

Section 3.4A

Name: Notes

Polygons

Date: \_\_\_\_\_ Period: \_\_\_\_\_

Essential Question

How can I classify and name polygons?

Polygon

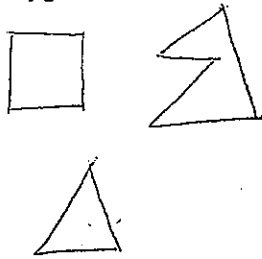
Closed figure with at least three segment sides.  
Sides must intersect only at endpoints.

Own words:

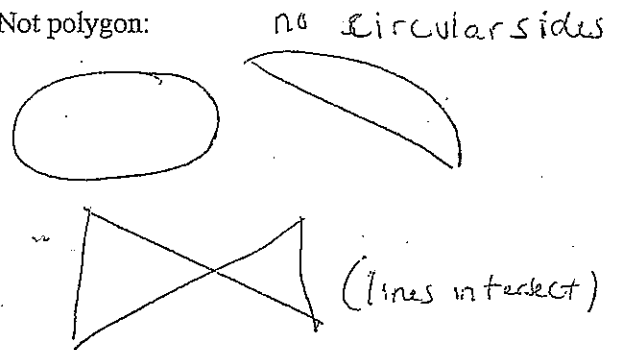
Closed shape  
no rounded sides

Closed geometric figure

Polygon:



Not polygon:



Naming a Polygon

Polygons are named with (all endpoints) in clockwise or counterclockwise order.

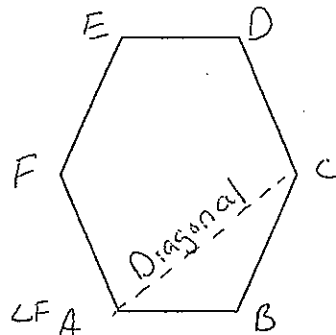
Name with  
vertices in order

Name: ABCDEF or  
CBAFED

Vertices: A, B, C, D, E, F

Sides:  $\overline{EP}$ ,  $\overline{DC}$ ,  $\overline{CB}$ ,  $\overline{BA}$ ,  $\overline{AF}$   
and  $\overline{FE}$

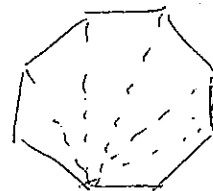
Angles:  $\angle A$ ,  $\angle B$ ,  $\angle C$ ,  $\angle D$ ,  $\angle E$ ,  $\angle F$



Convex Polygon

No diagonal with points outside the polygon

Diagonals are on  
the inside

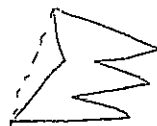
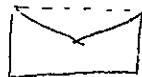


----- are diagonals

Concave Polygon

At least one diagonal with points outside the polygon.

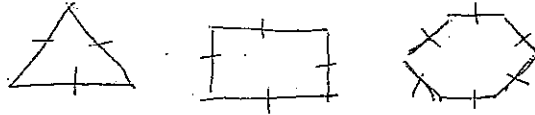
Can have a diagonal  
outside the  
polygon



- shape caves in

Equilateral Polygon

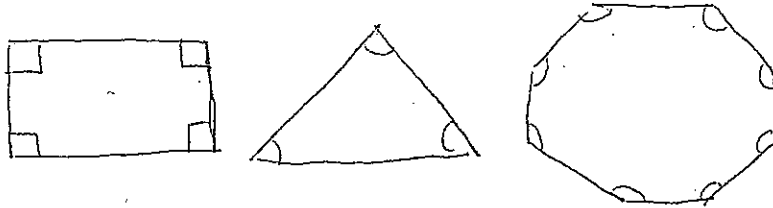
All sides congruent.



Equiangular Polygon

All angles congruent.

Equal Angles



Regular Polygon

Both equilateral and equiangular.

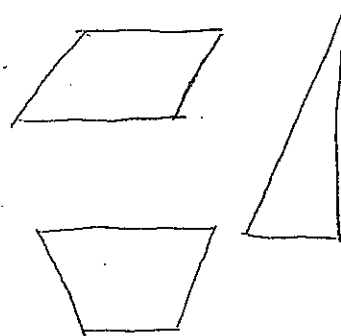
All sides and angles are  $\cong$

Own words: All sides and all angles are congruent



Regular:

Not regular: or Irregular



Summary

Write three things we have learned

polygon:

convex:




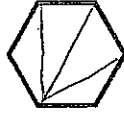




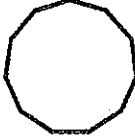

Concave:

Equilateral:

Equiangular:

Regular:

$n = \text{number of sides}$        $n - 2 (180) = \text{angle sum}$

Number of Sides	Polygon Name	Number of Triangles Formed	Sum of the Interior Angle Measures
3	Triangle	$n - 2 = 1$ 	$180^\circ$
4	Quadrilateral	$n - 2 = 2$ $4 - 2 = 2$ 	$2(180) = 360^\circ$
5	Pentagon	$n - 2 = 3$ 	$3(180) = 540^\circ$
6	Hexagon	$n - 2 = 4$ 	$4(180) = 720^\circ$
7	Heptagon	$n - 2 = 5$ 	$5(180) = 900^\circ$
8	Octagon	$n - 2 = 6$ 	$6(180) = 1080^\circ$
9	Nonagon	$n - 2 = 7$ 	$7(180) =$
10	Decagon	$n - 2 = 8$ $10 - 2 = 8$ 	$8(180)$
11	undecagon 11-gon		
12	Dodecagon 12-gon		
$n$	$n$ -gon		

How to find the angle sum of a polygon.