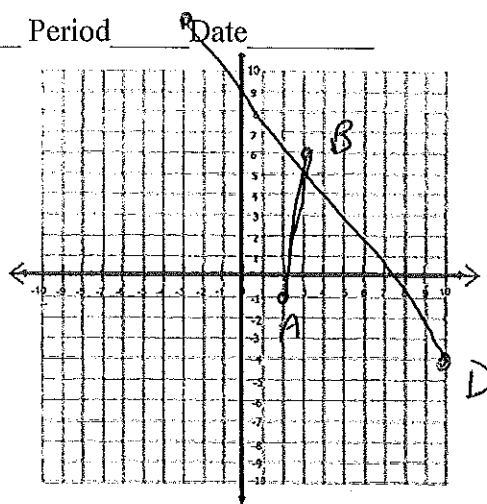


Graph the segments  $\overline{AB}$  and  $\overline{CD}$ .

1.  $A(2, -1), B(3, 6)$

2.  $C(-3, 14), D(10, -4)$



Find the coordinates of the midpoint of  $\overline{AB}$  and  $\overline{CD}$ .

3.  $A(2, -1), B(3, 6)$

4.  $C(-3, 14), D(10, -4)$

$$\left(\frac{3+2}{2}, \frac{-1+6}{2}\right) = \left(\frac{5}{2}, \frac{5}{2}\right)$$

or  $(2.5, 2.5)$

$$\left(\frac{-3+10}{2}, \frac{14+(-4)}{2}\right) = \left(\frac{7}{2}, 5\right)$$

or  $(3.5, 5)$

Find the distance between each pair of points. If necessary, round to the nearest hundredth.

7.  $A(-2, 6), B(10, -8)$

8.  $C(-3, -5), D(-9, 4)$

$$\sqrt{(10 - (-2))^2 + (-8 - 6)^2}$$

$$\sqrt{12^2 + (-14)^2}$$

$$\sqrt{144 + 196} = \sqrt{340} \approx 18.44$$

$$\sqrt{(-3 - (-9))^2 + (-5 - 4)^2}$$

$$(6)^2 + (-9)^2$$

$$\sqrt{36 + 81} = \sqrt{117} \approx 10.82$$

9. Find the perimeter of a triangle with vertices at the following points:  $A(3, -5), B(-2, 10), C(1, -1)$

Round your answers to the nearest hundredth.

$$AB = \sqrt{(3 - (-2))^2 + (-5 - 10)^2}$$

$$(5)^2 + (-15)^2$$

$$\sqrt{25 + 225}$$

$$\sqrt{250}$$

$$BC = \sqrt{(-2 - 1)^2 + (10 - (-1))^2}$$

$$(-3)^2 + (11)^2$$

$$\sqrt{9 + 121}$$

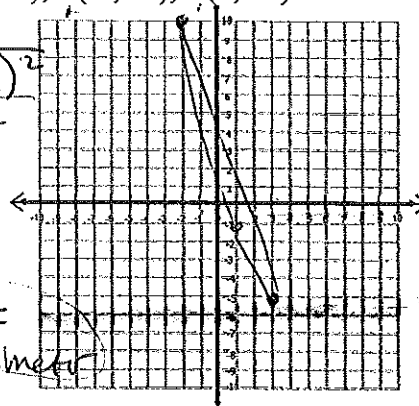
$$\sqrt{130}$$

$$AC = \sqrt{(3 - 1)^2 + (-5 - (-1))^2}$$

$$2^2 + (-4)^2$$

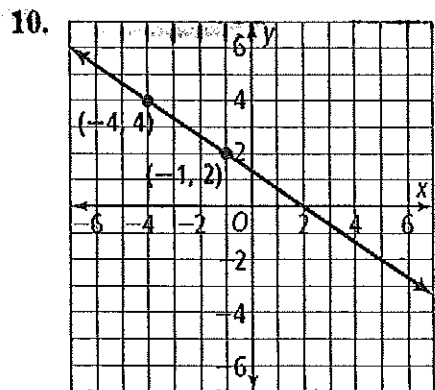
$$\sqrt{4 + 16}$$

$$\sqrt{20}$$

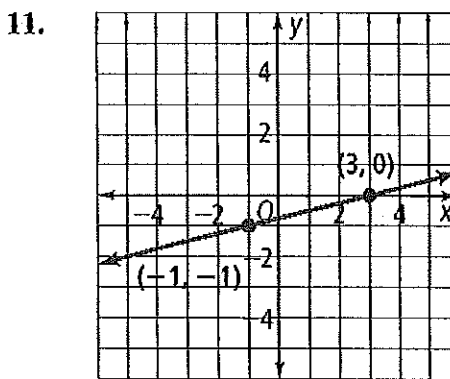


$P = 15.81 + 11.40 + 4.47 = 31.68$  perimeter

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



$-\frac{2}{3}$



$\frac{1}{4}$

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

12. (2, 3), (-1, -6)

$$\frac{-6-3}{-1-2} = \frac{-9}{-3} = 3$$

13. (-6, -2), (-3, -6)

$$\frac{-6+2}{-3+6} = \frac{-4}{3}$$

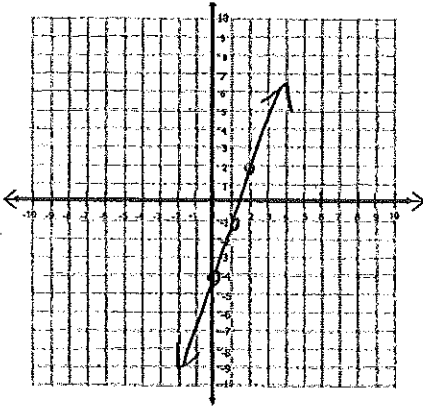
Fill in the missing information, then graph each line.

14.  $y = 3x - 4$

\*This equation is written in slope intercept form.

\*slope = 3

\*y-intercept = -4

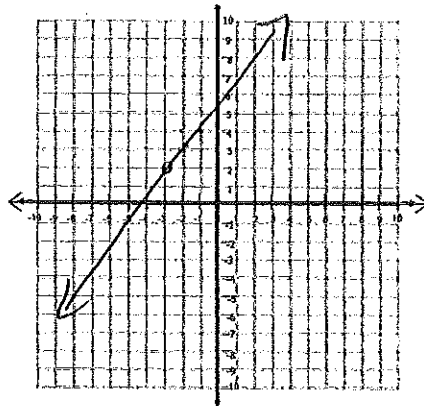


15.  $y - 2 = (x + 3)$

\*This equation is written in point-slope form.

\*slope = 1

\*point = (-3, 2)

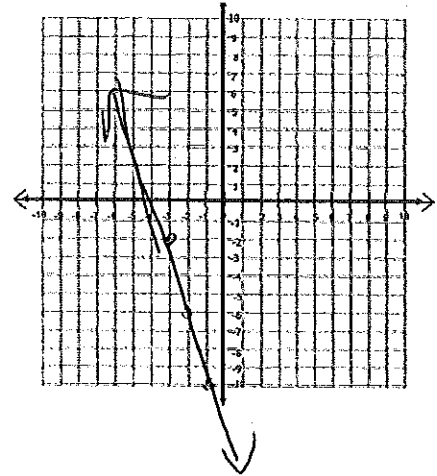


16.  $y + 2 = -4(x + 3)$

\*This equation is written in point-slope form.

\*slope = -4

\*point = (-3, -2)



Rewrite each equation in slope-intercept form.

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

$$y - 3 = 4x + 8$$

$$+3 \quad +3$$

$$y = 4x + 11$$

18.  $y - 2 = -2(x - 5)$

$$y - 2 = -2x + 10$$

$$+2 \quad +2$$

$$y = -2x + 12$$

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

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

$$-1 \quad -1$$

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

Rewrite the equations below in slope intercept form. Then determine whether the lines are parallel. Explain.

20.  $y - 6 = -\frac{5}{2}(x + 4)$

$$y - 6 = -\frac{5}{2}x - \frac{20}{2}$$

$$+6 \quad +6$$

$$y = -\frac{5}{2}x - 4$$

$$5y = 2x + 6$$

$$y = \frac{2}{5}x + \frac{6}{5}$$

21.  $\frac{10y + 130 = 50x}{-5y = 2x + 11}$

$$y + 13 = 5x$$

$$y = 5x - 13$$

$$y = -\frac{2}{5}x + \frac{11}{5}$$

NOT parallel (actually they are  $\perp$ )

NOT //

Use the given information to write an equation for each line in either form.

22. → given slope and intercept

slope 6, y-intercept 4

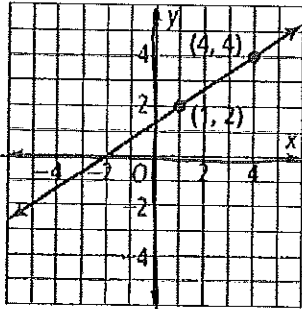
$$y = 6x + 4$$

b. slope  $-\frac{1}{3}$ , y-intercept -2

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

23. → given a graph

a.



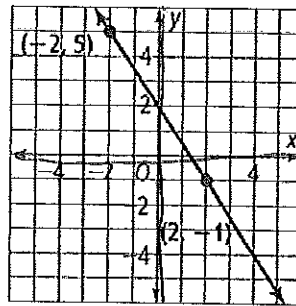
$$y - 4 = \frac{2}{3}(x - 4)$$

or

$$y - 4 = \frac{2}{3}x - \frac{8}{3} + \frac{12}{3}$$

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

b.



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

or

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

24. → given two points

a. through (-2, 0) and (3, 10)

$$\text{slope} = \frac{10 - 0}{3 - (-2)} = \frac{10}{5} = 2$$

$$y - 0 = 2(x + 2) \quad \text{or} \quad y - 10 = 2(x - 3)$$

$$y = 2x + 4$$

b. through (10, 2) and (2, -2)

$$\text{slope} = \frac{-2 - 2}{2 - 10} = \frac{-4}{-8} = \frac{1}{2}$$

$$y - 2 = \frac{1}{2}(x - 10) \quad \text{or} \quad y + 2 = \frac{1}{2}(x - 2)$$

$$\text{or} \quad y = \frac{1}{2}x - 3$$

25. → given slope and one point

a. Slope = -2 and passes through (5, -1)

Point slope form  $y + 1 = -2(x - 5)$

Slope intercept form  $y = -2x + 9$

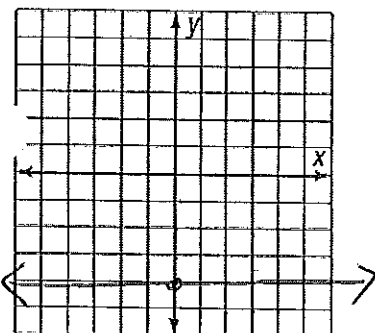
b. slope = 2/3 and passes through (-3, 4)

Point slope form  $y - 4 = \frac{2}{3}(x + 3)$

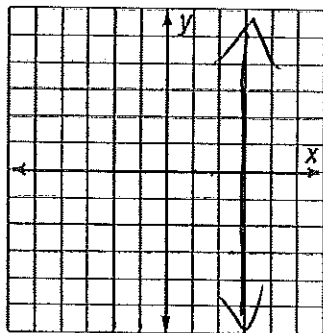
Slope intercept form  $y = \frac{2}{3}x + 6$

Graph each line.

26.  $y = -4$



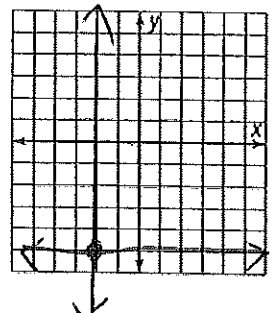
27.  $x = 3$



29. Graph each pair of lines. Then find their intersection point

$$y = -5, x = -2$$

intersection  $(-2, -5)$



Are the following lines (AB and CD) parallel, perpendicular or neither? Explain.

30.  $A(-1, -3), B(4, 5)$  and  $C(0, -3), D(-4, 6)$

AB slope =  $\frac{5 - (-3)}{4 - (-1)} = \frac{8}{5}$  CD slope =  $\frac{6 - (-3)}{-4 - 0} = \frac{9}{-4}$   
 neither

31.  $A(-2, 0), B(5, -8)$  and  $C(3, 4), D(10, 12)$

AB slope =  $\frac{-8 - 0}{5 - (-2)} = \frac{-8}{7}$  CD slope =  $\frac{12 - 4}{10 - 3} = \frac{8}{7}$   
 neither

32.  $A(2, 2), B(2, 9)$  and  $C(4, 5), D(4, -3)$

AB slope =  $\frac{9 - 2}{2 - 2} = \frac{7}{0}$  undefined vertical  
 CD slope =  $\frac{-3 - 5}{4 - 4} = \frac{-8}{0}$  undefined vertical  
 parallel

33.  $A(0, -2), B(3, 4)$  and  $C(-4, 7), D(-10, 10)$

AB slope =  $\frac{4 - (-2)}{3 - 0} = \frac{6}{3} = 2$   
 CD slope =  $\frac{10 - 7}{-10 - (-4)} = \frac{3}{-6} = -\frac{1}{2}$   
 perpendicular

Write an equation of the line parallel to  $\overline{AB}$  that contains point C.

34.  $\overline{AB}: y = -5x + 12; C(-2, 1)$

Slope of given line?  $-5$   
 Slope of new line?  $-5$   
 Equation  $y = -5x - 9$   
 (Handwritten work:  $y - 1 = -5(x + 2)$ ,  $y - 1 = -5x - 10$ )

35.  $\overline{AB}: y = -\frac{2}{3}x - 4; C(9, -5)$

$y + 5 = -\frac{2}{3}(x - 9)$   
 $y + 5 = -\frac{2}{3}x + 6$   
 $y = -\frac{2}{3}x + 1$

Write an equation of the line perpendicular to  $\overline{AB}$  that contains point C.

36.  $\overline{AB}: y = 2x - 3; C(-6, 5)$

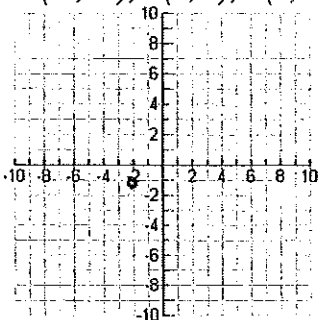
Slope of given line?  $2$   
 Slope of new line?  $-\frac{1}{2}$   
 Equation  $y = -\frac{1}{2}x + 2$   
 (Handwritten work:  $y - 5 = -\frac{1}{2}(x + 6)$ ,  $y - 5 = -\frac{1}{2}x - 3$ )

37.  $\overline{AB}: y = x - 1; C(-6, -3)$

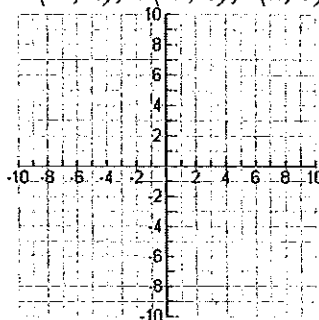
$y + 3 = -(x + 6)$   
 $y + 3 = -x - 6$   
 $y = -x - 9$

The vertices of a triangle are given. Plot the points on a coordinate plane and determine whether the triangle is a right triangle. Show your work to justify your answer.

38.  $X(-2, -1), Y(0, 2), Z(3, -1)$



39.  $T(-2, 4), R(-1, 0), I(2, 5)$



40. Find the perimeter of the triangle in #38.