

Find the point that partitions the segment with the two given endpoints with the given ratio.

1. $(-3, 4) (7, 6) 1:1$

$$\frac{1(-3)+1(7)}{1+1}, \frac{1(4)+1(6)}{1+1}$$

$$\frac{4}{2}, \frac{10}{2}$$

$$(2, 5)$$

2. $(-9, 3) (1, 8) 2:3$

$$\frac{3(-9)+2(1)}{3+2}, \frac{3(3)+2(8)}{3+2}$$

$$\frac{-25}{5}, \frac{25}{5}$$

$$(-5, 5)$$

3. $(8, -5) (4, 7) 1:3$

$$\frac{3(8)+1(4)}{3+1}, \frac{3(-5)+1(7)}{3+1}$$

$$\frac{28}{4}, \frac{-8}{4}$$

$$(7, -2)$$

4. $(5, -6) (4, 5) 3:4$

$$\frac{4(5)+3(4)}{4+3}, \frac{4(-6)+3(5)}{4+3}$$

$$\left(\frac{32}{7}, \frac{-9}{7}\right)$$

5. $(4, 9) (-5, -3) 2:3$

$$\frac{3(4)+2(-5)}{3+2}, \frac{3(9)+2(-3)}{3+2}$$

$$\left(\frac{2}{5}, \frac{21}{5}\right)$$

6. $(2, -1) (-3, -5) 1:2$

$$\frac{2(2)+1(-3)}{2+1}, \frac{2(-1)+1(-5)}{2+1}$$

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

7. Find the coordinates of point P, that lies $\frac{2}{3}$ of the way on the directed line segment \overline{AB} , where A $(-2, 5)$, B $(4, 9)$ $2:1$

$$\frac{1(-2)+2(4)}{1+2}, \frac{1(5)+2(9)}{1+2}$$

$$\frac{6}{3}, \frac{23}{3}$$

$$\left(3, \frac{23}{3}\right)$$

8. Find the coordinates of point P that lies on the line segment \overline{MQ} , M $(-9, -5)$, Q $(3, 5)$, and partitions the segment at a ratio of 2 to 5

$$\frac{5(-9)+2(3)}{5+2}, \frac{5(-5)+2(5)}{5+2}$$

$$\frac{-39}{7}, \frac{-15}{7}$$

$$\left(\frac{-39}{7}, \frac{-15}{7}\right)$$

3. Plot points A(4, -3), B(-1, -3), C(0, 1), and D(5, 1).

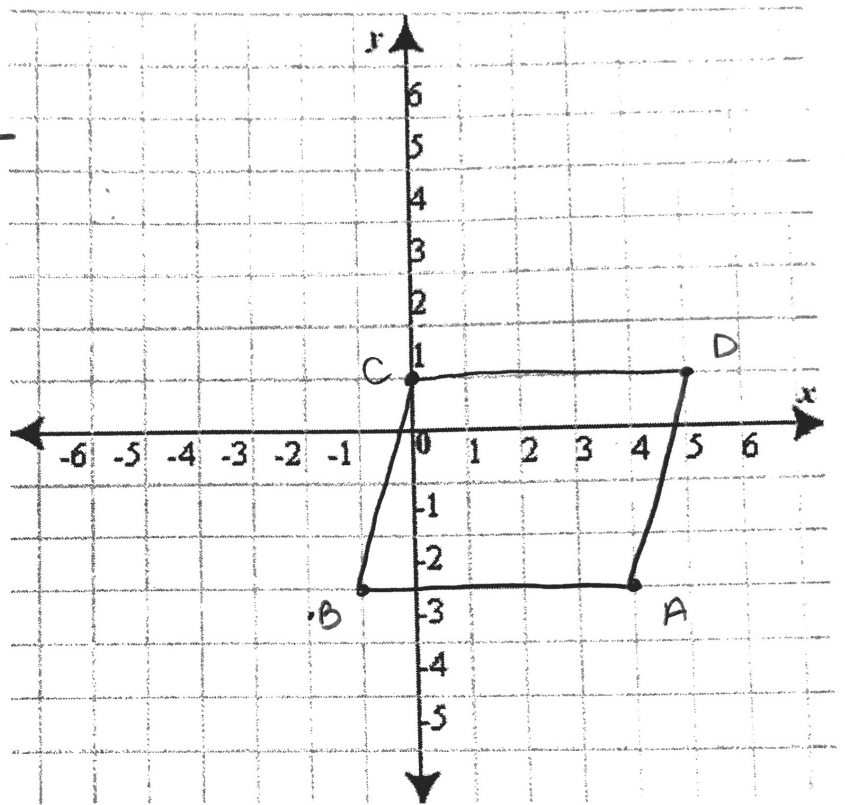
a. Find the length of all four sides.

$$AB = \sqrt{(4+1)^2 + (-3+3)^2} = \sqrt{25} = 5$$

$$BC = \sqrt{(-1-0)^2 + (-3-1)^2} = \sqrt{17}$$

$$CD = \sqrt{(5-0)^2 + (1-1)^2} = \sqrt{25} = 5$$

$$AD = \sqrt{(5-4)^2 + (1+3)^2} = \sqrt{17}$$



b. Find the perimeter of the polygon.

$$P = 5 + \sqrt{17} + 5 + \sqrt{17}$$

$$P = 10 + 2\sqrt{17}$$

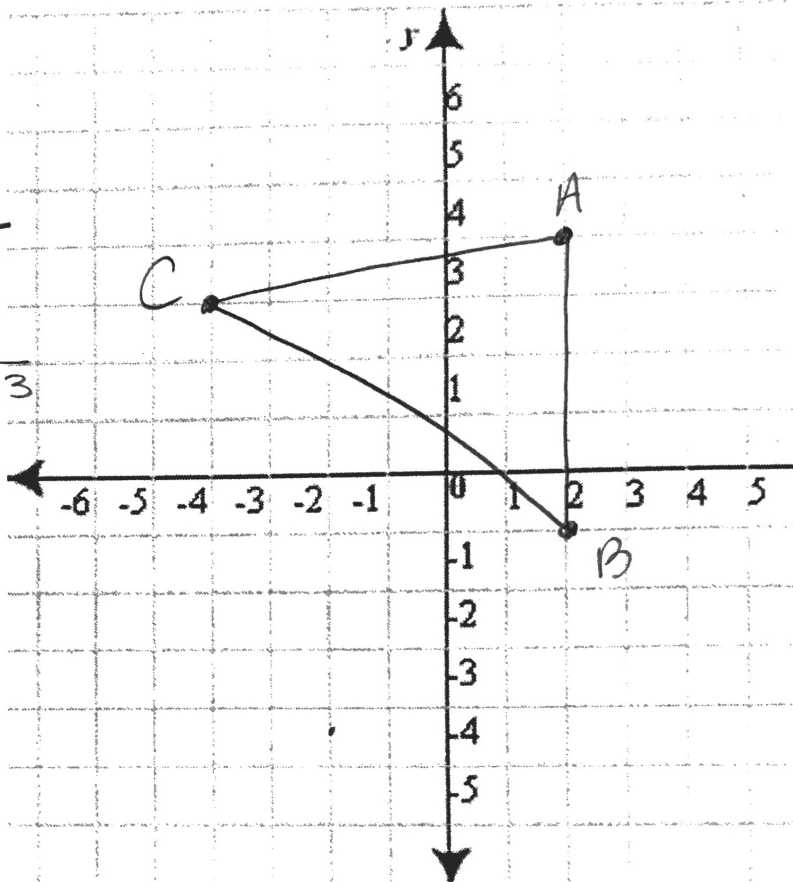
4. Plot points A(2,4), B(2,-1), and C(-4,3).

a. Find the length of all three sides.

$$AB = \sqrt{(2-2)^2 + (4+1)^2} = \sqrt{25} = 5$$

$$BC = \sqrt{(2+4)^2 + (-1-3)^2} = \sqrt{52} = 2\sqrt{13}$$

$$AC = \sqrt{(-4-2)^2 + (3-4)^2} = \sqrt{37}$$



b. Find the perimeter of the polygon.

$$P = 5 + 2\sqrt{13} + \sqrt{37}$$