

**Practice: get the midpoint's coordinate(s). 30 problems\***

1. On a number line.

A(5) & B(-5) Add and divide by two --->  $(5 + -5)/2 = 0/2 = 0$   
Midpoint located at 0, the origin.

When calculating the midpoint we get the average of 2 values.

2. On the coordinate plane.

A(8, -7) & B(5, 9) so now you add and divide by two twice, once with x-coordinates and once with the y-coordinates. The result is an ordered pair, (x, y).

$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right) \quad \text{so} \quad \left(\frac{8 + 5}{2}, \frac{-7 + 9}{2}\right) \quad \text{then} \quad \left(\frac{13}{2}, 1\right) \quad \text{or} \quad (6.5, 1)$$

3. Determine the other endpoint of a segment when you know its midpoint and one endpoint.

**2 x (midpoint coordinates) – (known endpoint's coordinates) = other endpoint's coordinates**

(we are treating the ordered pair for the purpose of our calculations as if they were stand alone values.)

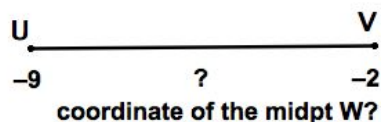
Ex: endpt A (5, -7) & midpt at (12, -3), what are the coordinates for the other endpoint, point C?

$$2 \times (12, -3) - (5, -7) \text{ ----> } (24, -6) - (5, -7) \text{ ----> } \mathbf{(19, 1) \text{ answer.}}$$

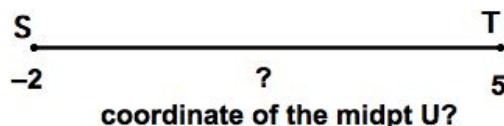
<p><b>Other set-up</b> Midpt (12, -3) ----&gt; x 2 ----&gt; 24, -6 then <u>subtract</u> endpt - 5, -7 <b>(19, 1) answer</b></p>
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Check: midpt  $\left(\frac{5 + 19}{2}, \frac{-7 + 1}{2}\right)$ , yes (12, -3)

1. What is the coordinate for the midpt of segment UV, pt W?



2. The coordinates for pts S and T are -2 and 5, respectively. What is the midpoint's (pt. U) coordinate?



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

3.  $(-4, 4), (5, -1)$

4.  $(-1, -6), (-6, 5)$

5.  $(2, 4), (1, -3)$

6.  $(-4, 4), (-2, 2)$

7.  $(5, 2), (-4, -3)$

8.  $(-1, 1), (5, -5)$

9.  $(2, -1), (-6, 0)$

10.  $(-3.1, -2.8), (-4.92, -3.3)$

11.  $(-5.1, -2), (1.4, 1.7)$

12.  $(4.9, -1.3), (-5.2, -0.6)$

13.  $(5.1, 5.71), (6, 3.6)$

14.  $(3.1, -2.1), (-0.52, -0.6)$

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

15. Endpoint:  $(-1, 9)$ , midpoint:  $(-9, -10)$

16. Endpoint:  $(2, 5)$ , midpoint:  $(5, 1)$

17. Endpoint:  $(5, 2)$ , midpoint:  $(-10, -2)$

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

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

20. Endpoint:  $(-6, 4)$ , midpoint:  $(4, 8)$

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

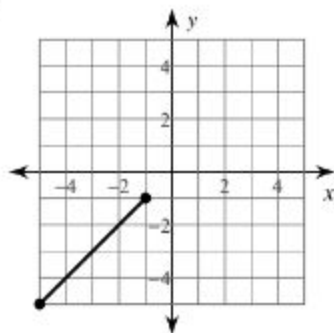
22. One endpoint of a line segment is  $(8, -1)$ . The point  $(5, -2)$  is one-third of the way from that endpoint to the other endpoint. Find the other endpoint.

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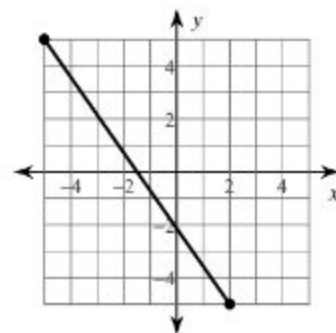
**Find the midpoint of each line segment.**

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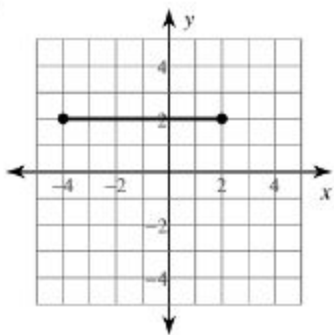
1)



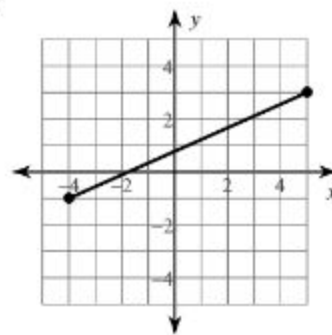
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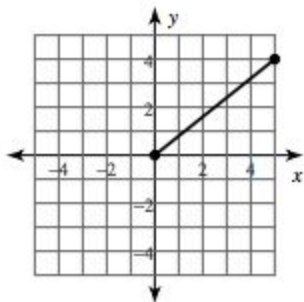
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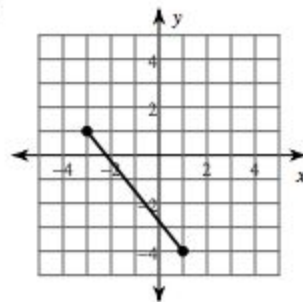
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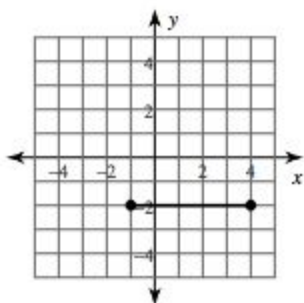
5)



6)



7)



8)

