

Jan 3-7:23 AM

Happy New Year. Sheet of Paper

Answer the following:

- 1.) Are you happy with your grade 1st Sem?
- 2.) What grade would you like to get 2nd Sem?
- 3.) What are you going to do differently or the same 2nd Sem?
- 4.) What can I do differently or the same 2nd Sem? (Be serious)
- 5.) Is there anything that will get in the way of achieving your goal?

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Chapter 7.1 Classifying Polygons 1/3

a polygon is a figure that is formed by THREE or more segments called SIDES. Each side intersects exactly one other side at each of its endpoints and each endpoint is a VERTEX

- Characteristics of a Polygon
- All sides are lines
- Closed figure
- No side intersects more than 1 other side at one vertex.

Not a polygon

① no curves

② no intersecting segments

③ open

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A polygon is **CONVEX** if no line that contains a side of the polygon passes through the interior of the polygon

None of the extended sides pass through the interior

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A polygon that is not convex is **CONCAVE**

At least one extended side passes through the interior

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POLYGONS CAN BE -

EQUILATERAL if all of its sides are congruent.

EQUIANGULAR if all of its interior angles are congruent.

REGULAR if it is both equiangular and equilateral

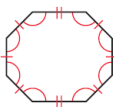
Equilateral


Equiangular


Regular

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EXAMPLE 2 Identify Regular Polygons
 Decide whether the polygon is regular. Explain your answer.


a.  **Equiangular**

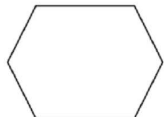
b.  **Regular**

c.  **Equilateral**

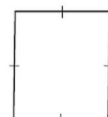
Jan 26-2:18 PM

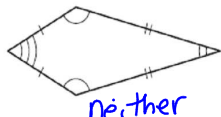
Decide if Regular, Equilateral, Equiangular
 Decide whether the polygon is *convex* or *concave*.

1.  **Concave**

2.  **Convex**

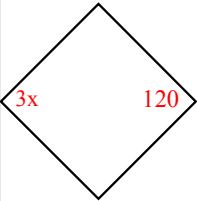
Decide whether the polygon is *equilateral*, *equiangular*, or *neither*.

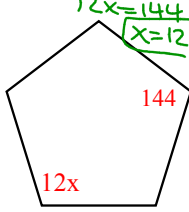
3.  **Equilateral**

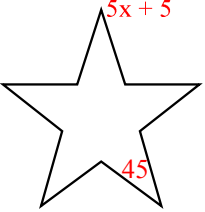
4.  **neither**

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Using Algebra - Solve for x in this regular polygon
 means $\angle's \cong$
 Sides \cong

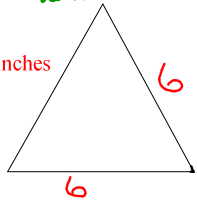
 $3x = 120$
 $x = 40$

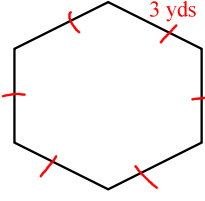
 $12x = 144$
 $x = 12$

 $5x + 5 = 45$
 $5x = 40$
 $x = 8$

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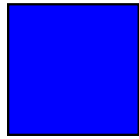
Finding Perimeters of Regular Polygons
 add up sides
 walk around ferr

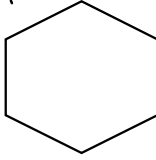
 6 inches
 6
 6
 What is the perimeter
 $6 + 6 + 6 = 18$ inches
 6 sides 18

 3 yds
 What is the perimeter
 6 sides $\cdot 3$ yds
 18 yds

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What is the difference between PERIMETER and AREA

Area 

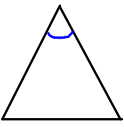
Perimeter 

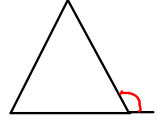
Perimeter is the SUM of all the side lengths

Area is the measurement of the blue area
 "multiply"

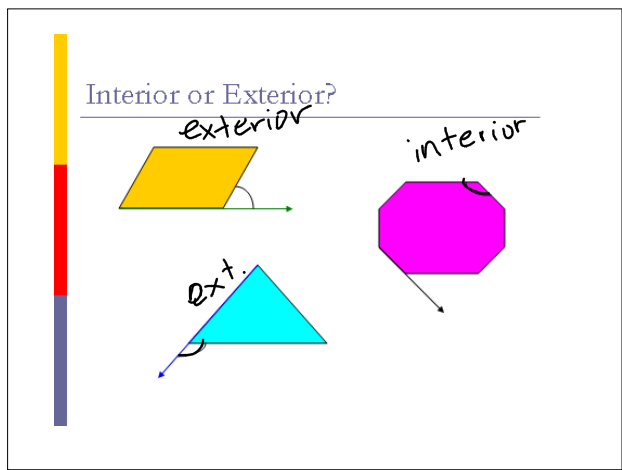
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Polygons have two types of angles:

INTERIOR ANGLES 

EXTERIOR ANGLES 

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Investigate the Number of Triangles that can be formed in a polygon...

Polygon	Number of sides	Number of triangles	Sum of measures of interior angles
Triangle	3	1	$1 \cdot 180^\circ = 180^\circ$
Quadrilateral	4	2	$2 \cdot 180^\circ = 360^\circ$
Pentagon	5	3	$3 \cdot 180^\circ = 540^\circ$
Hexagon	6	4	$4 \cdot 180^\circ = 720^\circ$
Heptagon	7	5	$5 \cdot 180^\circ = 900^\circ$
Octagon	8	6	$6 \cdot 180^\circ = 1080^\circ$
Nonagon	9	7	$7 \cdot 180^\circ = 1260^\circ$
Decagon	10	8	$8 \cdot 180^\circ = 1440^\circ$

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Polygon Interior Angles Theorem

The sum of the INTERIOR ANGLES of a convex polygon is $(n-2) \cdot 180$ (n is the number of sides)

ex 1

ex 2

If the sum of the interior angles add up to 3240° , how many sides does the polygon have?

$$\frac{3240}{180} = \frac{(n-2) \cdot 180}{180}$$

$$18 = n - 2$$

$$n = 20$$

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Find the sum of the measures of the interior angles of the convex polygon. Use $(n-2)180$

1. $(6-2) \cdot 180 = 4 \cdot 180 = 720$

2. $(9-2) \cdot 180 = 7 \cdot 180 = 1260^\circ$

How do we find one interior angle measure from a regular polygon?

$$\frac{(n-2)180}{n}$$

$(5-2) \cdot 180 = 3 \cdot 180 = 540$
5
= 108

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Find the measure of one interior angle:

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Let's explore Exterior Angles

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Polygon Exterior Angles Theorem

The sum of the EXTERIOR ANGLES of a convex polygon is 360° .

No really how can that be???

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How might we solve for $\angle 1$ on the example below?

3. 115° , 90° , 90° , $\angle 1$
 $115 + 90 + 90 + \angle 1 = 360$
 $\angle 1 + 295 = 360$
 $\angle 1 = 65$

4. 20° , 40° , $\angle 1$
 $20 + 40 + \angle 1 = 180$
 $60 + \angle 1 = 180$
 $\angle 1 = 120$

5. 75° , 85° , 75° , $\angle 1$
 $75 + 85 + 75 + \angle 1 = 360$
 $235 + \angle 1 = 360$
 $\angle 1 = 125$

6. 80° , 150° , $\angle 1$
 $\angle 1 + 80 + 150 = 360$
 $\angle 1 + 230 = 360$
 $\angle 1 = 130$

7. 75° , 90° , 125° , $\angle 1$
 $\angle 1 + 75 + 125 + 90 = 360$
 $\angle 1 + 290 = 360$
 $\angle 1 = 70$

8. 120° , 80° , 75° , $\angle 1$
 $\angle 1 + 120 + 80 + 75 = 360$
 $\angle 1 + 275 = 360$
 $\angle 1 = 85$

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Try These:

Find the sum of the measures of the interior angles of the convex polygon.

9. 10. 11.

Find the measure of $\angle A$.

12. 13. 14.

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1 Interior angle of REGULAR polygon:

$$\frac{(n-2)180}{n}$$

1 Exterior angle of REGULAR polygon

$$\frac{360}{n}$$

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Let's Practice: We will do 1 from each section together!

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Homework: Pg 364-365 1-29 odd

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