

Name:

Key

Date:

Hour:

Adv. Geometry
Review for PC #2 - Unit 3

Write the equation of the line that passes through the given points.

1. (-2, 5) and (4, 8)

$$+6 \left(\begin{array}{c|c} -2 & 5 \\ \hline 4 & 8 \end{array} \right) + 3 \quad 5 = \frac{1}{2}(-2) + b$$

$$m = \frac{3}{6} = \frac{1}{2} \quad \begin{array}{r} 5 = -1 + b \\ +1 \quad +1 \\ \hline 6 = b \end{array}$$

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

2. (3, -8) and (1, 0)

$$-2 \left(\begin{array}{c|c} 3 & -8 \\ \hline 1 & 0 \end{array} \right) + 8 \quad \begin{array}{r} -8 = -4(3) + b \\ -8 = -12 + b \\ +12 \quad +12 \\ \hline 4 = b \end{array}$$

$$m = \frac{8}{-2} = -4$$

$$y = -4x + 4$$

Write the equation of the line that satisfies the given information.

3. Passing thru (5, -2) and parallel to $3x - y = 4$

$$m = 3 \quad \begin{array}{r} -3x \quad -3x \\ \hline -y = -3x + 4 \\ y = 3x - 4 \end{array}$$

$$-2 = 3(5) + b$$

$$-2 = 15 + b$$

$$\begin{array}{r} -15 \quad -15 \\ \hline -17 = b \end{array}$$

$$y = 3x - 17$$

4. Passing thru (-6, 3) and parallel to $y = -\frac{1}{2}x + 3$

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

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

$$3 = 3 + b$$

$$0 = b$$

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

5. Passing thru (4, 7) and perpendicular to $2x - 3y = 6$

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

$$7 = -\frac{3}{2}(4) + b$$

$$7 = -6 + b$$

$$13 = b$$

$$y = \frac{-3}{2}x + 13$$

$$\begin{array}{r} -2x \quad -2x \\ \hline -3y = -2x + 6 \\ -3 \quad -3 \quad -3 \\ \hline y = \frac{2}{3}x - 2 \end{array}$$

6. Passing thru (-3, 1) and perpendicular to $y = -\frac{3}{4}x - 1$

$$\perp m = \frac{4}{3}$$

$$1 = \frac{4}{3}(-3) + b$$

$$1 = -4 + b$$

$$5 = b$$

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

7. Vertical line that passes through (-8, 2)

VUX

$$x = -8$$

8. Horizontal line that passes through (5, 6)

H0Y

$$y = 6$$

9. Vertical line that passes thru (5, -1)

VUX

$$x = 5$$

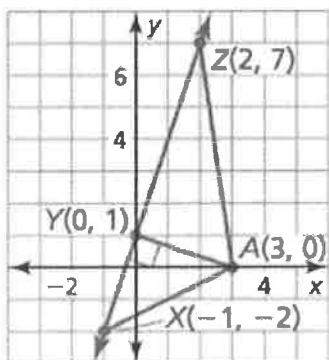
10. Horizontal line that passes thru (-2, -4)

H0Y

$$y = -4$$

Find the distance from point A to \overline{XZ} .

11.



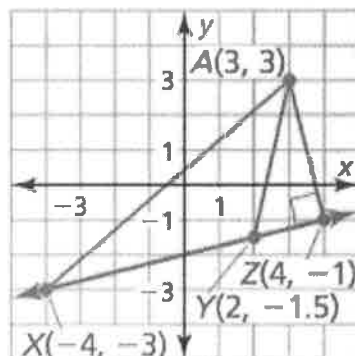
$$(3, 0) \quad (0, 1)$$

$$D = \sqrt{(3-0)^2 + (0-1)^2}$$

$$= \sqrt{9+1}$$

$$D = \sqrt{10} \quad \text{OR} \quad Ay = \sqrt{10}$$

12.



$$(3, 3) \quad (4, -1)$$

$$A_2 = \sqrt{(3-4)^2 + (3-(-1))^2}$$

$$= \sqrt{1+16}$$

$$A_2 = \sqrt{17}$$

13. Solve for x and y in the diagram.

$$3(10x + 12y = 90)$$

$$-2(15x + 9y = 90)$$

$$30x + 36y = 270$$

$$+ \quad -30x - 18y = -180$$

$$18y = 90$$

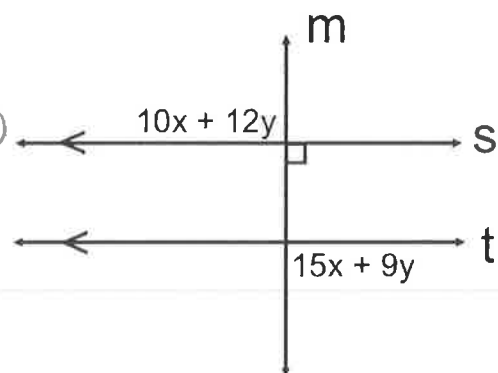
$$y = 5$$

$$10x + 12(5) = 90$$

$$10x + 60 = 90$$

$$10x = 30$$

$$x = 3$$



Write the equation of the line that is the perpendicular bisector to each set of points.

14. A(-4, -2) and B(8, 4)

$$1. \frac{-4+8}{2} \quad \frac{-2+4}{2} \quad 4. \quad 1 = -2(2) + b$$

$$M(2, 1) \quad 1 = -4 + b$$

$$2. \quad m = \frac{6}{12} = \frac{1}{2} \quad 5 = b$$

$$3. \perp m = -2 \quad \boxed{y = -2x + 5}$$

15. A(-9, 11) and B(-15, 19)

$$1. \frac{-9+(-15)}{2} \quad \frac{11+19}{2} \quad 4. \quad 15 = \frac{3}{4}(-12) + b$$

$$M(-12, 15) \quad 15 = -9 + b$$

$$2. \quad m = \frac{8}{-6} = -\frac{4}{3} \quad 24 = b$$

$$3. \perp m = \frac{3}{4} \quad \boxed{y = \frac{3}{4}x + 24}$$

16. A(11, -5) and B(1, -10)

$$1. \frac{11+1}{2} \quad \frac{-5+(-10)}{2} \quad 4. \quad -7.5 = -2(6) + b$$

$$M(6, -7.5) \quad -7.5 = -12 + b$$

$$2. \quad m = \frac{-5}{-10} = \frac{1}{2} \quad 4.5 = b$$

$$3. \perp m = -2 \quad \boxed{y = -2x + 4.5}$$

17. A(14, 18) and B(-6, 10)

$$1. \frac{14+(-6)}{2} \quad \frac{18+10}{2} \quad 4. \quad 14 = -\frac{5}{2}(4) + b$$

$$M(4, 14) \quad 14 = -10 + b$$

$$2. \quad m = \frac{-8}{-20} = \frac{2}{5} \quad 24 = b$$

$$3. \perp m = -\frac{5}{2} \quad \boxed{y = -\frac{5}{2}x + 24}$$

18. Find the distance from point P(-3, 7) to the line $y = \frac{1}{3}x - 2$.

$$1. \perp m = -3 \quad 3. \quad \frac{1}{3}x - 2 = -3x - 2 \quad 4. \quad (-3, 7) \quad (0, -2)$$

$$2. \quad 7 = -3(-3) + b \quad 3. \quad 3x - 2 = -2$$

$$7 = 9 + b \quad \frac{+2 \quad +2}{3. \quad 3x = 0}$$

$$-2 = b \quad x = 0$$

$$y = -3x - 2 \quad y = -3(0) - 2 \quad (0, -2)$$

$$D = \sqrt{(-3-0)^2 + (7-(-2))^2}$$

$$= \sqrt{9 + 81}$$

$$= \sqrt{90}$$

$$= 3\sqrt{10} \quad \boxed{D = 3\sqrt{10}}$$

9 10
33 52

19. Find the distance from point P(-2, 3) to the line $x - 2y = -2$.

$$x - 2y = -2$$

$$\frac{-x}{-x} \quad \frac{-x}{-x} \quad 3. \quad \frac{1}{2}x + 1 = -2x - 1$$

$$\frac{-2y}{-2} \quad \frac{-x-2}{-2} \quad 2.5x + 1 = -1$$

$$\frac{-2}{-2} \quad \frac{-2}{-2} \quad \frac{-1 \quad -1}{2.5x = -2}$$

$$y = \frac{1}{2}x + 1 \quad x = -0.8$$

$$4. \quad (-0.8, 0.6) \quad (-2, 3)$$

$$D = \sqrt{(-0.8-(-2))^2 + (0.6-3)^2}$$

$$= \sqrt{1.44 + 5.76}$$

$$= \sqrt{7.2}$$

$$= 2.68 \quad \boxed{D = 2.68}$$

$$1. \perp m = -2$$

$$2. \quad 3 = -2(-2) + b \quad y = -2(-0.8) - 1$$

$$3 = 4 + b \quad = 0.6$$

$$-1 = b \quad (-0.8, 0.6)$$

$$y = -2x - 1$$

Find the coordinates of point P along the directed line segment AB so that AP to PB is the given ratio.

20. A(8, 0) and B(3, -2) with ratio 1 to 4

$$\begin{aligned} X &= X_1 + t(X_2 - X_1) \\ &= 8 + \frac{1}{5}(3-8) \\ &= 8 + -1 \\ &= 7 \end{aligned}$$

$$\begin{aligned} y &= y_1 + t(y_2 - y_1) \\ &= 0 + \frac{1}{5}(-2-0) \\ &= 0 + -\frac{2}{5} \\ &= -\frac{2}{5} \end{aligned}$$

$$\boxed{P(7, -\frac{2}{5})}$$

21. A(-2, -4) and B(6, 1) with ratio 3 to 2

$$\begin{aligned} X &= -2 + \frac{3}{5}(6-(-2)) \\ &= -2 + 4.8 \\ &= 2.8 \end{aligned}$$

$$\begin{aligned} y &= -4 + \frac{3}{5}(1-(-4)) \\ &= -4 + 3 \\ &= -1 \end{aligned}$$

$$\boxed{P(2.8, -1)}$$

22. A(1, 6) and B(-2, -3) with ratio 5 to 1

$$\begin{aligned} X &= 1 + \frac{5}{6}(-2-1) \\ &= 1 + -2.5 \\ &= -1.5 \end{aligned}$$

$$\begin{aligned} y &= 6 + \frac{5}{6}(-3-6) \\ &= 6 + -7.5 \\ &= -1.5 \end{aligned}$$

$$\boxed{P(-1.5, -1.5)}$$

23. Determine if the given lines are parallel, perpendicular or neither.

Line A: (-9, 3), (-5, 7)

Line B: (-11, 6), (-7, 2)

$$\frac{A}{m = \frac{4}{4} = 1}$$

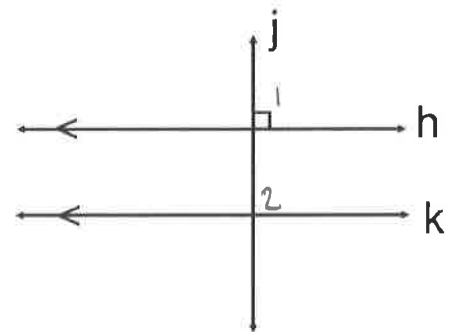
$$\frac{B}{m = \frac{-4}{4} = -1}$$

$\boxed{\text{perpendicular}}$

24. Given: $h \parallel k$ and $j \perp h$

Prove: $j \perp k$

S	R
1. $h \parallel k$	1. given
2. $j \perp h$	2. given
3. $\angle 1$ is rt. \angle	3. Def \perp
4. $m\angle 1 = 90$	4. Def rt. \angle 's
5. $\angle 1 \cong \angle 2$	5. Corr. \angle 's Thm
6. $m\angle 1 = m\angle 2$	6. Def $\cong \angle$'s
7. $m\angle 2 = 90$	7. Trans POE
8. $j \perp k$	8. Def \perp lines



-OR-

S	R
1. $h \parallel k$	1. given
2. $j \perp h$	2. given
3. $j \perp k$	3. \perp Trans. Thm