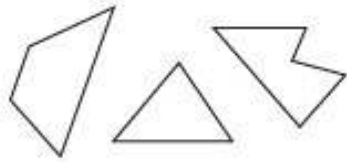


Picture Examples



Polygons

Picture Non-Examples



Not Polygons

Other Information

Definition

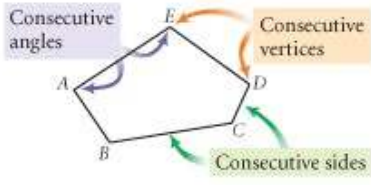
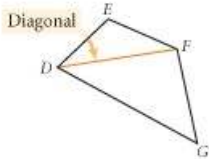
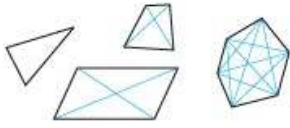

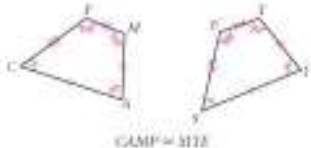
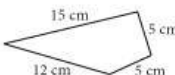
A polygon is a closed figure in a plane formed by connecting line segments (called sides of the polygon) endpoint to endpoint (called vertices) with each line segment intersecting exactly two others.

Vocabulary Word

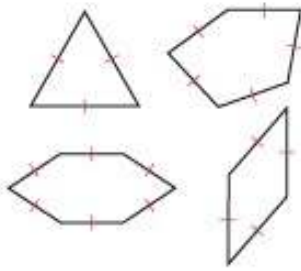
Polygon

Number of Sides	Polygon Name
3	Triangle
4	Quadrilateral
5	Pentagon
6	Hexagon
7	Heptagon
8	Octagon
9	Nonagon
10	Decagon
11	Undecagon
12	Dodecagon
n	n-gon

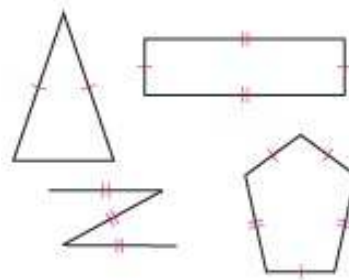
Mini-Definitions:

Term:	Definition:	Picture Model:
Consecutive	Angles, sides, or vertices that come one right after the other.	
Diagonal	A diagonal of a polygon is a line segment that connects two nonconsecutive vertices.	
Convex	A polygon is convex if no diagonal is outside the polygon.	 <p>Convex polygons: All diagonals are inside</p>
Concave	A polygon is concave if at least one diagonal is outside the polygon.	 <p>Concave polygons: One or more diagonals are outside</p>
Congruent (\cong)	Two polygons are congruent if and only if they are exactly the same size and shape.	<p>Naming congruent polygons and making congruence statements is order specific.</p> 
Perimeter	The perimeter of a polygon equals the sum of the lengths of its sides.	<p>Perimeter = 37 m</p> 

Picture Examples



Picture Non-Examples



Definition

Equilateral polygons are polygons in which all sides have equal length.

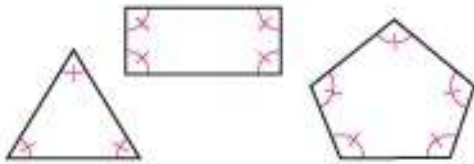
Vocabulary Word

Equilateral Polygon

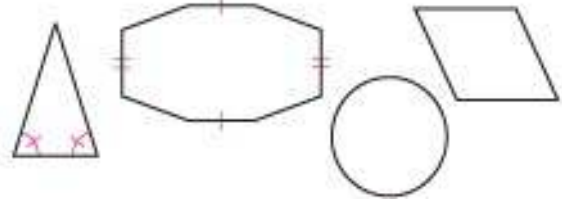
Other Information

equi = equal
lateral = sides

Picture Examples



Picture Non-Examples



Definition

Equiangular polygons are polygons in which all angles have equal measure.

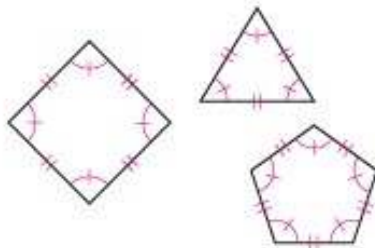
Vocabulary Word

Equiangular Polygon

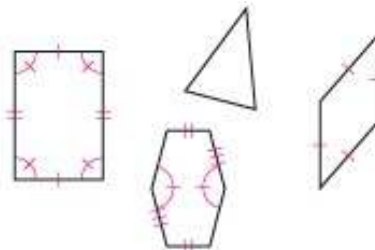
Other Information

equi = equal
angular = angles

Picture Examples



Picture Non-Examples



Definition

Regular polygons are polygons that are both equilateral and equiangular.

Vocabulary Word

Regular Polygon

Other Information

Lesson 1.4 • Polygons

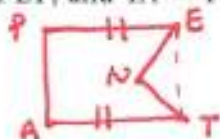
Name _____ Period _____ Date _____

For Exercises 1–8, complete the table.

Polygon name	Number of sides	Number of diagonals
1. Triangle	3	0
2. Quadrilateral	4	2
3. Pentagon	5	5
4. Hexagon	6	9
5. Heptagon	7	14
6. Octagon	8	20
7. Decagon	10	35
8. Dodecagon	12	54

For Exercises 9 and 10, sketch and label each figure. Mark the congruences.

9. Concave pentagon *PENTA*, with external diagonal \overline{ET} , and $\overline{TA} \cong \overline{PE}$.

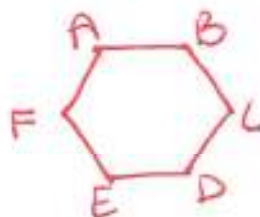


10. Equilateral quadrilateral *QUAD*, with $\angle Q \cong \angle U$.



For Exercises 11–14, sketch and use hexagon *ABCDEF*.

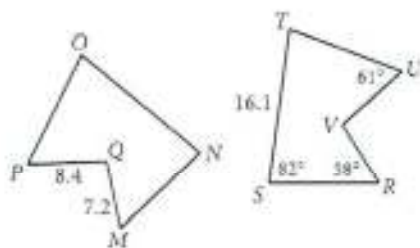
11. Name the diagonals from *A*. $\overline{AC}, \overline{AD}, \overline{AE}$
 12. Name a pair of consecutive sides. \overline{AB} and \overline{BC}
 13. Name a pair of consecutive angles. $\angle B$ and $\angle C$
 14. Name a pair of non-intersecting diagonals. \overline{AE} and \overline{BD}



For Exercises 15–18, use the figures at right.

$MNOPQ \cong RSTUV$

15. $m\angle N = 82^\circ$
 16. $VR = 7.2$
 17. $m\angle P = 161^\circ$
 18. $ON = 16.1$



19. The perimeter of a regular pentagon is 31 cm. Find the length of each side.

$$\frac{31 \text{ cm}}{5 \text{ sides}} = 6.2 \text{ cm}$$