

Objective: Determine the area of a quadrilateral or triangle given coordinates.

Warm Up:

1. What is the distance formula?
2. Define “area”.
3. How do we calculate slope?
4. What do we know about the slopes of parallel lines? Perpendicular lines?

Formulas:

Area of a Triangle: $A = \frac{1}{2} \cdot b \cdot h$

Area of a Rectangle/Square: $A = b \cdot h$

Area of a Parallelogram: $A = b \cdot h$

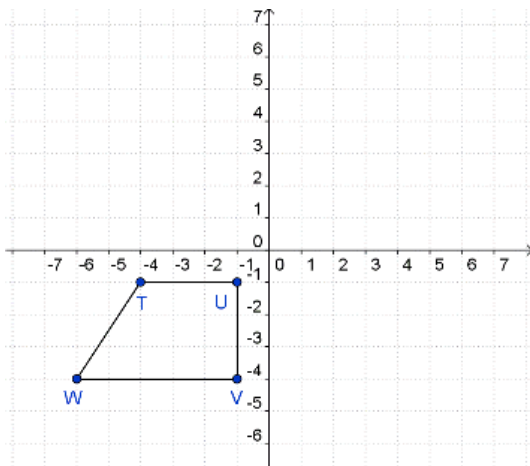
Area of a Rhombus: $A = b \cdot h$ or $A = \frac{1}{2} \cdot d_1 \cdot d_2$

Area of a Kite: $A = \frac{1}{2} \cdot d_1 \cdot d_2$

Area of a Trapezoid: $A = \frac{1}{2} \cdot h(b_1 + b_2)$

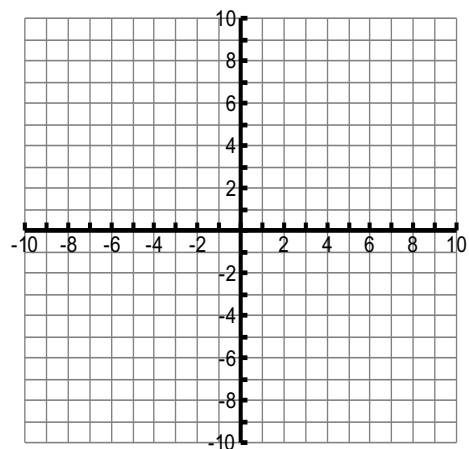
Examples:

1. Find the area and perimeter of the given polygon.

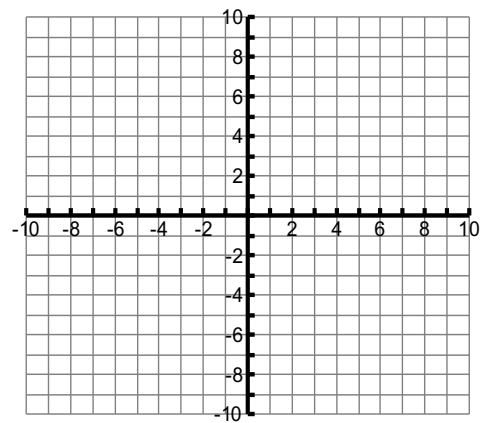


2. Classify the polygon and determine its area.

a. $E(-3, 1)$, $F(-2, 3)$, $G(2, 3)$, and $H(1, 1)$



b. $L(3, 3)$, $M(1, 2)$, $N(3, 1)$, and $P(5, 2)$



3. Given quadrilateral KJML with $K(1, 4)$, $J(3, 6)$, $L(3, 1)$ and $M(5, 4)$, determine the type of quadrilateral and justify your choice. Then, find the area.

