

$$\sqrt{125}$$

$$\sqrt{25 \cdot 5}$$

$$\sqrt{25} \cdot \sqrt{5}$$

$$5\sqrt{5} \approx 11.2$$

Warm Up

March 20, 2019

Use slopes and lengths of sides to determine whether Quadrilateral ABCD is a rectangle.

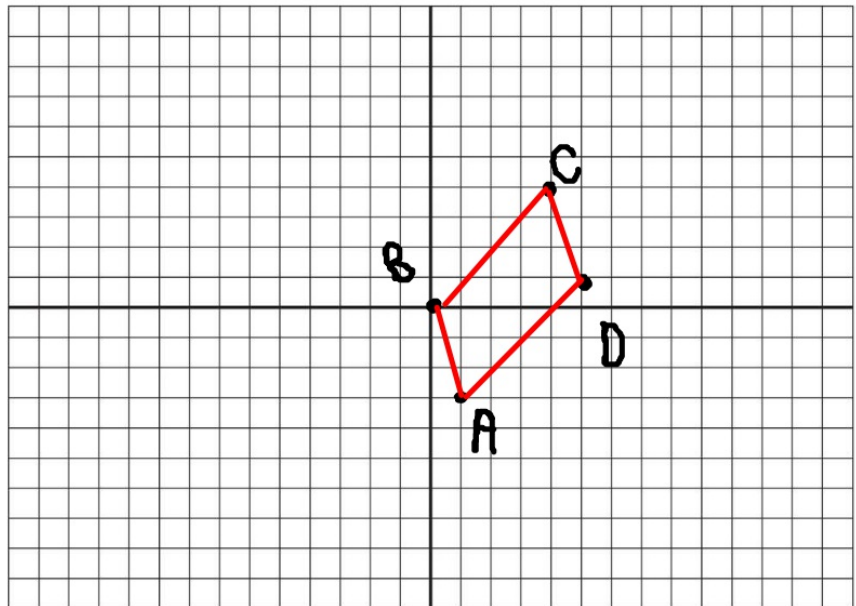
A (1, -3), B(0, 0), C(4, 4), and D(5, 1)

$$\overline{AB}: m = -3$$

$$\overline{BC}: m = 1$$

$$\overline{CD}: m = -3$$

$$\overline{AD}: m = 1$$



Quadrilateral ABCD is not a rectangle because consecutive sides are not perpendicular. It is parallelogram because opposite sides are parallel.

Find the area and perimeter of the parallelogram with vertices A(-1, 1), B(1, 3), C(4, -2), and D(2, -4).

$$\frac{AB}{(-1, 1)(1, 3)}$$

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

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

$$d = \sqrt{8}$$

$$d \approx 2.82$$

$$\frac{BC}{(1, 3)(4, -2)}$$

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

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

$$d = \sqrt{34}$$

$$d \approx 5.83$$

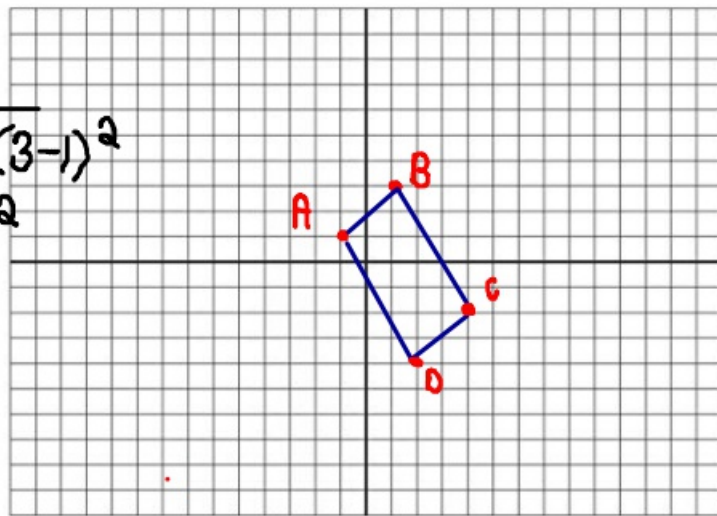
$$\frac{AD}{(-1, 1)(2, -4)}$$

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

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

$$d = \sqrt{34}$$

$$d \approx 5.83$$



hand2mind

hands-on learning for growing minds

hand2mind.com

Made in Taiwan.

hand2mind 42340

$$\frac{CD}{(4, -2)(2, -4)}$$

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

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

$$d = \sqrt{8}$$

$$d \approx 2.82$$

$$\text{Area} = (5.83)(2.82)$$

$$= 16.44 \text{ units}^2$$

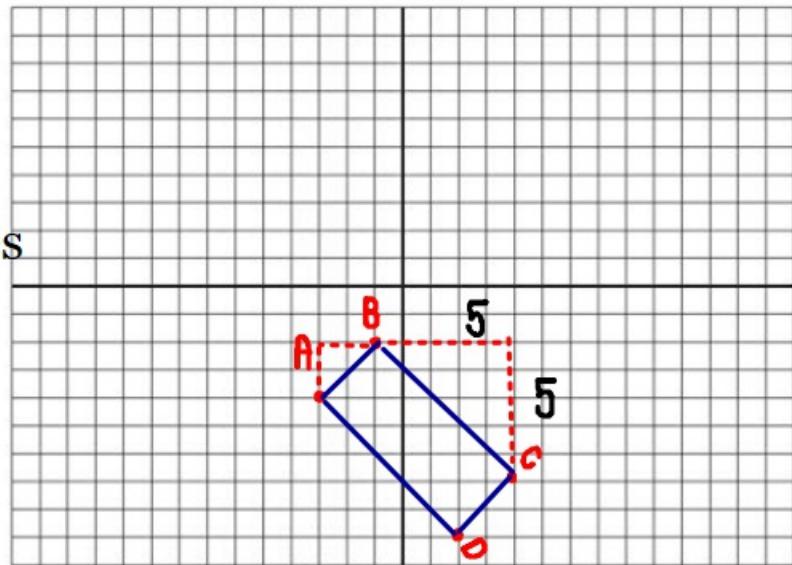
$$\text{perimeter} = 2(5.83) + 2(2.82)$$

$$= 17.3 \text{ units}$$

Find the area and perimeter of the **rectangle** with vertices A(-3, -4), B(-1, -2), C(4, -7), and D(2, -9).

Rectangle

- 4 right angles
- 2 pair of congruent sides
- 2 pair of parallel sides



hand2mind

hand2mind.com

Made in Taiwan.

hand2mind 42340

$$\begin{aligned} \frac{CB}{a^2 + b^2 &= c^2} \\ (5)^2 + (5)^2 &= c^2 \\ \sqrt{50} &= c \\ c &= 7.07 \end{aligned}$$

$$\begin{aligned} \frac{AB}{a^2 + b^2 &= c^2} \\ (2)^2 + (2)^2 &= c^2 \\ \sqrt{8} &= c \\ c &= 2.82 \end{aligned}$$

$$\begin{aligned} \text{Area} &= (7.07)(2.82) \\ &= 19.93 \end{aligned}$$

$$\begin{aligned} \text{Perimeter} &= 2(7.07) + 2(2.82) \\ &= 19.78 \end{aligned}$$

Find the area and perimeter of the square with vertices A(1,0), B(4,4), C(8,1), and D(5, -3)

$$\begin{aligned} & \overline{AB} \\ & (4)^2 + (3)^2 = c^2 \\ & \sqrt{25} = \sqrt{c^2} \\ & c = 5 \end{aligned}$$

Area = 25 units
Perimeter = 20 units

