

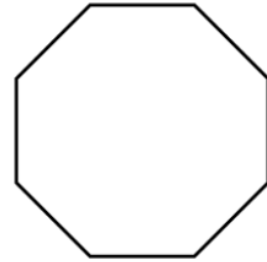
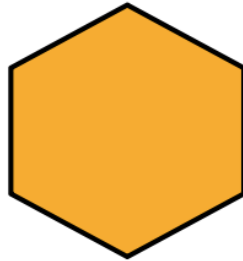
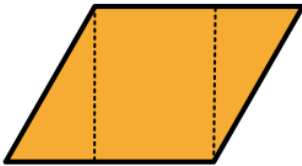
Name: _____
Geometry

Date: _____
Band: _____

1.4 Perimeter and Area in the Coordinate Plane Notes

Warm Up

How could you divide a hexagon and octagon into familiar polygons. For an example, see how the parallelogram is divided into a rectangle and two triangles.

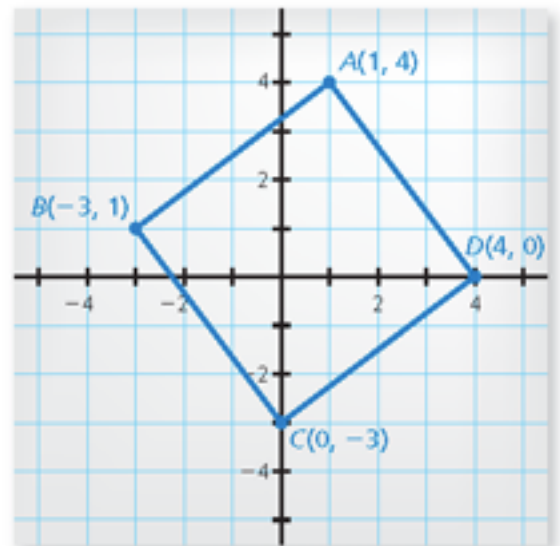


Exploration 1

B. Find the perimeter of quadrilateral $ABCD$.

C. Are adjacent sides of quadrilateral $ABCD$ perpendicular to each other? How can you tell?

D. What is the definition of a square? Is quadrilateral $ABCD$ a square? Justify your answer. Find the area of quadrilateral $ABCD$.

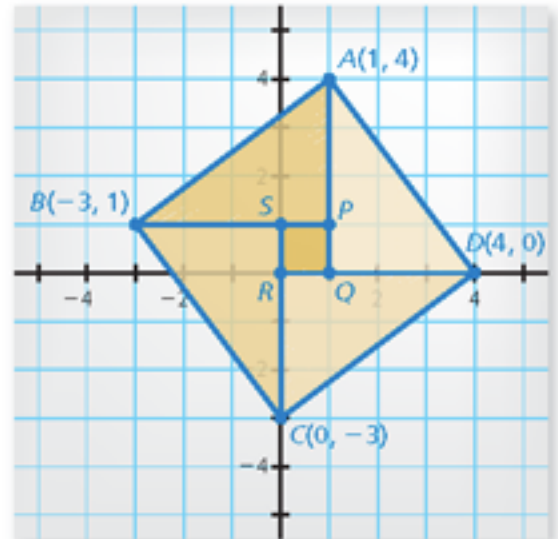


Exploration 2

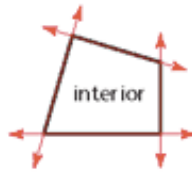
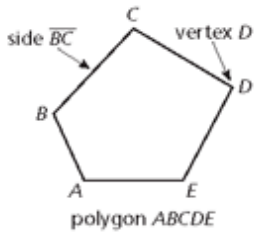
A. Partition quadrilateral $ABCD$ into four right triangles and one square, as shown. Find the coordinates of the vertices for the five smaller polygons.

B. Find the areas of the five smaller polygons.

C. Is the sum of the areas of the five smaller polygons equal to the area of quadrilateral $ABCD$? Justify your answer.



Polygon:



Example 1: Classifying Polygons

Classify each polygon by the number of sides. Tell whether it is *convex* or *concave*.



A.



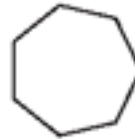
B.

YOU TRY:

Classify the polygon by the number of sides. Tell whether it is *convex* or *concave*.

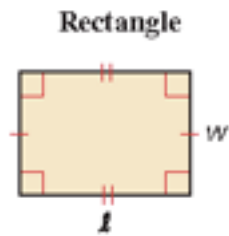
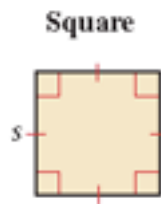
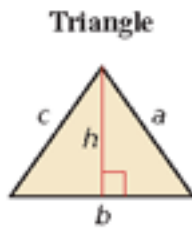


1.



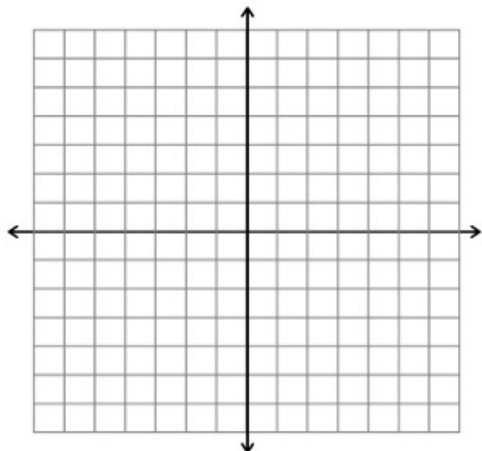
2.

Perimeter and Area:



Example 2: Finding Perimeter in the Coordinate Plane

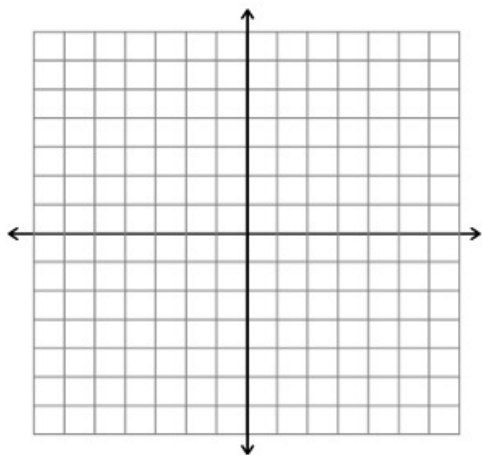
Find the perimeter of $\triangle ABC$ with vertices $A(-2,3)$, $B(3,-3)$, and $C(-2,-3)$.



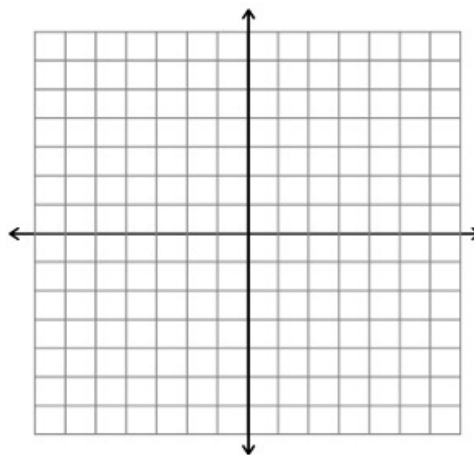
YOU TRY:

Find the perimeter of the polygon with the given vertices.

3. $G(-3,2)$, $E(4,2)$, $O(4,-3)$

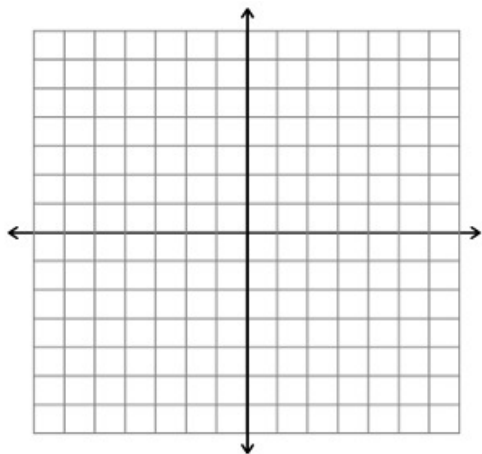


4. $M(-1,1)$, $A(4,1)$, $T(2,-2)$, $H(-3,-2)$



Example 3: Finding Area in the Coordinate Plane

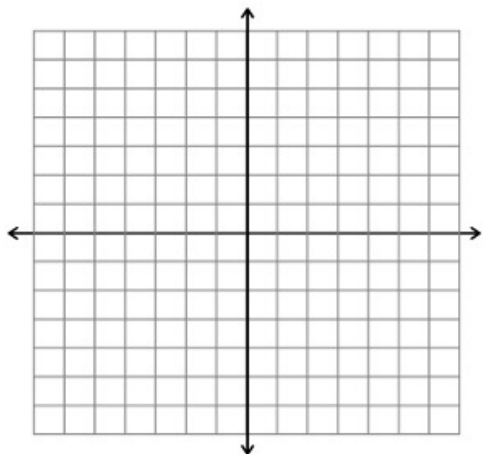
Find the area of $\triangle DEF$ with vertices $D(1,3)$, $E(4,-3)$, and $F(-4,-3)$.



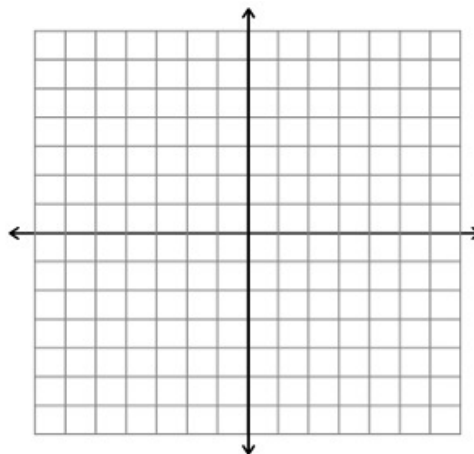
YOU TRY:

Find the area of the polygon with the given vertices.

5. $A(2,2)$, $L(3,-1)$, $G(-2,-1)$

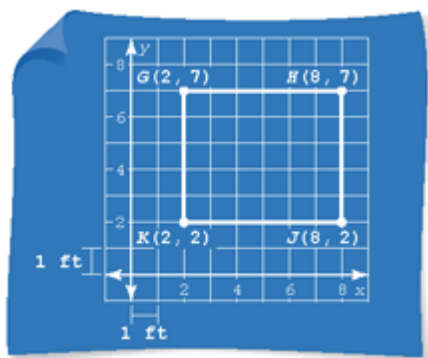


6. $P(-1,1)$, $O(2,1)$, $L(2,-2)$, $Y(-1,-2)$



Example 4: Modeling with Mathematics

You are building a shed in your backyard. The diagram shows the four vertices of the shed. Each unit in the coordinate plane represents 1 foot. Find the area of the floor of the shed.



YOU TRY:

7. You are building a patio in your school's courtyard. In the diagram, the coordinates represent the four vertices of the patio. Each unit in the coordinate plane represents 1 foot. Find the area of the patio.

