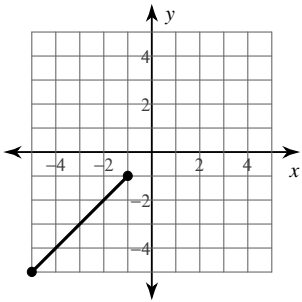


# The Midpoint Formula

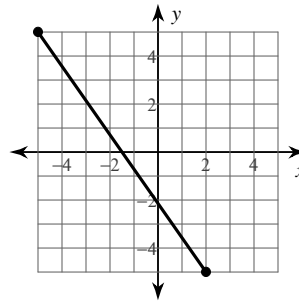
**Find the midpoint of each line segment.**

1)



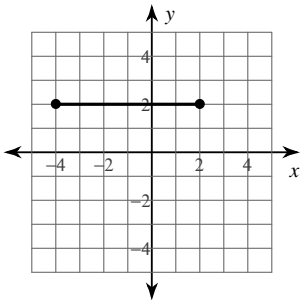
$(-3, -3)$

2)



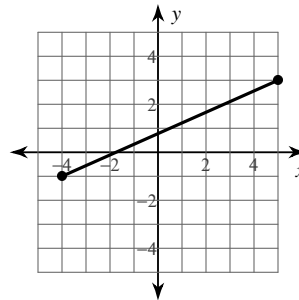
$(-1\frac{1}{2}, 0)$

3)



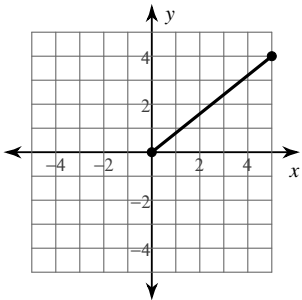
$(-1, 2)$

4)



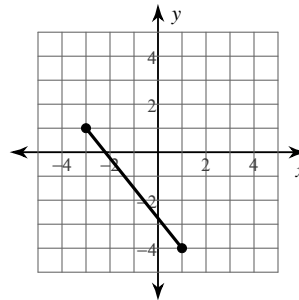
$(\frac{1}{2}, 1)$

5)



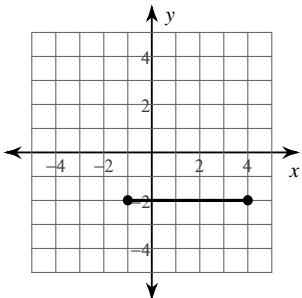
$(2\frac{1}{2}, 2)$

6)



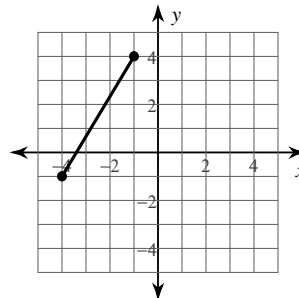
$(-1, -1\frac{1}{2})$

7)



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

8)



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

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

9)  $(-4, 4), (5, -1)$

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

11)  $(2, 4), (1, -3)$

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

13)  $(5, 2), (-4, -3)$

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

15)  $(2, -1), (-6, 0)$

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

17)  $(-5.1, -2), (1.4, 1.7)$

$(-1.85, -0.15)$

19)  $(5.1, 5.71), (6, 3.6)$

$(5.55, 4.655)$

10)  $(-1, -6), (-6, 5)$

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

12)  $(-4, 4), (-2, 2)$

$(-3, 3)$

14)  $(-1, 1), (5, -5)$

$(2, -2)$

16)  $(-3.1, -2.8), (-4.92, -3.3)$

$(-4.01, -3.05)$

18)  $(4.9, -1.3), (-5.2, -0.6)$

$(-0.15, -0.95)$

20)  $(3.1, -2.1), (-0.52, -0.6)$

$(1.29, -1.35)$

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

21) Endpoint:  $(-1, 9)$ , midpoint:  $(-9, -10)$

$(-17, -29)$

22) Endpoint:  $(2, 5)$ , midpoint:  $(5, 1)$

$(8, -3)$

23) Endpoint:  $(5, 2)$ , midpoint:  $(-10, -2)$

$(-25, -6)$

24) Endpoint:  $(9, -10)$ , midpoint:  $(4, 8)$

$(-1, 26)$

25) Endpoint:  $(-9, 7)$ , midpoint:  $(10, -3)$

$(29, -13)$

26) Endpoint:  $(-6, 4)$ , midpoint:  $(4, 8)$

$(14, 12)$

**Critical thinking questions:**

27) Find the point that is one-fourth of the way from  $(2, 4)$  to  $(10, 8)$ .

$(4, 5)$

28) One endpoint of a line segment is  $(8, -1)$ . The point  $(5, -2)$  is one-third of the way from that endpoint to the other endpoint. Find the other endpoint.

$(-1, -4)$