

Rising Geometry

Name _____ ID: 1

Summer Packet

Simplify each expression.

1) $-7m - 10m$

$$-17m$$

2) $-9v - 8v$

3) $-(7n + 10)$

$$\begin{array}{l} \text{↖ ↗} \\ -(7n + 10) \\ -7n + -10 \\ -7n - 10 \end{array}$$

4) $-9(-4 + 6a)$

5) $6 + 7(x - 1)$

$$\begin{array}{l} \text{↙ ↘} \\ \downarrow \downarrow \\ 6 + 7x - 7 \end{array}$$

$$7x - 1$$

6) $2 - 2(1 - 6x)$

$$7) -8v + 9(5 + 3v)$$

$$\underline{-8v} + 45 + \underline{27v}$$

$$19v + 45$$

$$8) 6(5x - 4) - 8x$$

Solve each equation.

$$9) r - 12 = 8$$

$$\begin{array}{r|l} +12 & +12 \\ \hline r & = 20 \end{array}$$

$$10) n - 5 = 15$$

$$11) x + 2 = -17$$

$$\begin{array}{r|l} -2 & -2 \\ \hline x & = -19 \end{array}$$

$$12) b + 13 = 5$$

$$13) \begin{array}{l} 6p = 84 \\ \hline 6 \quad | \quad 6 \\ p = 14 \end{array}$$

$$14) 6n = 60$$

$$15) \begin{array}{l} \frac{x}{3} = 15 \\ 3 \cdot \frac{x}{3} = 15 \cdot 3 \\ x = 45 \end{array}$$

$$16) \frac{r}{10} = 1$$

$$17) 2(-4 + m) = -12$$

$$18) 4(r + 4) = 64$$

$$\begin{array}{l} -8 + 2m = -12 \\ +8 \quad \quad \quad +8 \\ \hline 2m = -4 \\ \frac{2m}{2} = \frac{-4}{2} \\ m = -2 \end{array}$$

$$19) 9 + 8k = 161$$

$$20) 8x - 4 = 92$$

$$\begin{array}{l} -9 \quad \quad -9 \\ \hline 8k = 152 \\ \frac{8k}{8} = \frac{152}{8} \\ k = 19 \end{array}$$

$$\begin{array}{r}
 21) \quad 8 - 3k + 2k = 14 \\
 \hline
 -k + 8 = 14 \\
 -8 \quad -8 \\
 \hline
 -k = 6 \\
 \hline
 \frac{-k}{-1} = \frac{6}{-1} \\
 k = -6
 \end{array}$$

$$22) -20 = -3a - 7a$$

$$\begin{array}{r}
 23) \quad -24 = 2(m - 6) \\
 \hline
 -24 = 2m - 12 \\
 +12 \quad +12 \\
 \hline
 -12 = 2m \\
 \hline
 \frac{-12}{2} = \frac{2m}{2} \\
 -6 = m
 \end{array}$$

$$24) -63 = -7(7 + x)$$

$$\begin{array}{r}
 25) \quad -8 + 3n = n + 2 \\
 \hline
 +8 \quad +8 \\
 \hline
 3n = n + 10 \\
 -n \quad -n \\
 \hline
 2n = 10 \\
 \hline
 \frac{2n}{2} = \frac{10}{2} \\
 n = 5
 \end{array}$$

$$26) n + 1 = 7 + 7n$$

$$\begin{array}{r}
 27) \quad 6(-4n - 4) + 5 = 33 + 2n \\
 \hline
 -24n - 24 + 5 = 33 + 2n \\
 -24n - 19 = 33 + 2n \\
 +19 \quad +19 \\
 \hline
 -24n = 52 + 2n \\
 -2n \quad -2n \\
 \hline
 -26n = 52 \\
 \hline
 \frac{-26n}{-26} = \frac{52}{-26} \\
 n = -2
 \end{array}$$

$$28) -35 - 6x = -2(5 + 6x) - 7$$

Solve each proportion.

29) $\frac{x}{3} = \frac{7}{2}$

Handwritten work: A curved arrow points from the 3 in the denominator to the 2 in the denominator of the second fraction. Below the arrow, the equation $\frac{2x}{2} = \frac{21}{2}$ is written.

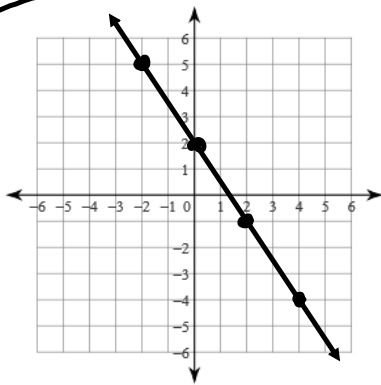
$x = \frac{21}{2}$

30) $\frac{4}{9} = \frac{x}{10}$

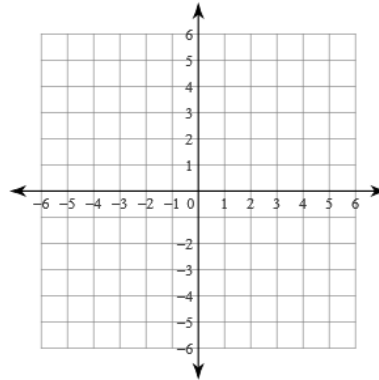
Sketch the graph of each line.

31) $y = -\frac{3}{2}x + 2$ ← y int

slope

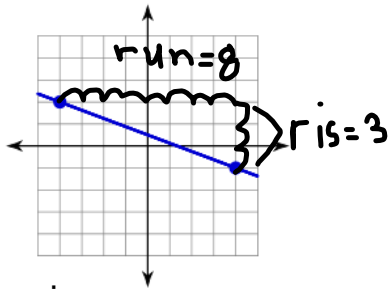


32) $y = -2x - 2$



Find the slope of each line.

33)

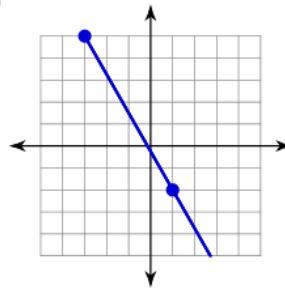


$$\text{slope} = \frac{\text{rise}}{\text{run}}$$

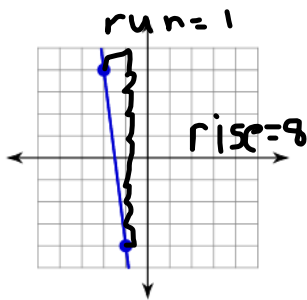
slope = m

$$m = -\frac{3}{8}$$

34)



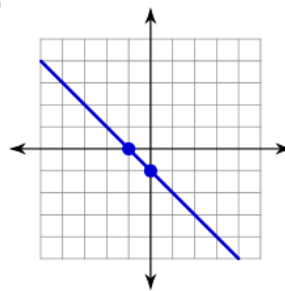
35)



$$m = -\frac{8}{1}$$

$$m = -8$$

36)



Formula for slope is $m = \frac{y_2 - y_1}{x_2 - x_1}$

Find the slope of the line through each pair of points.

37) $(-3, 3), (6, 19)$

38) $(5, -5), (8, 11)$

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

$$m = \frac{19 - 3}{6 - (-3)}$$

$$m = \frac{16}{9}$$

Find the slope of each line.

39) $y = \frac{3}{2}x$

40) $y = -8x - 3$

$$y = mx + b$$

m is always with x

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

Find the slope of a line parallel to each given line. Parallel lines have the same slope

41) $y = 5x + 1$

42) $y = -x - 3$

$$m = 5$$

Perpendicular lines are opposite reciprocals

Find the slope of a line perpendicular to each given line. When you multiply them the product is -1

43) $y = \frac{5}{4}x$

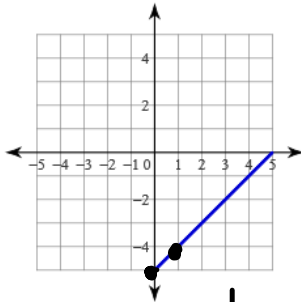
line 1: $m = \frac{5}{4}$

line 2: $m = -\frac{4}{5}$

44) $y = -7x + 4$

Write the slope-intercept form of the equation of each line. slope intercept form is $y = mx + b$

45)

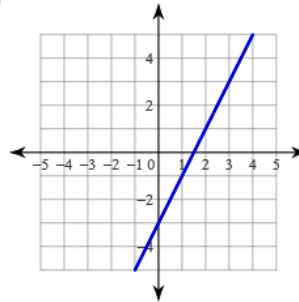


$m = \frac{\text{rise}}{\text{run}} = \frac{1}{1} = 1$

$b = -5$

$y = 1x - 5$

46)



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

47) Slope = $\frac{7}{5}$, y-intercept = 2

$$y = mx + b$$

$$y = \frac{7}{5}x + 2$$

48) Slope = -6, y-intercept = 2

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

49) $y + 2 = 4(x + 1)$

$$\begin{array}{r|l} y + 2 & 4x + 4 \\ -2 & -2 \\ \hline y & 4x + 2 \end{array}$$

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

point slope form is $y - y_1 = m(x - x_1)$

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

51) through: $(-2, -5)$, slope = $\frac{3}{2}$

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

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

52) through: $(2, 1)$, slope = -2

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

53) through: $(3, 5)$ and $(1, -3)$

54) through: $(-1, 2)$ and $(4, 0)$

1st find slope

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-3 - 5}{1 - 3} = \frac{-8}{-2} = 4$$

$$y - 5 = 4(x - 3)$$

Distance formula $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

Find the distance between each pair of points.

55) $(5, 0)$, $(-1, -7)$

56) $(4, -1)$, $(-1, 8)$

$$\sqrt{(5 - (-1))^2 + (0 - (-7))^2}$$

$$\sqrt{(6)^2 + (7)^2}$$

$$\sqrt{36 + 49} = \sqrt{85}$$

57) $(5, -3)$, $(4, 8)$

58) $(6, 8)$, $(8, 3)$

$$\sqrt{(5 - 4)^2 + (-3 - 8)^2}$$

$$\sqrt{(1)^2 + (-11)^2}$$

$$\sqrt{1 + 121}$$

$$\sqrt{122}$$