 \\ y = x - 6 \end{cases}$$

 $(2, -4)$

4.
$$\begin{cases} 2x + y = 1 \\ x - 2y = 18 \end{cases}$$

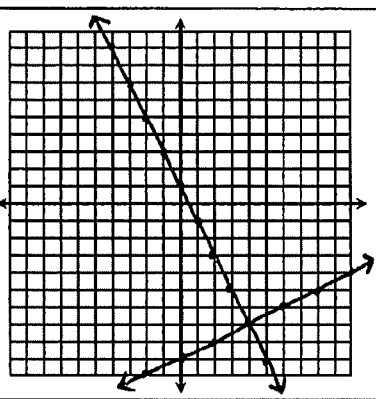
$$2x + y = 1$$

$$y = -2x + 1$$

$$x - 2y = 18$$

$$-2y = -x + 18$$

$$y = \frac{1}{2}x - 9$$

 $(4, -7)$ 

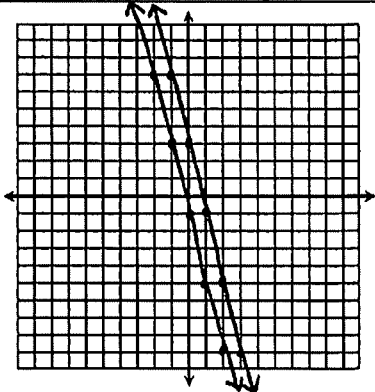
5.
$$\begin{cases} 4x + y = -1 \\ 2y = 6 - 8x \end{cases}$$

$$4x + y = -1$$

$$y = -4x - 1$$

$$2y = -8x + 6$$

$$y = -4x + 3$$

 \emptyset 

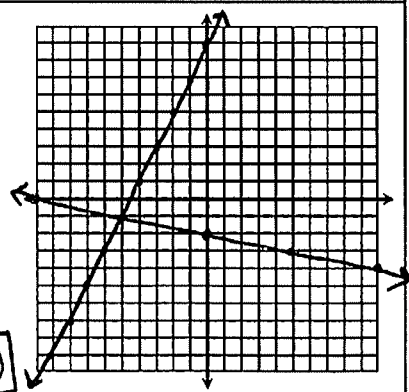
6.
$$\begin{cases} x + 5y = -10 \\ 4x - 2y = -18 \end{cases}$$

$$5y = -x - 10$$

$$y = -\frac{1}{5}x - 2$$

$$-2y = -4x - 18$$

$$y = 2x + 9$$

 $(-5, -1)$ 

Topic #3: Systems of Equations Algebraically

Use either substitution or elimination to solve each system of equations.

7.
$$\begin{cases} x + y = -4 \\ x - y = 2 \end{cases}$$

$$2x = -2$$

$$x = -1$$

$$-1 + y = -4$$

$$y = -3$$

 $(-1, -3)$

8.
$$\begin{cases} x + y = 4 \\ 2x - 5y = 15 \end{cases} \cdot 2$$

$$x - 1 = 4$$

$$x = 5$$

$$2x + 2y = 8$$

$$-(2x - 5y = 15)$$

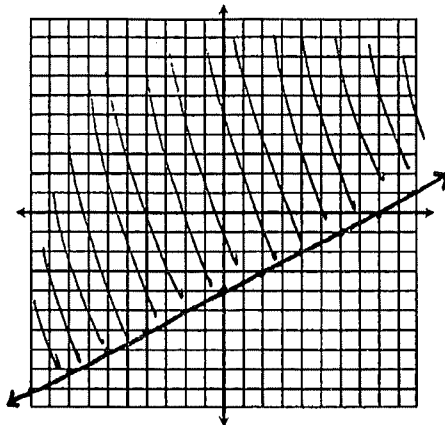
$$7y = -7$$

$$y = -1$$

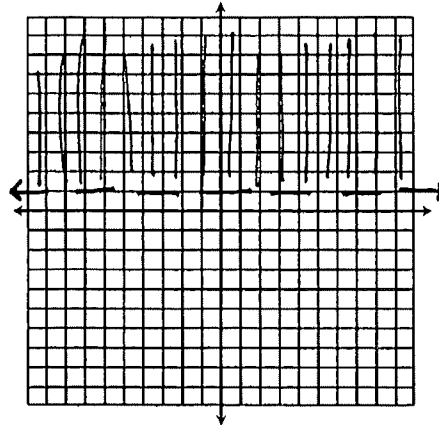
 $(5, -1)$

20. $x - 2y \leq 8$

$$\begin{aligned} -2y &\leq -x + 8 \\ y &\geq \frac{1}{2}x - 4 \end{aligned}$$



21. $y > 1$

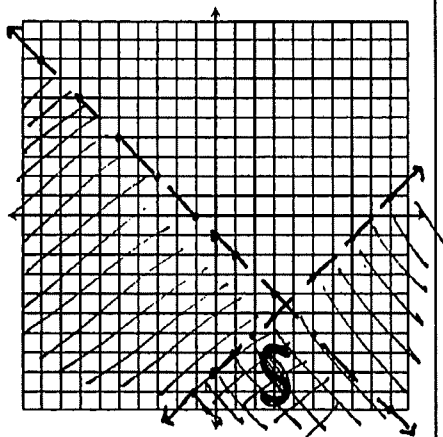


Topic #6: Systems of Linear Inequalities

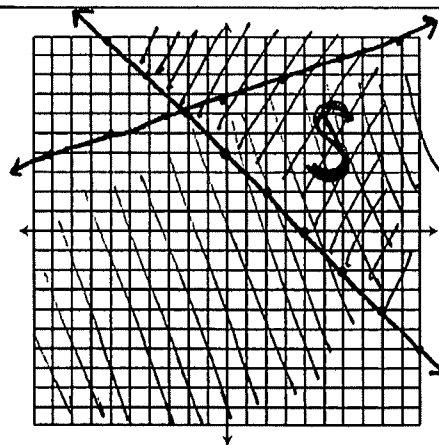
Graph the solution to each system of inequalities.

22. $\begin{cases} x + y < -1 \\ x - y > 8 \end{cases}$
 $y < -x - 1$

$$\begin{aligned} -y &> -x + 8 \\ y &< x - 8 \end{aligned}$$

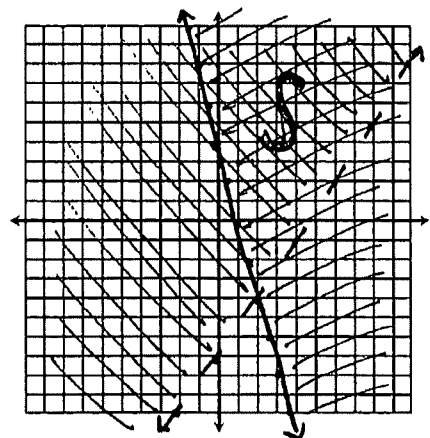


23. $\begin{cases} -x + 3y \leq 21 \\ y \geq -x + 4 \end{cases}$
 $3y \leq x + 21$
 $y \leq \frac{1}{3}x + 7$

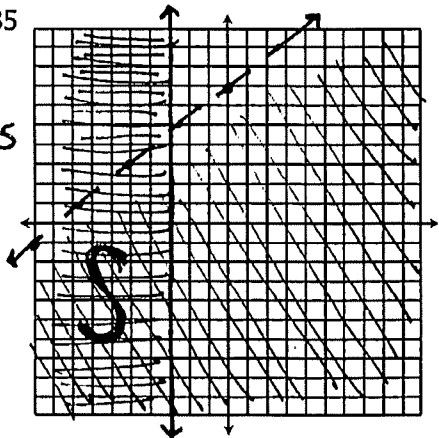


24. $\begin{cases} 4x + y \geq 4 \\ 3x - 2y < 14 \end{cases}$
 $y \geq -4x + 4$

$$\begin{aligned} -2y &< -3x + 14 \\ y &> \frac{3}{2}x - 7 \end{aligned}$$



25. $\begin{cases} 4x - 5y > -35 \\ x \leq -3 \end{cases}$
 $-5y > -4x - 35$
 $y < \frac{4}{5}x + 7$

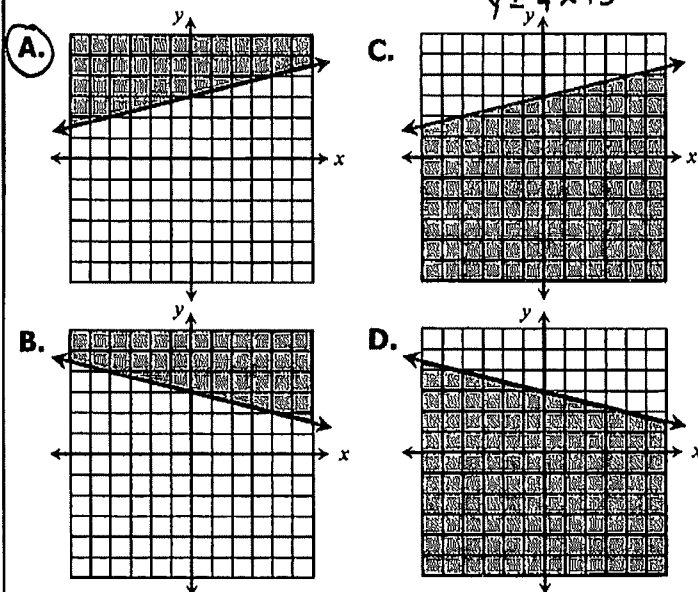


8. Keesha bought 11 binders and notebooks from the store and spent \$45. Binders cost \$6 each and notebooks cost \$2.50 each. Which two equations can be used to find the number of binders, b , and notebooks, n , she purchased?

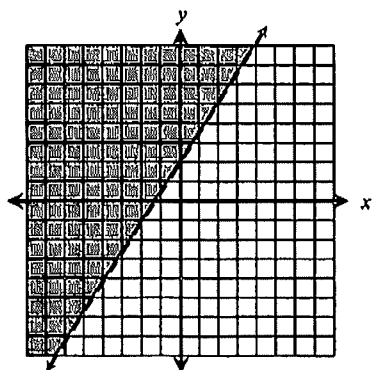
<input checked="" type="checkbox"/> $b + n = 11$	<input type="checkbox"/> $6b + 2.5n = 11$
<input type="checkbox"/> $b + n = 45$	<input checked="" type="checkbox"/> $6b + 2.5n = 45$

9. Which graph represents the solution to the inequality $x - 4y \leq -12$?

$$\begin{aligned} -4y &\leq -x - 12 \\ y &\geq \frac{1}{4}x + 3 \end{aligned}$$



10. Which inequality represents the graph?

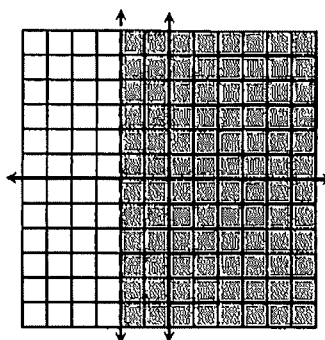


- F. $y \geq \frac{3}{2}x + 2$
- G. $y \leq \frac{3}{2}x + 2$
- H. $y > \frac{3}{2}x + 2$
- J. $y < \frac{3}{2}x + 2$

11. Which ordered pairs are solutions to the inequality $2x - y > -4$? Check all that apply.

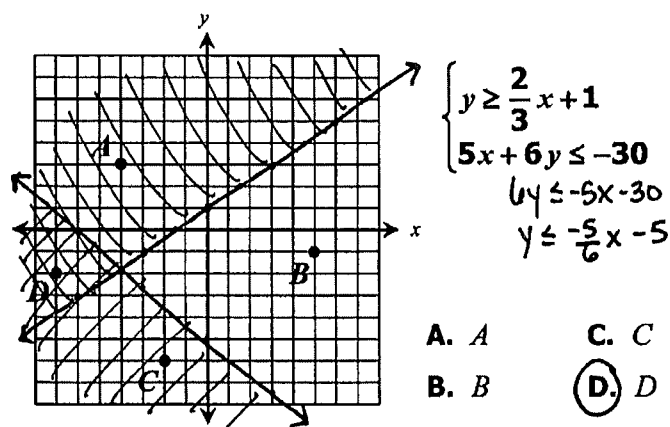
<input type="checkbox"/> $(-4, -3)$	<input checked="" type="checkbox"/> $(1, -6)$	<input checked="" type="checkbox"/> $(-2, -5)$
<input checked="" type="checkbox"/> $(8, 2)$	<input checked="" type="checkbox"/> $(4, 0)$	<input type="checkbox"/> $(-3, 5)$

12. Which inequality represents the graph?



- A. $x < -2$
- B. $x > -2$
- C. $y > -2$
- D. $y < -2$

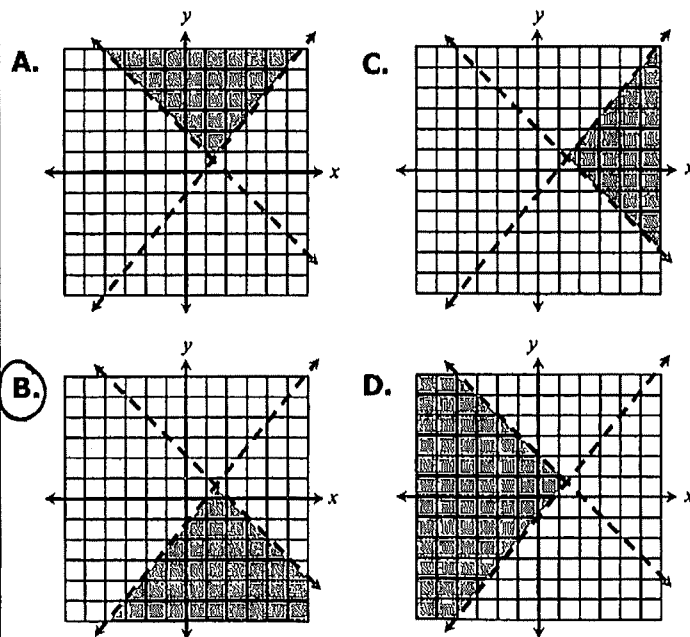
13. Which point on the graph below is included in the solution to the following system of equations?



14. Which graph represents the solution to the system of inequalities below?

$$\begin{cases} y < -x + 2 \\ 5x - 4y > 4 \end{cases}$$

$$\begin{aligned} -4y &> -5x + 4 \\ y &< \frac{5}{4}x - 1 \end{aligned}$$



Name: _____

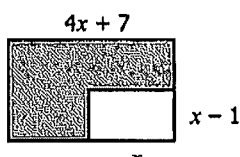
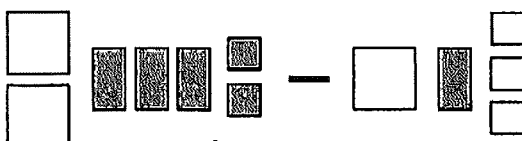
Algebra 1 Review: Packet #5

Topic #1: Simplifying Monomials

PRODUCT RULE	QUOTIENT RULE	POWER RULE	NEGATIVE EXPONENT RULE
$x^a \cdot x^b = x^{a+b}$	$\frac{x^a}{x^b} = x^{a-b}$	$(x^a)^b = x^{a \cdot b}$	$x^{-a} = \frac{1}{x^a}$
Simplify each expression.			
1. $7m \cdot m^2 \cdot 8v^5$ $56m^3v^5$	2. $(4x^3y^5)^3$ $64x^9y^{15}$	3. $\frac{35k^{10}}{5k^2}$ $7k^8$	
4. $(-2a^6bc^3)^2 \cdot -5ab^2$ $4a^{12}b^2c^6 \cdot -5ab^2$ $-20a^{13}b^4c^6$	5. $\frac{r^{16}s^2t^3}{r^4s^2t^8}$ $r^{12}t^{-5}$ $= \frac{r^{12}}{t^5}$	6. $\frac{(-3k^6)^2}{5k^3 \cdot 3k^3}$ $\frac{9k^{12}}{15k^6}$ $= \frac{3k^6}{5}$	
7. $\left(\frac{4m^4n^2}{6m^5n}\right)^2$ $\left(\frac{2n}{3m}\right)^2$ $= \frac{4n^2}{9m^2}$	8. $(-2y^4) \cdot (xy^3)^2 - 13x^2y^{10}$ $(-2y^4) \cdot (x^2y^6) - 13x^2y^{10}$ $-2x^2y^{10} - 13x^2y^{10}$ $= -15x^2y^{10}$	9. $\frac{-5p^2q^8}{20p^{-1}q^2}$ $-\frac{p^3q^6}{4}$	
10. $\frac{a^{12}b^{-3}}{(ab)^{-4}}$ $\frac{a^{12}b^{-3}}{a^{-4}b^{-4}}$ $= a^{16}b$	11. $(2v)^{-2} \cdot (6v^{-7})^3$ $\frac{1}{4}v^{-2} \cdot 216v^{-21}$ $= \frac{54}{v^{23}}$	12. $\left(\frac{c^{-7}d}{3c^2d^5}\right)^4$ $\frac{c^{-28}d^4}{81c^{-8}d^{20}}$ $= \frac{1}{81c^{20}d^{16}}$	

Topic #2: Simplifying Polynomials

Simplify each expression.	
13. $(n^2 - 3n + 14) + (3n^2 + n - 25)$ $4n^2 - 2n - 11$	14. $(2x^2 + 3x - 2) - (x^2 - 4x - 1)$ $x^2 + 7x - 1$
15. $(5 - 8k) - (8k - 13 + 2k^2)$ $-2k^2 - 16k + 18$	16. $(6 + m^3 + m - 3m^2) + (7m^3 + 11 - 6m + m^2)$ $8m^3 - 2m^2 - 5m + 17$
17. $3a^2b^3(2a^2 - 7ab + b^2)$ $6a^4b^3 - 21a^3b^4 + 3a^2b^5$	18. $8p(p^2 + 7p - 2) - (9p^3 - 2p^2)$ $8p^3 + 56p^2 - 16p - 9p^3 + 2p^2$ $-p^3 + 58p^2 - 16p$

<p>19. $(x-9)(x+7)$</p> $x^2 + 7x - 9x - 63$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">$x^2 - 2x - 63$</div>	<p>20. $(w+8)(w-8)$</p> $w^2 - 8w + 8w - 64$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">$w^2 - 64$</div>	<p>21. $(v+1)(4v+3)$</p> $4v^2 + 3v + 4v + 3$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">$4v^2 + 7v + 3$</div>
<p>22. $(2k-5)(3k-4)$</p> $6k^2 - 8k - 15k + 20$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">$6k^2 - 23k + 20$</div>	<p>23. $(2a+5b)(a-3b)$</p> $2a^2 - 6ab + 5ab - 15b^2$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">$2a^2 - ab - 15b^2$</div>	<p>24. $(2y-1)^2$</p> $(2y-1)(2y-1)$ $4y^2 - 2y - 2y + 1$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">$4y^2 - 4y + 1$</div>
<p>25. $(x-4)(x^2+5x+3)$</p> $x^3 + 5x^2 + 3x - 4x^2 - 20x - 12$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">$x^3 + x^2 - 17x - 12$</div>		<p>26. $(2c+1)(c^2-3c-11)$</p> $2c^3 - 6c^2 - 22c + c^2 - 3c - 11$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">$2c^3 - 5c^2 - 25c - 11$</div>
<p>27. $\frac{18a^3b + 12a^2b^2 - 6ab}{6ab}$</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">$3a^2 + 2ab - 1$</div>	<p>28. $\frac{-24x^4 - 8x^3 + 40x^2}{-8x^2}$</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">$3x^2 + x - 5$</div>	
<p>29. The length of a rectangular classroom floor is 19 feet less than twice its width. Write an expression to represent the area of the floor in simplest form.</p> <div style="display: flex; align-items: center; margin-top: 10px;"><div style="border: 1px solid black; width: 60px; height: 40px; margin-right: 10px; position: relative;"><div style="position: absolute; top: -10px; left: 0;">$2x-19$</div></div><div style="margin-right: 10px;">x</div><div style="margin-right: 10px;">$x(2x-19)$</div><div style="border: 1px solid black; padding: 5px;">$2x^2 - 19x$</div></div>		
<p>30. Write an expression to represent the area of the shaded region below in simplest form.</p> <div style="display: flex; align-items: center; margin-top: 10px;"><div style="margin-right: 20px;"></div><div>$(2x-3)(4x+7)$ $8x^2 + 14x - 12x - 21$ $8x^2 + 2x - 21$ $- \underline{\quad \quad \quad}$ $x(x-1)$ $x^2 - x$ $\underline{\quad \quad \quad}$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">$SA = 7x^2 + 3x - 21$</div></div></div>		
<p>Use the polynomial models below to answer question 31.</p> <div style="display: flex; flex-wrap: wrap; justify-content: space-around; margin-top: 10px;"><div style="margin: 5px;"> = x^2</div><div style="margin: 5px;"> = x</div><div style="margin: 5px;"> = 1</div><div style="margin: 5px;"> = $-x^2$</div><div style="margin: 5px;"> = $-x$</div><div style="margin: 5px;"> = -1</div></div>		
<p>31. Write a polynomial to represent the following:</p> <div style="display: flex; align-items: center; margin-top: 10px;"><div style="margin-right: 20px;"></div><div>$(x^2 - 3x - 2) - (x^2 - x + 3)$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">$x^2 - 2x - 5$</div></div></div>		

Topic #3: Simplifying Radicals (Square Roots and Cube Roots)

List the first 15 perfect square numbers:

1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225

Write each expression in simplest form.

32. $\sqrt{75}$
 $\sqrt{25} \cdot \sqrt{3}$
 $\boxed{5\sqrt{3}}$

33. $\sqrt{40}$
 $\sqrt{4} \cdot \sqrt{10}$
 $\boxed{2\sqrt{10}}$

34. $\sqrt{448}$
 $\sqrt{64} \cdot \sqrt{7}$
 $\boxed{8\sqrt{7}}$

35. $\sqrt{392}$
 $\sqrt{196} \cdot \sqrt{2}$
 $\boxed{14\sqrt{2}}$

List the first 10 perfect cube numbers:

1, 8, 27, 64, 125, 216, 343, 512, 729, 1000

Write each expression in simplest form.

36. $\sqrt[3]{48}$
 $\sqrt[3]{8} \cdot \sqrt[3]{6}$
 $\boxed{2\sqrt[3]{6}}$

37. $\sqrt[3]{250}$
 $\sqrt[3]{125} \cdot \sqrt[3]{2}$
 $\boxed{5\sqrt[3]{2}}$

38. $\sqrt[3]{108}$
 $\sqrt[3]{27} \cdot \sqrt[3]{4}$
 $\boxed{3\sqrt[3]{4}}$

39. $\sqrt[3]{192}$
 $\sqrt[3]{64} \cdot \sqrt[3]{3}$
 $\boxed{8\sqrt[3]{3}}$

Topic #4: Simplifying Monomial Square Roots

Write each expression in simplest form.

40. $\sqrt{24x^2}$
 $\sqrt{4x^2} \sqrt{6}$
 $\boxed{2x\sqrt{6}}$

41. $\sqrt{81m^5}$
 $\sqrt{81m^4} \sqrt{m}$
 $\boxed{9m^2\sqrt{m}}$

42. $\sqrt{72p^{16}}$
 $\sqrt{36p^{16}} \sqrt{2}$
 $\boxed{6p^8\sqrt{2}}$

43. $\sqrt{45r^9}$
 $\sqrt{9r^8} \sqrt{5r}$
 $\boxed{3r^4\sqrt{5r}}$

44. $\sqrt{320x^{18}}$
 $\sqrt{64x^{18}} \sqrt{5}$
 $\boxed{8x^9\sqrt{5}}$

45. $\sqrt{28ab^4}$
 $\sqrt{4b^4} \sqrt{7a}$
 $\boxed{2b^2\sqrt{7a}}$

46. $\sqrt{\frac{1}{9}x^2y^{10}}$
 $\boxed{\frac{1}{3}xy^5}$

47. $\sqrt{108r^{25}s^7t^6}$
 $\sqrt{36r^{24}s^6t^6} \sqrt{3rs}$
 $\boxed{6r^{12}s^3t^3\sqrt{3rs}}$

48. $\sqrt{147c^{15}d^{20}}$
 $\sqrt{49c^{14}d^{20}} \sqrt{3c}$
 $\boxed{7c^7d^{10}\sqrt{3c}}$

Algebra 1 Review

QUIZ 5

Name: _____

Date: _____ Per: _____

1. Which is equivalent to the expression below?

$$(3x^2 - 2x + 5) - (2x^2 - 5x + 1)$$

- ☒ A. $x^2 + 3x + 4$
- B. $x^2 - 7x + 6$
- C. $x^2 - 3x - 6$
- D. $x^2 - 7x + 4$

2. Which is equivalent to $(-2ab^3)(-3a^2b^5)$?

- F. $-5ab$
- G. $6a^2b^{15}$
- H. $6a^3b^2$
- ☒ J. $6a^3b^8$

3. Which is a simplified form of the following expression?

$$(xy^3)(xy)^4$$

$$xy^3 \cdot x^4y^4$$

- A. x^2y^7
- B. x^4y^{12}
- ☒ C. x^5y^7
- D. x^5y^{12}

4. If $ab \neq 0$, which is equivalent to $\frac{-12a^3b^2}{6ab^2}$?

- F. $2a^2b$
- ☒ G. $-2a^2$
- H. $-6a^2b$
- J. $6a^4b^4$

5. Which is equivalent to $(2x^2y) \cdot (8x^3y^3)$?

☒ A. $\frac{16}{x^5y^2}$

B. $\frac{16}{x^6y^2}$

C. $\frac{10}{x^5y^2}$

D. $10x^6y^2$

$$16x^{-5}y^{-2}$$

6. Which is equivalent to $\left(\frac{-2m^2n^3}{m^2n^4}\right)^2$?

F. $\frac{-4m}{n^2}$

G. $\frac{-4}{n^2}$

H. $\frac{4m}{n^2}$

☒ J. $\frac{4}{n^2}$

$$\left(\frac{-2}{n}\right)^2$$

7. Fill in the boxes with values that make the statement true

$$\frac{p^5q^6}{p^{-3}q^{\boxed{3}}} = p^{\boxed{8}}q^3$$

Name: _____

Algebra 1 Review: Packet #6

Topic #1: Factoring Polynomials

Factor each polynomial.

Greatest Common Factor (GCF)	1. $21c - 12$ $3(7c - 4)$	2. $x^6y + 8x^2y$ $x^2y(x^4 + 8)$	3. $75a^2b^3c - 30ab^2$ $15ab^2(5abc - 2)$
Difference of Squares ($a^2 - b^2$)	4. $w^2 - 64$ $(w+8)(w-8)$	5. $9k^2 - 1$ $(3k+1)(3k-1)$	6. $4m^2 - 81n^2$ $(2m+9n)(2m-9n)$
Trinomial ($x^2 + bx + c$)	7. $p^2 - 13p + 30$ $(p-3)(p-10)$	8. $y^2 - 3y - 40$ $(y-8)(y+5)$	9. $a^2 + 12a + 36$ $(a+6)(a+6)$ $=(a+6)^2$
Trinomial ($ax^2 + bx + c$)	10. $3x^2 + 10x + 3$ $x^2 + 10x + 9$ $(x+\frac{9}{3})(x+\frac{1}{3})$ $(x+3)(3x+1)$	11. $12c^2 + 5c - 2$ $c^2 + 5c - 24$ $(c+\frac{8}{12})(c-\frac{3}{12})$ $(3c+2)(4c-1)$	12. $4v^2 - 16v + 7$ $v^2 - 16v + 28$ $(v-14)(v-2)$ $\frac{1}{4} \quad \frac{1}{4}$ $(2v-7)(2v-1)$

Factor each polynomial completely.

13. $12x^2 - 12$ $12(x^2 - 1)$ $12(x+1)(x-1)$	14. $n^3 - 4n^2 - 60n$ $n(n^2 - 4n - 60)$ $n(n-10)(n+6)$	15. $8m^2 - 21$ Prime (cannot be factored)
16. $5w^2 - 15w - 20$ $5(w^2 - 3w - 4)$ $5(w-4)(w+1)$	17. $8v - 98v^3$ $2v(4 - 49v^2)$ $2v(2+7v)(2-7v)$	18. $4x^2 - 10x + 4$ $2(2x^2 - 5x + 2)$ $2(x^2 - 5x + 4)$ $2(x-4)(x-1)$ $\frac{1}{2} \quad \frac{1}{2}$ $2(x-2)(2x-1)$
19. $27ab - 75ab^3$ $3ab(9 - 25b^2)$ $3ab(3+5b)(3-5b)$	20. $12y^2 - 16y - 16$ $4(3y^2 - 4y - 4)$ $4(y^2 - 4y - 12)$ $4(y-\frac{6}{3})(y+\frac{2}{3})$ $4(y-2)(3y+2)$	21. $3h^2 - 6h + 3$ $3(h^2 - 2h + 1)$ $3(h-1)(h-1)$ $3(h-1)^2$

Topic #2: Dividing Polynomials by a Binomial (using Factoring)

Find each quotient.

22. $\frac{x^2 - 12x + 20}{x - 10}$

$$\frac{(x-10)(x-2)}{x-10}$$

$$= \boxed{x-2}$$

23. $\frac{3y^2 - 16y + 5}{3y - 1}$

$$\frac{(3y-1)(y-5)}{3y-1}$$

$$= \boxed{y-5}$$

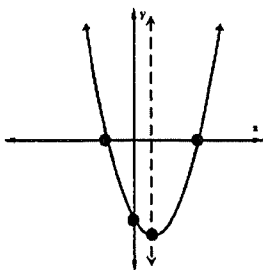
24. $\frac{(k^2 - 1) \div (k + 1)}{k + 1}$

$$\frac{(k+1)(k-1)}{k+1}$$

$$= \boxed{k-1}$$

Topic #3: Graphing Quadratic Equations

A quadratic equation creates a U-shaped curve called a PARABOLA.



Standard Form:

$$y = ax^2 + bx + c$$

Axis of Symmetry: $x = \frac{-b}{2a}$

Vertex Form:

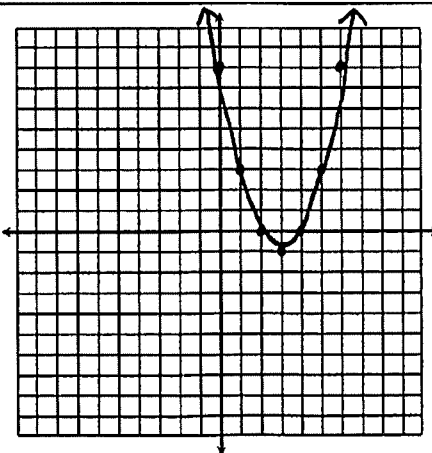
$$y = a(x-h)^2 + k$$

Axis of Symmetry: $x = h$; Vertex: (h, k)

Graph each equation using a table of values. Identify all key characteristics.

25. $y = x^2 - 6x + 8$

x	y
0	8
1	3
2	0
3	-1
4	0
5	3
6	8



Domain: \mathbb{R}

Range: $y \geq -1$

Axis of Symmetry: $x = 3$

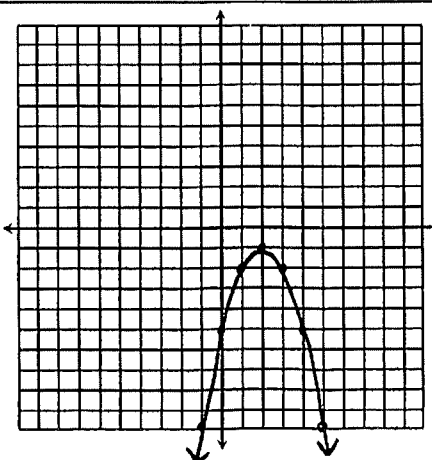
Vertex: $(3, -1)$

x-intercepts (zeros): $x = \{2, 4\}$

y-intercept: $(0, 8)$

26. $y = -x^2 + 4x - 5$

x	y
-1	-10
0	-5
1	-2
2	-1
3	-2
4	-5
5	-10



Domain: \mathbb{R}

Range: $y \leq -1$

Axis of Symmetry: $x = 2$

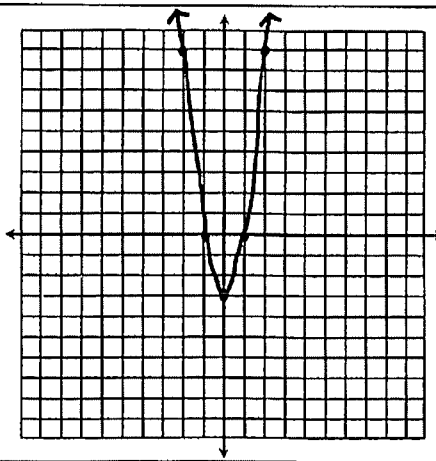
Vertex: $(2, -1)$

x-intercepts (zeros): \emptyset

y-intercept: $(0, -5)$

27. $y = 3x^2 - 3$

x	y
-3	24
-2	9
-1	0
0	-3
1	0
2	9
3	24



Domain: \mathbb{R}

Range: $y \geq -3$

Axis of Symmetry: $x = 0$

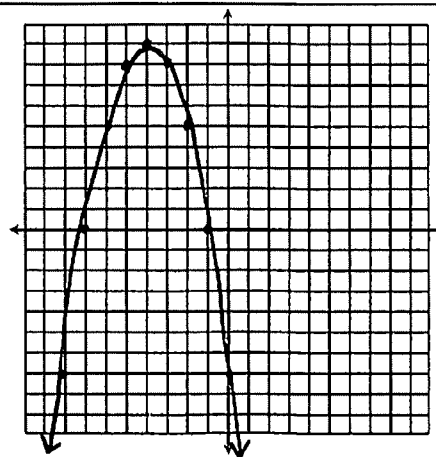
Vertex: $(0, -3)$

x-intercepts (zeros): $x = \{-1, 1\}$

y-intercept: $(0, -3)$

28. $y = -(x + 4)^2 + 9$

x	y
-7	0
-6	5
-5	8
-4	9
-3	8
-2	5
-1	0



Domain: \mathbb{R}

Range: $y \leq 9$

Axis of Symmetry: $x = -4$

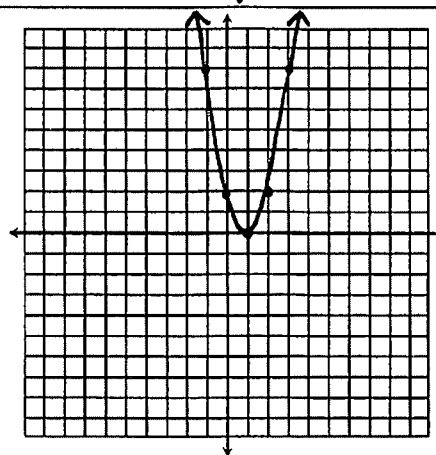
Vertex: $(-4, 9)$

x-intercepts (zeros): $x = \{-7, -1\}$

y-intercept: $(0, -7)$

29. $y = 2(x - 1)^2$

x	y
-2	18
-1	8
0	2
1	0
2	2
3	8
4	18



Domain: \mathbb{R}

Range: $y \geq 0$

Axis of Symmetry: $x = 1$

Vertex: $(1, 0)$

x-intercepts (zeros): $x = \{1\}$

y-intercept: $(0, 2)$

Topic #4: Transformations of the Quadratic Function

Recall that vertex form describes transformations from the quadratic parent function, $y = x^2$.

Given $y = a(x - h)^2 + k$:

Translations (Shifts)				Reflections	Dilations (compress/stretch)	
$+h$	shifts left	$+k$	shifts up	If a is negative, the graph reflects over the x -axis.	$ a > 1$	creates a vertical stretch
$-h$	shifts right	$-k$	shifts down		$ a < 1$	creates a vertical compression

Given each equation, describes the transformations from the parent function $y = x^2$.

30. $y = (x+5)^2 + 3$

Translated left 5
and up 3

31. $y = -2(x-4)^2$

Vertical stretch by 2;
Reflected over x-axis;
Translate right 4

32. $y = \frac{1}{3}(x+1)^2 - 4$

Compress by $\frac{1}{3}$;
Translate left 1 and
down 4

Transformations from the function $y = x^2$ are described below. Write an equation to represent the new function.

33. translated 3 units right and
2 units up

$$y = (x-3)^2 + 2$$

34. vertically stretched by a factor
of 4, then translated 5 units
down

$$y = 4x^2 - 5$$

35. reflected over the x-axis, then
translated 7 units left and 1
unit up

$$y = -(x+7)^2 + 1$$

Topic #5: Solving Quadratic Equations

<ul style="list-style-type: none"> The solutions to a quadratic equation are the point(s) at which the parabola intersects the <u>x - axis</u>. Solutions are also referred to as roots, zeros, or x-intercepts. A quadratic equation can have two solutions, one solution, or no real solutions. 	<p>Methods to Solve a Quadratic Equation:</p> <ul style="list-style-type: none"> Factoring Square Roots Completing the Square Quadratic Formula
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Solve each equation. Simplify all irrational solutions.

36. $x^2 + 8x = 0$

$$x(x+8) = 0$$

$$\begin{array}{l|l} x=0 & x+8=0 \\ & x=-8 \end{array}$$

$$x = \{-8, 0\}$$

37. $4x^2 = 10x$

$$4x^2 - 10x = 0$$

$$2x(2x-5) = 0$$

$$\begin{array}{l|l} 2x=0 & 2x-5=0 \\ x=0 & 2x=5 \\ & x=\frac{5}{2} \end{array}$$

$$x = \{0, \frac{5}{2}\}$$

38. $2x^2 - 72 = 0$

$$2(x^2 - 36) = 0$$

$$2(x+6)(x-6) = 0$$

$$\begin{array}{l|l|l} 2 \neq 0 & x+6=0 & x-6=0 \\ & x=-6 & x=6 \end{array}$$

$$x = \{-6, 6\}$$

39. $4x^2 - 43 = 6$

$$4x^2 - 49 = 0$$

$$(2x+7)(2x-7) = 0$$

$$\begin{array}{l|l} 2x+7=0 & 2x-7=0 \\ x=-\frac{7}{2} & x=\frac{7}{2} \end{array}$$

$$x = \{-\frac{7}{2}, \frac{7}{2}\}$$

40. $\frac{1}{2}x^2 - 30 = 10$

$$2 \cdot \frac{1}{2}x^2 = 40 \cdot 2$$

$$\sqrt{x^2} = \sqrt{80}$$

$$x = \pm 4\sqrt{5}$$

41. $9 - x^2 = 17$

$$-x^2 = 8$$

$$\sqrt{x^2} = \sqrt{-8}$$

$$x = \emptyset$$

42. $x^2 + 5x = 6$

$$x^2 + 5x - 6 = 0$$

$$(x+6)(x-1) = 0$$

$x+6=0$	$x-1=0$
---------	---------

$x=-6$	$x=1$
--------	-------

$$x = \{-6, 1\}$$

43. $x^2 = 18x - 81$

$$x^2 - 18x + 81 = 0$$

$$(x-9)(x-9) = 0$$

$x-9=0$	$x-9=0$
---------	---------

$x=9$	$x=9$
-------	-------

$$x = \{9\}$$

44. $x^2 - 4x - 14 = 0$

$$x^2 - 4x = 14$$

$$(-2)^2 = 4$$

$$x^2 - 4x + 4 = 14 + 4$$

$$\sqrt{(x-2)^2} = \sqrt{18}$$

$$x-2 = \pm 3\sqrt{2}$$

$$x = \{2 \pm 3\sqrt{2}\}$$

45. $-x^2 - 14x = 37$

$$x^2 + 14x = -37$$

$$(7)^2 = 49$$

$$x^2 + 14x + 49 = -37 + 49$$

$$\sqrt{(x+7)^2} = \sqrt{12}$$

$$x+7 = \pm 2\sqrt{3}$$

$$x = \{-7 \pm 2\sqrt{3}\}$$

46. $3x^2 = 30 - 9x$

$$3x^2 + 9x - 30 = 0$$

$$3(x^2 + 3x - 10) = 0$$

$$3(x+5)(x-2) = 0$$

$3 \neq 0$	$x+5=0$	$x-2=0$
	$x=-5$	$x=2$

$$x = \{-5, 2\}$$

47. $6x^2 - x - 2 = 0$

$$x^2 - x - 12 = 0$$

$$(x-\frac{4}{6})(x+\frac{3}{6}) = 0$$

$$(3x-2)(2x+1) = 0$$

$3x-2=0$	$2x+1=0$
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$x = \frac{2}{3}$	$x = -\frac{1}{2}$
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$$x = \{-\frac{1}{2}, \frac{2}{3}\}$$

48. $2x^2 + 8x - 3 = 0$

$$x = \frac{-8 \pm \sqrt{8^2 - 4(2)(-3)}}{2(2)}$$

$$x = \frac{-8 \pm \sqrt{64 + 24}}{4}$$

$$x = \frac{-8 \pm \sqrt{88}}{4}$$

$$x = \frac{-8 \pm 2\sqrt{22}}{4}$$

$$x = \left\{ \frac{-4 \pm \sqrt{22}}{2} \right\}$$

49. $4x^2 - 10x = 5$

$$4x^2 - 10x - 5 = 0$$

$$x = \frac{10 \pm \sqrt{(-10)^2 - 4(4)(-5)}}{2(4)}$$

$$x = \frac{10 \pm \sqrt{100 + 80}}{8}$$

$$x = \frac{10 \pm \sqrt{180}}{8}$$

$$x = \frac{10 \pm 6\sqrt{5}}{8}$$

$$x = \left\{ \frac{5 \pm 3\sqrt{5}}{4} \right\}$$

Algebra 1 Review

QUIZ 6

Name: _____

Date: _____ Per: _____

1. Which of the following binomials is a factor of $x^2 - 13x - 30$?

- A. $(x + 15)$ C. $(x - 10)$
B. $(x - 3)$ **D. $(x + 2)$**

2. If the polynomial below is completely factored, which expressions represent its factors? Check all that apply.

$$64x^4y - 36x^2y$$

$$4x^2y(16x^2 - 9)$$

<input type="checkbox"/> $4x^4$	<input checked="" type="checkbox"/> $4x - 3$	<input type="checkbox"/> $4x - 3y$
<input checked="" type="checkbox"/> $4x^2y$	<input type="checkbox"/> $8x - 6$	<input checked="" type="checkbox"/> $4x + 3$

3. Given Polynomial A and Polynomial B below, which binomial factor do they have in common?

Polynomial A	Polynomial B
$2n^2 + n - 36$	$n^2 - 10n + 24$

$$(2n+9)(n-4)$$

$$(n-6)(n-4)$$

F. $(n - 4)$

H. $(n - 12)$

G. $(n + 2)$

J. $(n - 2)$

4. If the area of a rectangle can be represented by the expression $x^2 + 10x - 24$, which two binomials could represent the length and width of the rectangle?

<input type="checkbox"/> $(x - 12)$	<input type="checkbox"/> $(x + 6)$	<input checked="" type="checkbox"/> $(x - 2)$
<input type="checkbox"/> $(x - 8)$	<input checked="" type="checkbox"/> $(x + 12)$	<input type="checkbox"/> $(x - 4)$

5. Which polynomials are prime? Check all that apply.

<input checked="" type="checkbox"/> $x^2 - 10x - 35$	<input checked="" type="checkbox"/> $25x^2 + 4$
<input type="checkbox"/> $18c - 21d$	<input checked="" type="checkbox"/> $2x^2 - 9x - 10$
<input type="checkbox"/> $8x^2 + 14x + 3$	<input type="checkbox"/> $x^2 + 7x$

6. Which polynomial is equivalent to the expression below if $w \neq 3$?

$$\frac{3w^2 - w - 24}{w - 3}$$

$$= \frac{(3w+8)(w-3)}{w-3}$$

A. $3w^2 - 8$

B. $3w^2 + 8$

C. $3w - 8$

D. $3w + 8$

7. Which quadratic equation has a vertex located at $(4, -3)$?

F. $y = 4x^2 + 3$

G. $y = (x + 4)^2 - 3$

H. $y = x^2 - 8x + 13$

J. $y = x^2 + 8x - 3$

8. Which statement is false regarding the quadratic equation below?

$$y = -(x + 1)^2 + 4$$

A. The axis of symmetry is $x = -1$

B. The range is $y \leq 4$

C. The x-intercepts are $(1, 0)$ and $(-3, 0)$.

D. The y-intercept is $(0, 4)$.

9. Which two transformations can be used to obtain the graph of $y = 3(x - 5)^2$ from the graph of $y = x^2$?

F. A vertical compression and a translation 5 units left.

G. A vertical stretch and a translation 5 units left.

H. A vertical compression and a translation 5 units right.

J. A vertical stretch and a translation 5 units right.