Name_____ Date _____

1.4 Perimeter and Area in the Coordinate Plane

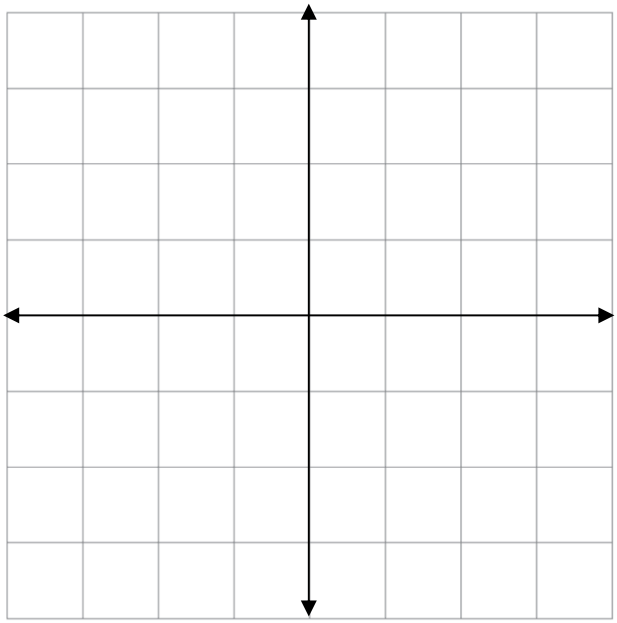
For use with Exploration 1.4

Essential Question How can you find the perimeter and area of a polygon in a coordinate plane?

1 EXPLORATION: Finding the Perimeter and Area of a Quadrilateral

Work with a partner.

a. On the centimeter graph paper, draw quadrilateral $ABCD$ in a coordinate plane. Label the points $A(1, 4)$, $B(-3, 1)$, $C(0, -3)$, and $D(4, 0)$.



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 $ABCD$.

Name _____ Date _____

1.4 Notetaking with Vocabulary

For use after Lesson 1.4

Important Terms:

Polygon – Closed plane figure made of line segments.

Side – A line segment that makes the outside of a polygon.

Vertex – A shared endpoint of two sides.

n-gon – A poygon with n sides.

Diagonal – A line segment that connects *non-consecutive* vertices.

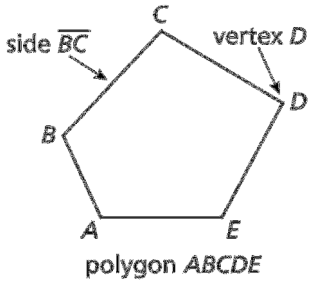
Convex – All diagonals are *inside* the polyon.

Concave – One or more diagonals are outside the polygon.
(it's "caved" in.)

Core Concepts

Polygons

In geometry, a figure that lies in a plane is called a plane figure. Recall that a *polygon* is a closed plane figure formed by three or more line segments called *sides*. Each side intersects exactly two sides, one at each *vertex*, so that no two sides with a common vertex are collinear. You can name a polygon by listing the vertices in consecutive order.

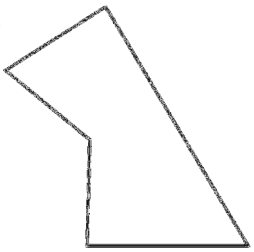


polygon *ABCDE*

Extra Practice

In Exercises 1–4, classify the polygon by the number of sides. Tell whether it is *convex* or *concave*.

1.



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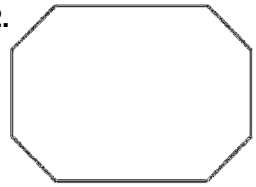

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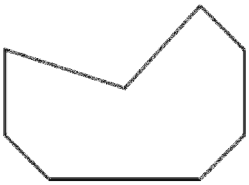

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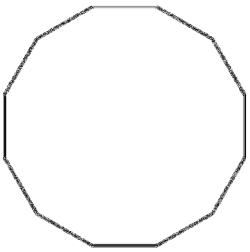

5. find the perimeter and area of the polygon with the given vertices.
$X(2, 4)$, $Y(0, -2)$, $Z(2, -2)$