

Name: Key

Quadrilaterals in the Coordinate Plane

### BEAR Quadrilateral

B(-1,4), E(2,5), A(3,2), R(0,1)

Calculate the length and slope of each side and from these calculations only determine what type of quadrilateral BEAR is.

$$\overline{BE} = \sqrt{(-1-2)^2 + (4-5)^2} = \sqrt{3^2 + 1^2} = \sqrt{10} \checkmark$$

Square

$$\overline{EA} = \sqrt{(3-2)^2 + (2-5)^2} = \sqrt{1^2 + 3^2} = \sqrt{10} \checkmark$$

$$\overline{AR} = \sqrt{(3-0)^2 + (2-1)^2} = \sqrt{3^2 + 1^2} = \sqrt{10} \checkmark$$

$$\overline{BR} = \sqrt{(0+1)^2 + (1-4)^2} = \sqrt{1^2 + 3^2} = \sqrt{10} \checkmark$$

$$m_{\overline{BE}} = \frac{-1}{-3} = \frac{1}{3}$$

$$m_{\overline{EA}} = \frac{-3}{2} = -\frac{3}{2}$$

$$m_{\overline{AR}} = \frac{1}{3}$$

$$m_{\overline{BR}} = \frac{3}{-1} = -\frac{3}{1}$$

### OHMY Quadrilateral

O(-1,4), H(2,3), M(4,-3), Y(1,-2)

Calculate the length and slope of each side and from these calculations only determine what type of quadrilateral OHMY is.

$$\overline{OH} = \sqrt{3^2 + 1^2} = \sqrt{10}$$

$$\overline{HM} = \sqrt{2^2 + 6^2} = \sqrt{40}$$

$$\overline{MY} = \sqrt{3^2 + 1^2} = \sqrt{10}$$

$$\overline{YO} = \sqrt{2^2 + 6^2} = \sqrt{40}$$

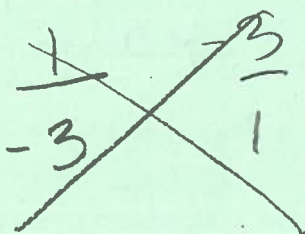
$$m_{\overline{OH}} = \frac{1}{-3}$$

$$m_{\overline{HM}} = \frac{-3}{2} = -\frac{3}{2}$$

$$m_{\overline{MY}} = \frac{-1}{3} = -\frac{1}{3}$$

$$m_{\overline{YO}} = \frac{6}{-2} = -\frac{3}{1}$$

~~Rect~~  
Parallelogram



Parallelogram

Name: \_\_\_\_\_

### Quadrilaterals in the Coordinate Plane

## WZRD Quadrilateral

W(0,3), Z(5,3), R(8,-1), D(3,-1)

Calculate the length, slope, and midpoints of the two DIAGONALS and from these calculations only determine what type of quadrilateral WZRD is.

⊥ diagonals  
~~like~~ ~~square~~  
Rhombus

$$\overline{WR} = \sqrt{8^2 + 4^2} = \sqrt{80}$$

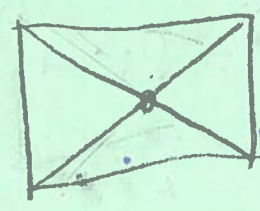
$$\text{mdpt } \overline{WR} = (4, 1)$$

$$\overline{ZD} = \sqrt{2^2 + 4^2} = \sqrt{20}$$

$$\text{mdpt } \overline{ZD} = (4, 1)$$

If diagonals have the same mdpt  
The diagonals bisect each other

$$\begin{aligned} m\overline{WR} &= \frac{4}{-8} = -\frac{1}{2} \\ m\overline{ZD} &= \frac{4}{2} = 2 \end{aligned} \quad \left. \vphantom{\begin{aligned} m\overline{WR} \\ m\overline{ZD} \end{aligned}} \right] \perp$$



Rhombus

## AHSZ Quadrilateral

A(-2,1), H(2,2), S(5,-4), Z(1,-5)

Calculate the length, slope, and midpoints of the two DIAGONALS and from these calculations only determine what type of quadrilateral AHSZ is.

$$d = \sqrt{(5+2)^2 + (-4-1)^2} = \sqrt{7^2 + 5^2} = \sqrt{49+25}$$

$$\overline{AS} = \sqrt{7^2 + 5^2} = \sqrt{74} \checkmark$$

$$\text{mdpt } \overline{AS} = (1.5, 1.5)$$

$$\overline{HZ} = \sqrt{1^2 + 7^2} = \sqrt{50} \checkmark$$

$$\text{mdpt } \overline{HZ} = (1.5, 1.5)$$

$$\begin{aligned} m\overline{AS} &= \frac{5}{-7} \\ m\overline{HZ} &= \frac{7}{1} \end{aligned}$$

not  $\perp$   $\checkmark$

~~like~~ ~~square~~ ~~Rhombus~~ ~~parallelogram~~  
not  $\perp$   $\checkmark$   
parallelogram