Accelerated Coordinate Algebra

Name _____

Benchmark 1--Study Guide

Period ____ Fall 2015 _____

Solve each equation.

1) $-15 + 8x - 5x = 2x + 6x$

$-15 + 3x = 8x$
$-3x \quad -3x$
$-15 = 5x$
$[-3 = x]$

2) $-5 + x = x - 5$

[IS - everything cancels]

3) $-5(5n - 3) = 15 + 5n$

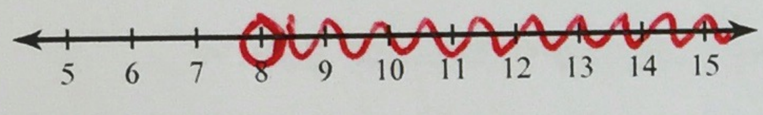
$-25n + 15 = 15 + 5n$
$-5n \quad -15 \quad -15 \quad -5n$
$-30n = 0$
$[n = 0]$

4) $4x + 29 = -3(8x + 2) + 7$

$4x + 29 = -24x - 6 + 7$
$4x + 29 = -24x + 1$
$+24x \quad -29 \quad +24x \quad -29$
$28x = -28$
$[x = -1]$

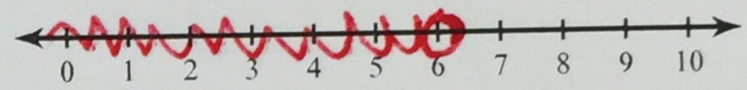
Solve each inequality and graph its solution.

5) $-4(8 + 6n) < -224$



$-32 - 24n < -224$
$+32 \quad +32$
$\frac{-24n}{-24} < \frac{-192}{-24}$
$[n > 8]$

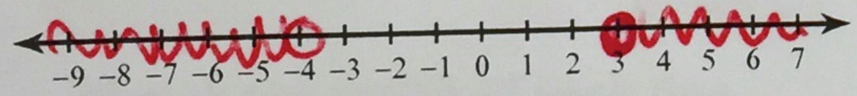
6) $-8(3x - 7) > -88$



$-24x + 56 > -88$
$-56 \quad -56$
$-24x > -144$
$[x < 6]$

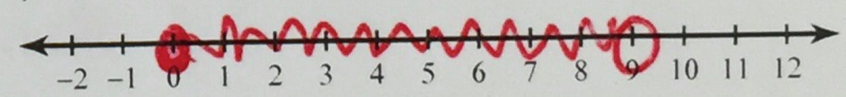
Solve each compound inequality and graph its solution.

7) $6 - 2n > 14$ or $4n - 5 \geq 7$



$6 - 2n > 14$ or $4n - 5 \geq 7$
$-6 \quad -6 \quad +5 \quad +5$
$-2n > 8 \quad 4n \geq 12$
$[n < -4]$ OR $[n \geq 3]$

8) $6 \leq 10n + 6 < 96$



$6 \leq 10n + 6 < 96$
$-6 \quad -6 \quad -6$
$\frac{0}{10} \leq \frac{10n}{10} < \frac{90}{10}$
$[0 \leq n < 9]$

Solve each proportion.

9) $\frac{v}{6} = \frac{5}{9}$ $9v = 30$

$[v = \frac{10}{3}, 3\frac{1}{3}, \text{or } 3.\overline{3}]$

10) $\frac{p-1}{8} = \frac{3}{4}$

$4(p-1) = 24$
$4p - 4 = 24$
$+4 \quad +4$
$4p = 28$
$[p = 7]$

11) A rectangle has a length of $x + 2$ inches and a width of 5 inches. For what values of x is the area of the rectangle greater than the perimeter of the rectangle? Draw a diagram to help.

See question #19 on other study guide

12) A model airplane flies 18 feet in 2 seconds. What is the airplane's speed in miles per hour? Round your answer to the nearest hundredth.

See question #20 on other Study Guide

13) Solve $F = \frac{9}{5}C + 32$ for C.

$F + 32 = \frac{9}{5}C$

$\frac{5}{9}(F + 32) = C$

14) Solve $P = 2L + 2w$ for L.

$-2w \quad -2w$

$P - 2w = 2L$

$\frac{P-2w}{2} = \frac{2L}{2}$ → $\frac{P-2w}{2} = L$ or $\frac{P}{2} - w = L$

15) Sarah is comparing five different scales using a standard mass that is exactly 10 grams. Her results are below:

Scale 1 : 9.98 g
Scale 2 : 9.9 g
Scale 3 : 10.1 g
Scale 4 : 10.3 g
Scale 5 : 9.8 g

See #23 on other Study Guide

Which scale is the most precise? _____

Which scale is the most accurate?

16) A triangle has side lengths of 5 inches, 10 inches, and 15 inches. Every dimension is multiplied by $\frac{1}{5}$ to form a new triangle. See #24

What is the scale factor? _____

What is the ratio of the corresponding sides of the first figure to the second figure?

_____

What is the ratio of the perimeters? _____

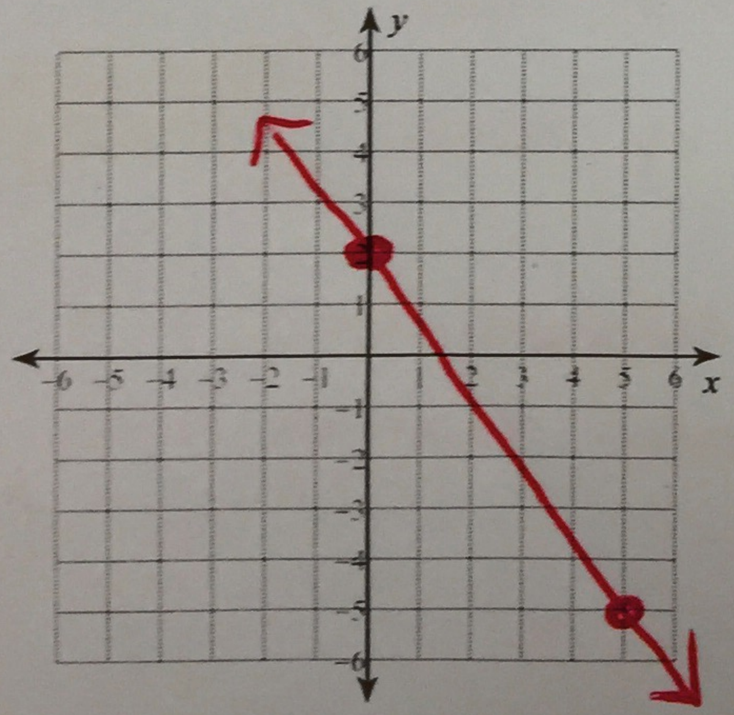
What is the ratio of the areas? _____

17) A contractor has a blueprint for a house drawn to the scale 1 in : 3 ft. A wall on the blueprint is 6.5 inches long. How long is the actual wall?

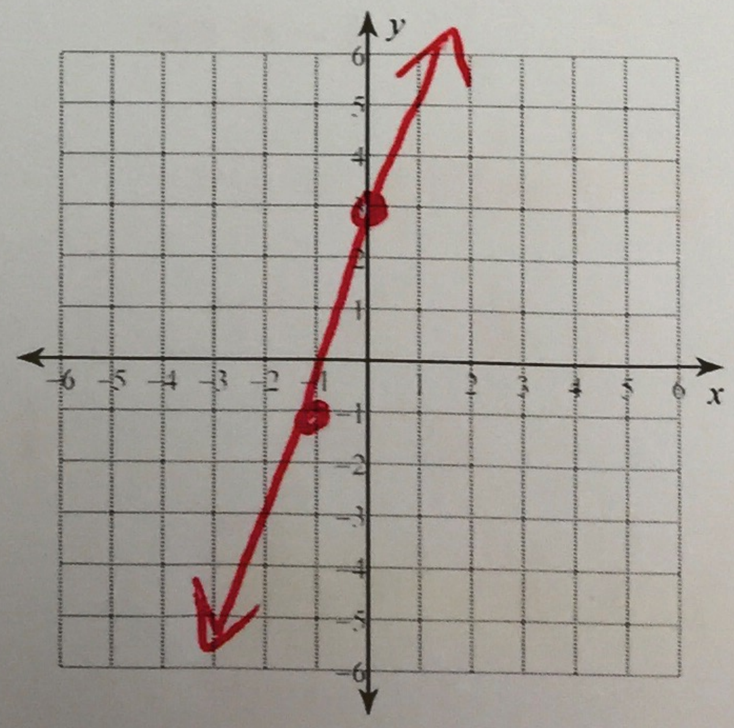
See question #25 on other Study Guide

Sketch the graph of each line.

18) $7x + 5y = 10$ $y = -\frac{7}{5}x + 2$



19) $4x - y = -3$ $y = 4x + 3$



Find the slope of the line through each pair of points. $\frac{y-y}{x-x}$

20) $(-12, 13), (-12, 5)$ $\frac{13-5}{-12-(-12)} = \frac{8}{0}$

[undefined]

21) $(-16, 5), (-1, 11)$

$\frac{5-11}{-16+(+1)} = \frac{-6}{-15} = \boxed{\frac{2}{5}}$

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

22) through: $(-2, 2)$, slope $= -\frac{1}{2}$ (x y; m)

$2 = \frac{-1}{2}(-2) + b$ → $-\frac{1}{2} \cdot -2 = \frac{2}{2} = 1$

$2 = 1 + b$

$1 = b$

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

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

23) through: $(3, -2)$ and $(4, 2)$ (x y)

① m

$\frac{-2-2}{3-4} = \frac{-4}{-1} = 4$

② b

$-2 = 4(3) + b$

$-2 = 12 + b$

$-14 = b$

$\boxed{y = 4x - 14}$

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

24) through: $(1, -3)$, parallel to $y = -5$

slope = 0 means write y= the y-value

$\boxed{y = -3}$

- if it said parallel to $x = -5$ your answer would be $x = 1$

25) through: $(3, -1)$, perp. to $y = \frac{1}{1}x + 2$ (x y; r; opp. sign reciprocal)

$m = -1$

$-1 = -1(3) + b$

$-1 = -3 + b$

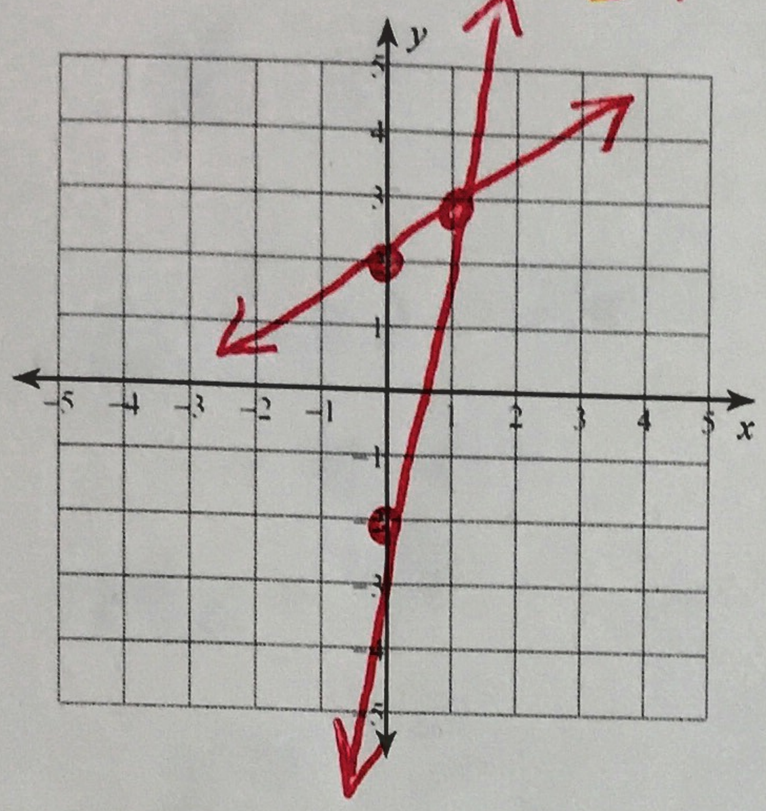
$2 = b$

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

Solve each system by graphing.

26) $y = 5x - 2$
$y = x + 2$

[(1, 3)]

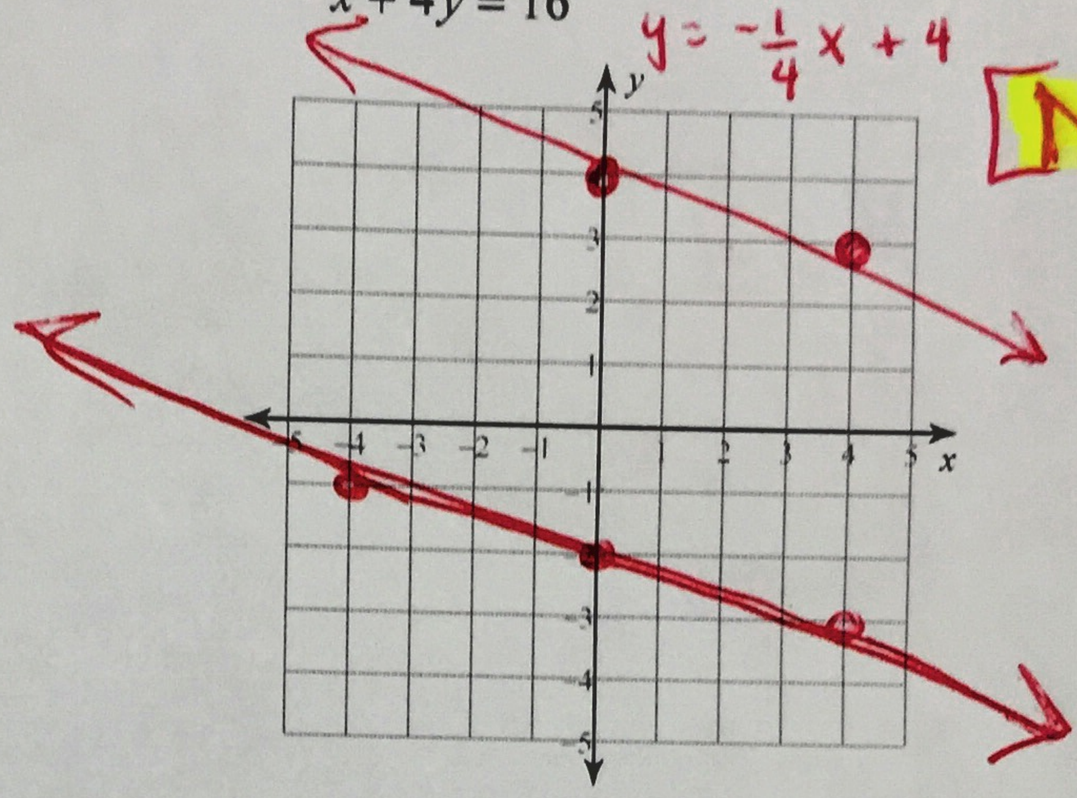


27) $x + 4y = -8$
$x + 4y = 16$

$y = -\frac{1}{4}x - 2$ Parallel!!

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

[NS]



Solve each system by substitution.

28) $y = 4x + 19$
$-6x - 2y = 4$

$-6x - 2(4x + 19) = 4$
$-6x - 8x - 38 = 4$
$-14x - 38 = 4$
$-14x = 42$
$x = -3$

$y = 4(-3) + 19$
$y = 7$

[(-3, 7)]

29) $2x - 3y = 9$
$y = 1$

$2x - 3(1) = 9$
$2x - 3 = 9$
$2x = 12$
$x = 6$

[(6, 1)]

Solve each system by elimination.

30) $12x - 9y = 0$
$3(-4x + 3y = 0)$

$12x - 9y = 0$
$-12x + 9y = 0$

[IS]

- everything cancels out

31) $5(-7x - 6y = 24)$
$6(6x + 5y = -21)$

$-35x - 30y = 120$
$36x + 30y = -126$

$x = -6$

$7(-6) - 6y = 24$
$-42 - 6y = 24$
$+42 \quad +42$
$-6y = 66$
$y = -11$

[(-6, -11)]