


10.2 Polygons and Quadrilaterals


Goal: Classify polygons and quadrilaterals.

Vocabulary

Polygon: closed plane figure with many sides

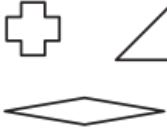
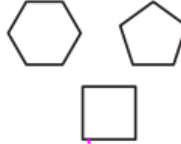

Regular polygon: congruent sides & congruent angles

Convex polygon: 

Concave polygon: 

Diagonal of a polygon:

poly = many

Polygons	Regular polygons	Not polygons
		

The name n -gon refers to a polygon that has n sides. For example, a 15-gon is a polygon that has 15 sides.

Names of Other Polygons

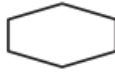
Polygons	Pentagon	Hexagon	Heptagon	Octagon	n -gon
Number of sides	5	6	7	8	n

*16-gon
20-gon
79-gon*

Example 1 Identifying and Classifying Polygons

Tell whether the figure is a polygon. If it is a polygon, classify it and tell whether it is *convex* or *concave*. If not, explain why.

a.



yes it's a polygon
hexagon
convex

b.

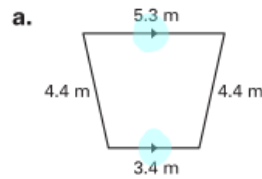


no it's not a polygon
b/c it has curved
sides

Quadrilaterals	Diagram
Trapezoid A trapezoid is a quadrilateral with exactly 1 pair of parallel sides.	
Parallelogram A parallelogram is a quadrilateral with both pairs of opposite sides parallel.	
Rhombus A rhombus is a parallelogram with 4 congruent sides.	
Rectangle A rectangle is a parallelogram with 4 right angles.	
Square A square is a parallelogram with 4 right angles and 4 congruent sides.	

Example 2 Classifying Quadrilaterals

Classify the quadrilateral.



trapezoid

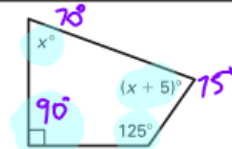


rhombus

interior angles of a quadrilateral add up to 360°

Example 3 Finding an Unknown Angle Measure

Find the value of x .



$$x + (x + 5) + 125 + 90 = 360$$

Sum of angle measures in quadrilateral is 360°.

$$2x + 220 = 360$$

Combine like terms.

$$2x = 140$$

Subtract 220 from each side.

$$x = 70$$

Divide each side by 2.

Checkpoint Tell whether the figure is a polygon. If it is a polygon, classify it, and tell whether it is convex or concave. If not, explain why.

<p>1.</p> <p>yes pentagon convex</p>	<p>2.</p> <p>No, it has a curved line</p>
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