Accelerated Coordinate Algebra

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Name_____

# Benchmark 2--Study Guide

Date_____ Period____

**Solve each equation.**

1) $-3k - 4 = -8 - 5k$

$+5k \quad +4 \quad +4 \quad +5k$

$2k = -4$

$k = -2$ ✓

2) $6 - 7x = -1 - 7x$

$+7x \quad +7x$

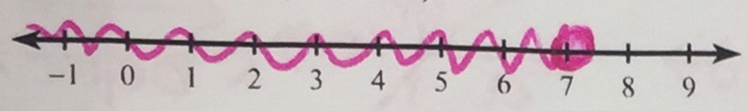
$6 = -1$ x

Not true

No Solution

**Solve each inequality and graph its solution.**

3) $-106 \leq -3(5x + 5) + 2x$




$-106 \leq -3(5x + 5) + 2x$

$-106 \leq -15x - 15 + 2x$

$-106 \leq -13x - 15$

$+15 \quad +15$

$\frac{-91}{-13} \leq \frac{-13x}{-13}$

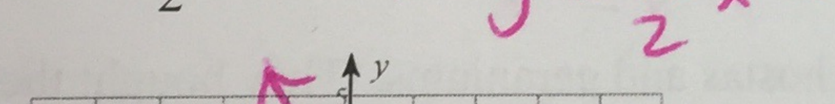
$7 \geq x$

$x \leq 7$ ← flip to graph

Remember to flip inequality symbol when you divide by a negative

**Solve each compound inequality and graph its solution.**

4) $-6 + 3b \geq 21$ or $9 + 7b \leq -47$




$-6 + 3b \geq 21$ $\quad$ $9 + 7b \leq -47$

$+6 \quad +6$ $\quad$ $-9 \quad -9$

$3b \geq 27$ $\quad$ $7b \leq -56$

$b \geq 9$ or $b \leq -8$

5) $6m + 5 > -49$ and $-7m - 3 > -73$


$6m + 5 > -49$ $\quad$ $-7m - 3 > -73$

$-5 \quad -5$ $\quad$ $+3 \quad +3$

$6m > -54$ $\quad$ $-7m > -70$

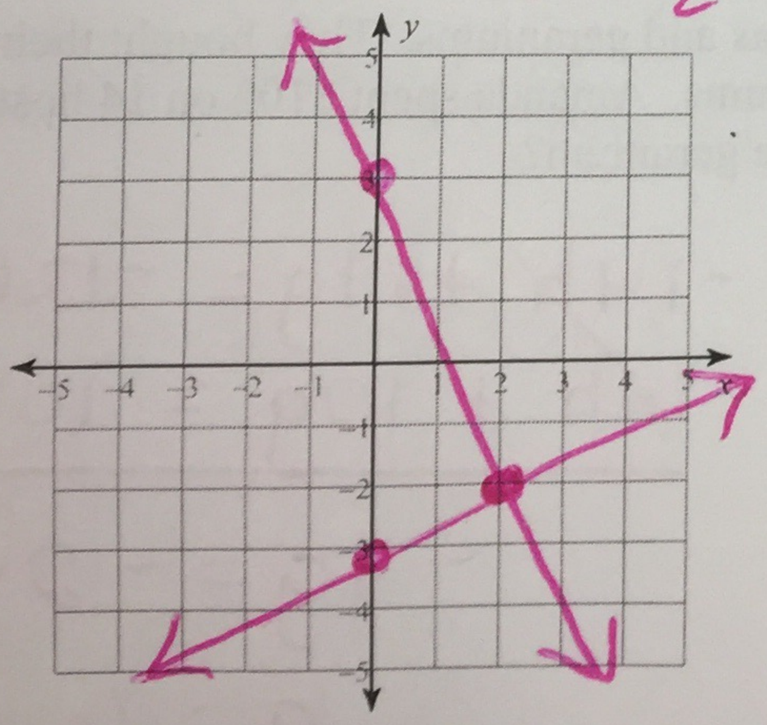
$\frac{6m}{6} > \frac{-54}{6}$ $\quad$ $\frac{-7m}{-7} > \frac{-70}{-7}$

$m > -9$ $\quad$ $m < 10$

**Solve each system by graphing.**

6) $2y = -5x + 6$ → $y = -\frac{5}{2}x + 3$

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




Solution = (2, -2)

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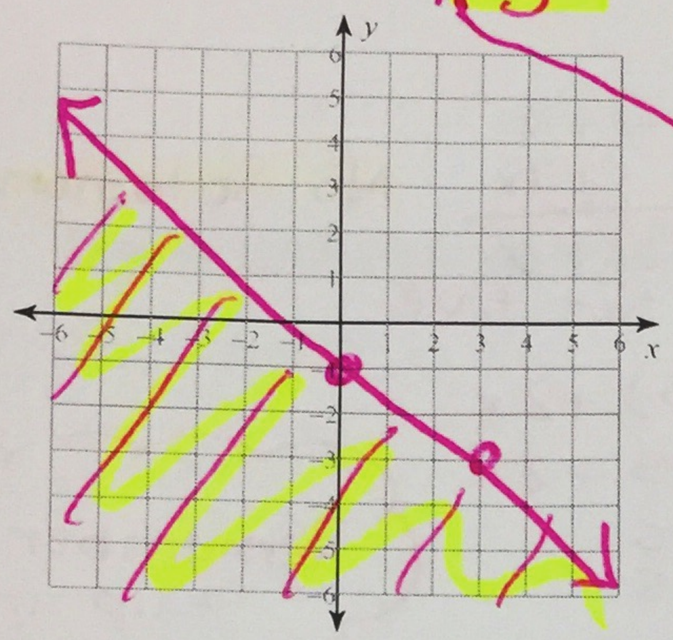
**Sketch the graph of each linear inequality.**

7) $2x + 3y \leq -3$

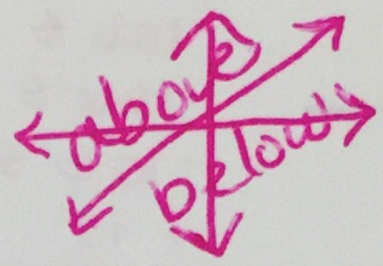
$y \leq -\frac{2}{3}x - 1$



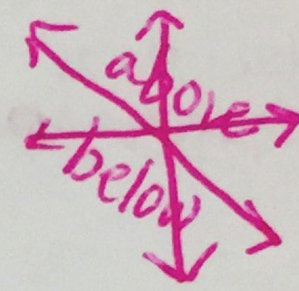

Shade
above >, ≥
below <, ≤

line
dotted (dashed) >, <
solid ≥, ≤

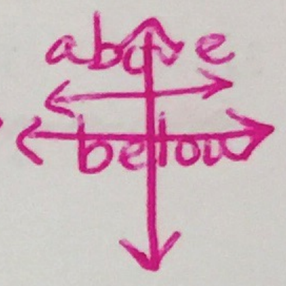
Positive



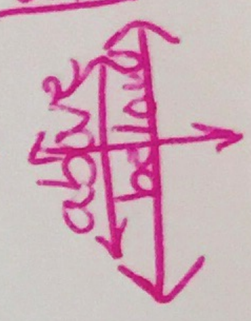

Neg




Zero




Und



**Solve each system by substitution.**

8) $-8x + y = -6$ → $y = 8x + 6$
$-16x + 2y = -4$

$-16x + 2(8x + 6) = -4$
$-16x + 16x + 12 = -4$
$12 = -4$ Not true

No Solution

**Solve each system by elimination.**

9) $2x + 4y = 14$ (-2) → $-4x - 8y = -28$
$9x + 8y = -7$ → $9x + 8y = -7$

$5x = -35$
$x = -7$

$2(-7) + 4y = 14$
$-14 + 4y = 14$
$+14 \quad +14$
$4y = 28$
$y = 7$

(-7, 7)

10) Jaidee and Amanda each improved their yards by planting hostas and geraniums. They bought their supplies from the same store. Jaidee spent $63 on 7 hostas and 7 geraniums. Amanda spent $102 on 14 hostas and 10 geraniums. What is the cost of one hosta and the cost of one geranium?

$-2(7h + 7g = 63)$ → $-14h - 14g = -126$
$14h + 10g = 102$ → $14h + 10g = 102$

$-4g = -24$
$g = 6$

geranium - $6

$7h + 7(6) = 63$
$7h + 42 = 63$
$7h = 21$
$h = 3$

hosta - $3

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11) A rectangle has a length of $x - 3$ inches and a width of 6 inches. For what values of x is the area of the rectangle greater than the perimeter of the rectangle? Draw a diagram to help.

area = $l \times w$

Perimeter = $2l + 2w$

$6(x-3) > 2(x-3) + 2(6)$

$6x - 18 > 2x - 6 + 12$

$6x - 18 > 2x + 6$

$4x > 24$

$x > 6$

12) A cyclist 45 miles in 4 hours. What is her speed in feet per second?

$\frac{45 \text{ miles}}{4 \text{ hours}} \cdot \frac{5280}{3600} = \frac{237600 \text{ ft}}{14400} = 16.5$

*5280 ft in a mile

*3600 sec in a minute

13) Solve $\frac{m}{x} = k - 6$ for m.

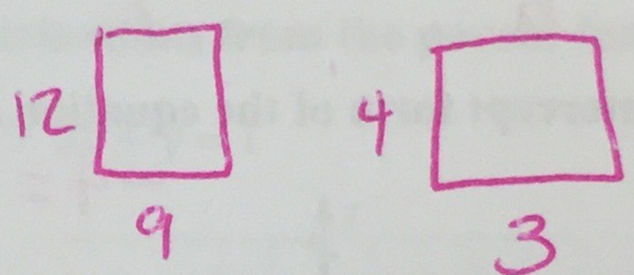
$x \cdot \frac{m}{x} = (k-6) \cdot x$

$m = x(k-6)$ or $m = xk - 6x$

- Remember x has to multiply to both

14) A rectangle has side lengths of 12 inches and 9 inches. Every dimension is multiplied by $\frac{1}{3}$ to form a new rectangle.

What is the scale factor? 1/3




What is the ratio of the corresponding sides of the first figure to the second figure? 3:1 or 3

What is the ratio of the perimeters? 3:1 or 3 [42 : 14] P

What is the ratio of the areas? 9:1 or 9 [108 : 12] A

15) An architect built a scale model of a shopping mall. On the model, a circular fountain is 20 inches tall and 22.5 inches in diameter. The actual fountain is to be 8 feet tall. What will be the diameter of the fountain?

$\frac{20}{22.5} = \frac{8}{x}$ (You don't have to convert)

$x = 9$

**Solve each proportion.**

16) ~~$\frac{9}{7} = \frac{r+6}{10}$~~

$9(10) = 7(r+6)$

$90 = 7r + 42$

$48 = 7r$

$6.86 = r$

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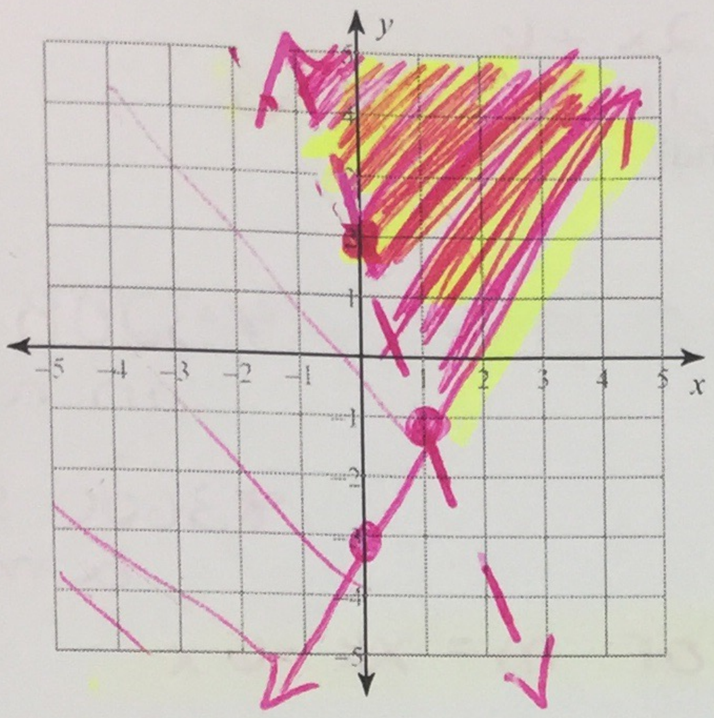
**Sketch the solution to each system of inequalities.**

17) $y \geq 2x - 3$ solid above
$y > -3x + 2$ dotted above




**Write the slope-intercept form of the equation of each line given the slope and y-intercept.**

18) Slope = $-1$, y-intercept = 3
m b
$y = -1x + 3$ or $y = -x + 3$

**Write the slope-intercept form of the equation of the line through the given point with the given slope.**

19) through: $(3, -4)$, slope = $-\frac{7}{3}$
x y
m
$-4 = \frac{-7}{3}(3) + b$
$-4 = -7 + b$
$3 = b$
$y = \frac{-7}{3}x + 3$

**Write the slope-intercept form of the equation of the line through the given points.**

20) through: $(0, 3)$ and $(4, -2)$
x = 0 → y-int
slope: $\frac{3 + +2}{0 - 4} = \frac{5}{-4}$
$y = -\frac{5}{4}x + 3$

**Write the slope-intercept form of the equation of the line described.**

21) through: $(-4, -1)$, parallel to $y = \frac{3}{2}x + 1$
x y
m
Parallel = same slope
$-1 = \frac{3}{2}(-4) + b$
$-1 = -6 + b$
$5 = b$
$y = \frac{3}{2}x + 5$

22) through: $(1, -2)$, perp. to $y = 3$
perp to y= is x=
↑ x value
$x = 1$

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