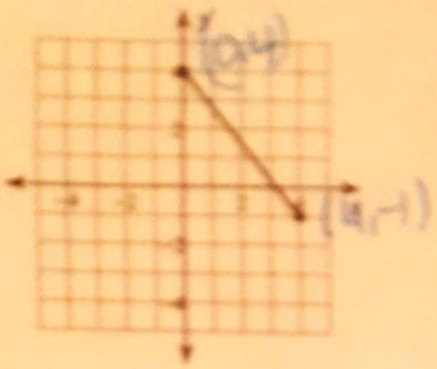
Geometry $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$ Name _____

Midpoint

Date _____

Find the midpoint of each line segment.

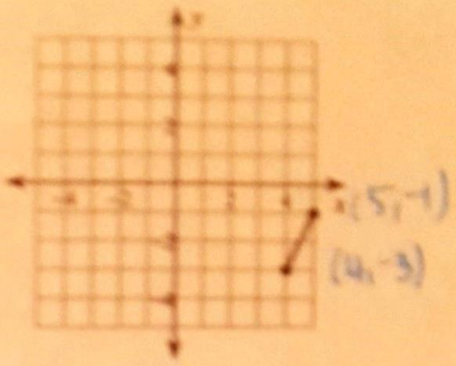
1)



$\left(\frac{0+4}{2}, \frac{4+-1}{2}\right)$

$\left(2, \frac{3}{2}\right)$

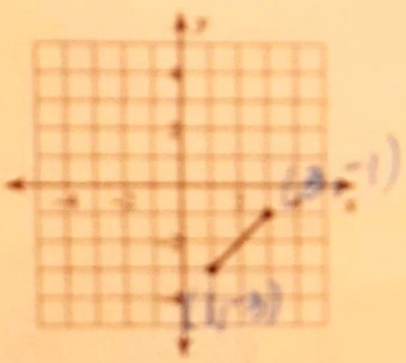
2)



$\left(\frac{9}{2}, \frac{-4}{2}\right)$

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

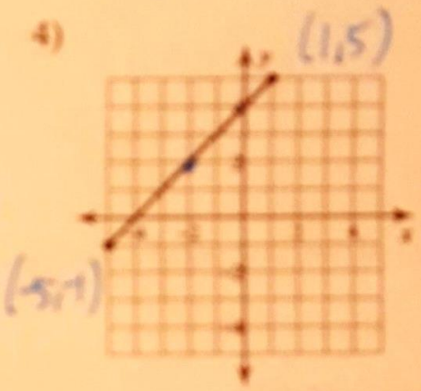
3)



$\frac{4}{2}, \frac{-4}{2}$

$(2,-2)$

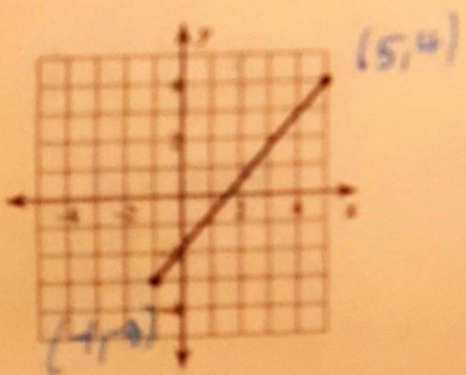
4)



$\frac{-4}{2}, \frac{4}{2}$

$(-2,2)$

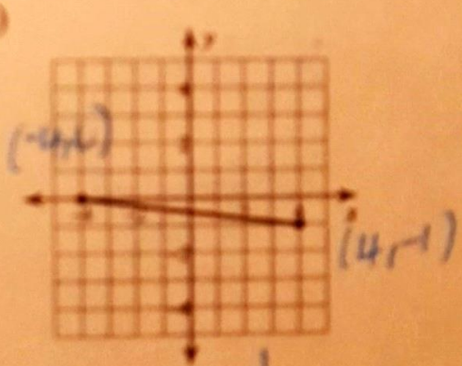
5)



$\left(\frac{1}{2}, \frac{+1}{2}\right)$

$\left(2, \frac{1}{2}\right)$

6)



$\left(\frac{0}{2}, \frac{-1}{2}\right)$

$\left(0, \frac{-1}{2}\right)$

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

7) $(-8, 1), (-7, 3)$

$\left(\frac{-7+-8}{2}, \frac{1+3}{2}\right)$

$\left(\frac{-15}{2}, 2\right)$

8) $(-3, 8), (9, 8)$

$\left(\frac{-3+9}{2}, \frac{8+8}{2}\right)$

$(3, 8)$

9) $(3, -8), (0, 1)$

$\left(\frac{3+0}{2}, \frac{-8+1}{2}\right)$

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

10) $(2, 7), (-3, -9)$

$\left(\frac{2+-3}{2}, \frac{7+-9}{2}\right)$

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

11) $(-10, -1), (-1, 4)$

$\left(\frac{-10+-1}{2}, \frac{-1+4}{2}\right)$

$\left(\frac{-11}{2}, \frac{3}{2}\right)$

12) $(-10, 6), (-6, 0)$

$\left(\frac{-10+-6}{2}, \frac{6+0}{2}\right)$

$(-8, 3)$

Find the other endpoint of the line segment with the given endpoint and midpoint.

13) Endpoint: $(-6, 8)$, midpoint: $(-8, 6)$

$\frac{x+-6}{2} = -8$ $\quad$ $\frac{y+8}{2} = 6$

$x+-6 = -16$ $\quad$ $y+8 = 12$

$x = -10$ $\quad$ $y = 4$

14) Endpoint: $(7, 6)$, midpoint: $(4, 10)$

$\frac{x+7}{2} = 4$ $\quad$ $\frac{y+6}{2} = 10$

$x+7 = 8$ $\quad$ $y+6 = 20$

$x = 1$ $\quad$ $y = 14$

15) Endpoint: $(-9, 3)$, midpoint: $(0, 0)$

$\frac{x+-9}{2} = 0$ $\quad$ $\frac{y+3}{2} = 0$

$x+-9 = 0$ $\quad$ $y+3 = 0$

$x = 9$ $\quad$ $y = -3$

16) Endpoint: $(-5, 9)$, midpoint: $(0, 3)$

$\frac{x+-5}{2} = 0$ $\quad$ $\frac{y+9}{2} = 3$

$x-5 = 0$ $\quad$ $y+9 = 6$

$x = 5$ $\quad$ $y = -3$

17) Endpoint: $(-10, 7)$, midpoint: $(9, -10)$

$\frac{x+-10}{2} = 9$ $\quad$ $\frac{y+7}{2} = -10$

$x-10 = 18$ $\quad$ $y+7 = -20$

$x = 28$ $\quad$ $y = -27$

18) Endpoint: $(8, 4)$, midpoint: $(-1, 0)$

$\frac{x+8}{2} = -1$ $\quad$ $\frac{y+4}{2} = 0$

$x+8 = -2$ $\quad$ $y+4 = 0$

$x = -10$ $\quad$ $y = -4$

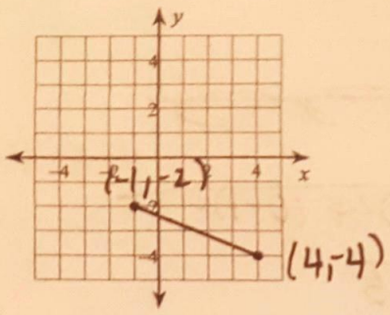
Geometry $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ Name _____

Distance

Date _____

Find the distance between each pair of points.

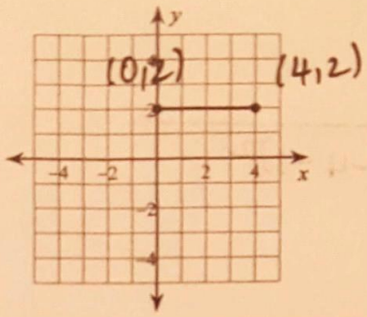
1)



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

$\sqrt{29}$

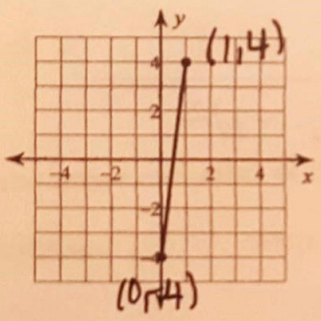
2)



$\sqrt{(4-0)^2 + (2-2)^2}$

4

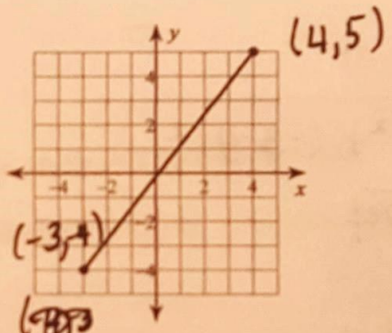
3)



$\sqrt{(0-1)^2 + (-4-4)^2}$

$\sqrt{65}$

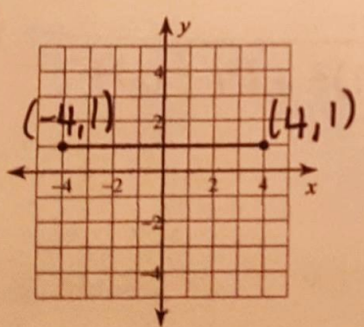
4)



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

$\sqrt{130}$

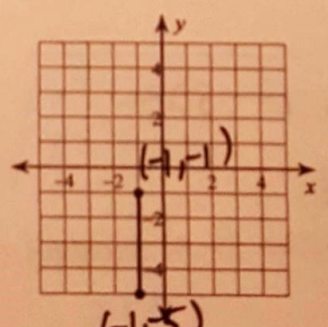
5)



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

8

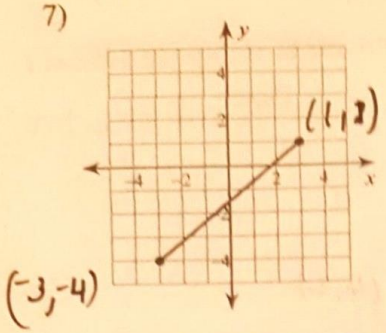
6)



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

4

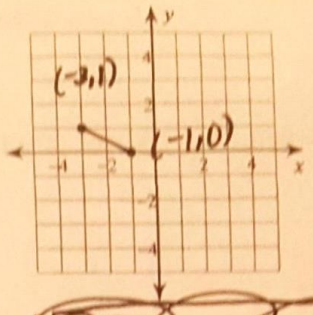
7)



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

$\sqrt{41}$

8)



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

$\sqrt{5}$

9) (8, –5), (–5, –3)

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

$\sqrt{173}$

10) (0, –8), (3, –8)

$\sqrt{(3-0)^2+(-8--8)^2}$

3

11) (–3, 4), (–8, –3)

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

$\sqrt{74}$

12) (8, –1), (8, 5)

$\sqrt{(8-8)^2+(5--1)^2}$

6

13) (–3, –6), (–5, 8)

$\sqrt{(-5--3)^2+(8--6)^2}$

$10\sqrt{2}$

14) (4, –6), (6, –6)

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

2

15) (3, –8), (–1, 7)

$\sqrt{(-1-3)^2+(7--8)^2}$

$\sqrt{241}$

16) (–7, –6), (–3, 7)

$\sqrt{(-3--7)^2+(7--6)^2}$

$\sqrt{185}$

17) (–6, 5), (6, –3)

$\sqrt{(6--6)^2+(-3-5)^2}$

$4\sqrt{13}$

18) (8, –4), (8, 6)

$\sqrt{(8-8)^2+(6--4)^2}$

10