

## 11.1 Practice - Distance and Midpoint

Date \_\_\_\_\_ Period \_\_\_\_\_

Find the distance between each pair of points. Round your answer to the nearest tenth, if necessary.

1) (13, 12), (1, -4)

$$d = \sqrt{(13-1)^2 + (12+4)^2}$$

$$d = \sqrt{400}$$

$$d = 20$$

3) (9, -6), (-1, 1)

$$d = \sqrt{(9+1)^2 + (-6-1)^2}$$

$$d = \sqrt{149}$$

$$d \approx 12.207$$

2) (6, 4), (-2, 6)

$$d = \sqrt{(6+2)^2 + (4-6)^2}$$

$$d = \sqrt{68}$$

$$d \approx 8.246$$

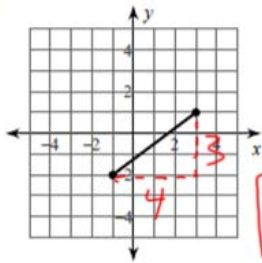
4) (3, 13), (-4, 12)

$$d = \sqrt{(3+4)^2 + (13-12)^2}$$

$$d = \sqrt{50}$$

$$d \approx 7.071$$

5)

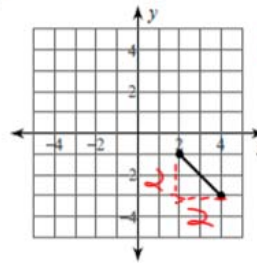


$$d^2 = 3^2 + 4^2$$

$$d = \sqrt{25}$$

$$d = 5$$

6)

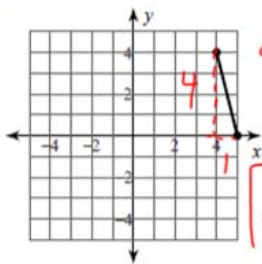


$$d^2 = 2^2 + 2^2$$

$$d = \sqrt{8}$$

$$d \approx 2.828$$

7)

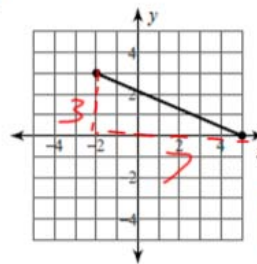


$$d^2 = 4^2 + 1^2$$

$$d = \sqrt{17}$$

$$d \approx 4.123$$

8)



$$d^2 = 3^2 + 7^2$$

$$d = \sqrt{58}$$

$$d \approx 7.616$$

Find the midpoint of the line segment with the given endpoints.

9) (4, 2), (5, -7)

$$M\left(\frac{4+5}{2}, \frac{2-7}{2}\right)$$

$$M\left(\frac{9}{2}, -\frac{5}{2}\right)$$

11) (-6, -2), (-3, -5)

$$M\left(\frac{-6-3}{2}, \frac{-2-5}{2}\right)$$

$$M\left(-\frac{9}{2}, -\frac{7}{2}\right)$$

10) (-3, -7), (-6, -5)

$$M\left(\frac{-3-6}{2}, \frac{-7-5}{2}\right)$$

$$M\left(-\frac{9}{2}, -6\right)$$

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

$$M\left(\frac{1-1}{2}, \frac{-3-6}{2}\right)$$

$$M\left(0, -\frac{9}{2}\right)$$

Find the equation of the perpendicular bisector between the two given points.

13) (0, 4), (-6, 6)

$$m = \frac{6-4}{-6-0} = \frac{2}{-6} = -\frac{1}{3}$$

$$M\left(\frac{0}{2}, \frac{10}{2}\right)$$

$$M(-3, 5)$$

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

$$y-5 = 3x+9$$

$$y = 3x+14$$

14) (4, -6), (6, 0)

$$m = \frac{-6-0}{4-6} = \frac{-6}{-2} = 3$$

$$M\left(\frac{10}{2}, \frac{-6}{2}\right)$$

$$M(5, -3)$$

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

$$y+3 = -\frac{1}{3}x + \frac{5}{3}$$

$$y = -\frac{1}{3}x - \frac{4}{3}$$

15) (-2, 4), (-6, 2)

$$m = \frac{4-2}{-2+6} = \frac{2}{4} = \frac{1}{2}$$

$$M\left(\frac{-8}{2}, \frac{6}{2}\right) = M(-4, 3)$$

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

$$y-3 = -2x-8$$

$$y = -2x-5$$

16) (4, 3), (-4, -5)

$$m = \frac{3+5}{4+4} = \frac{8}{8} = 1$$

$$M\left(\frac{0}{2}, \frac{-2}{2}\right)$$

$$M(0, -1)$$

$$y+1 = -1(x-0)$$

$$y = -x-1$$