

1-6 Polygons

vocabulary:

- polygon -
- concave -
- convex -
- n-gon -
- regular polygon -
- perimeter -

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examples of polygons

symbol - A polygon is named by the letters of its vertices, written in consecutive order.

Polygon ABC $\triangle ABC$

Triangle ABC

convex

concave

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Classification of polygons

number of sides	polygon
3	triangle
4	quadrilateral
5	pentagon
6	hexagon
7	heptagon
8	octagon
9	nonagon
10	decagon
12	dodecagon
n	n-gon

11-gon

17 sides

17-gon

17 sides

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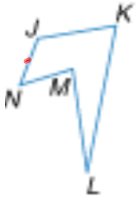
Regular polygon

Irregular

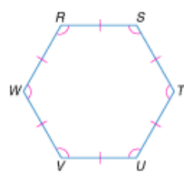
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Lesson 1-6
 Example 1 Identify Polygons

Name each polygon by its number of sides. Then classify it as *convex* or *concave* and *regular* or *irregular*.

a. 

Pentagon
 Concave
 Irregular

b. 

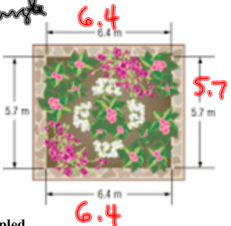
Hexagon
 Convex
 Regular

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Example 2 Find perimeter
GARDENING A landscape designer is putting black plastic edging around a rectangular flower garden that has length 6.4 meters and width 5.7 meters. The edging is sold in 5-meter lengths.

a. Find the perimeter of the garden and determine how much edging the designer should buy.

$P = 2l + 2w$ ← rectangle
 $P = 2(6.4) + 2(5.7)$
 $P = 12.8 + 11.4 = 24.2$
 (25)



Suppose the length and width of the garden are tripled. What is the effect on the perimeter and how much edging should the designer buy?

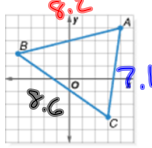
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Example 3 Perimeter on the Coordinate Plane

$d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

COORDINATE GEOMETRY Find the perimeter of triangle ABC if A(4, 4), B(-4, 2) and C(3, -3).


$AC = \sqrt{(4 - 3)^2 + (4 - (-3))^2}$
 $AC = \sqrt{1^2 + 7^2}$
 $\sqrt{1 + 49} = \sqrt{50} = 7.1$



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Example 4 Use Perimeter to Find Sides

ALGEBRA The length of a rectangle is five times the width. The perimeter is 4 yards. Find the length of each side.

$P = 2w + 2l$ w 

$4 = 2w + 2(5w)$
 $4 = 2w + 10w$
 $4 = \frac{12w}{12}$ $w = \frac{1}{3}$ $l = \frac{5}{3}$

$4 = 12w$
 $\frac{1}{3} \text{yd} = w$

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