## **UNIT 4 NOTE PACKET**

# **Polygon information**

Date	Page(s)	Торіс	Homework	
10/31	2	Classifying Triangles by sides &	Pg. 150 # 4,23,24,26	
		angles		
		Find value for angles in a triangles		
11/1	3	Remote Interior Angles & Exterior	The Exterior Angle	
		Angles	Theorem Worksheet	
			(circled questions)	
11/4	4	QUIZ	No Homework!	
		Biggest Side-Biggest Angle		
		Theorem		
11/5	5,6	Triangle Inequality Theorem	Triangle Inequality	
			worksheet (odds)	
11/6	7	QUIZ	No homework	
		Interior Angles in Polygons		
11/7	7,8	Exterior Angles in Polygons	Pg. 161 #11,24,34,40	
11/8	9	Practice with Angles in Polygons	Worksheet	
11/12		Review	Ticket-In	
11/13		Test	No Homework	

#### **CLASSIFYING TRIANGLES**

Triangles can be classified by \_\_\_\_\_\_ and by \_\_\_\_\_\_.

The triangles below are classified by angles, draw a picture for each triangle below and tell all of the properties of the triangle given:

Equiangular	Acute	Right	Obtuse
Picture:			
Properties:			

The triangles below are classified by sides, draw a picture for each triangle below and tell all of the properties of the triangle given:

Equilateral	Isosceles	Scalene	
Picture:			
Ducu cuticas			
Properties:			

Find the missing angles then classify each triangle:







## **EXTERIOR ANGLES IN A TRIANGLE**





5. Find the  $M \measuredangle DBC$ .



#### **BIGGEST ANGLE- BIGGEST SIDE**

The Biggest Angle is **always** located \_\_\_\_\_\_ from the Biggest Side!!!!!!!

Likewise, the smallest angle is located across from the smallest side.

Name the angles in order from biggest to smallest. Use inequalities.



Name the sides in order from biggest to smallest. Use inequalities





5.)



## TRIANGLE INEQUALITY

John has 30 feet of fencing. He will bend it at two points to form a triangular area to be used as a garden. The shape of the triangle depends on the two points he chooses

Here are some examples of shapes that he could make:



What would happen if John tried to make one side too long? (Look at the picture below)

d.) 6ft 20ft 4ft

John has made one side of the fence so long that the other sides do not meet to make a triangle!

ill in the chart below using the sides given in part a-d above.

Shortest side	Middle side	Longest side	Shortest + Middle
a.)			
b.)			
c.)			
d.)			

Compare the last two columns. You should notice that for part d.) the sum of the shorter and middle sides is less than the longest side.

Hence the rule is:

## Triangle Inequality Theorem:

The sum of the lengths of any two sides of a triangle must be\_\_\_\_\_

Tell whether or not the following lengths make up the sides of a triangle:

1.) 4,7,6 2.) 9,9,20

5.) 8,3,11

For the following questions **a**.) give a third side that will form a triangle and **b**.) one that will not form a triangle.

6.) 4,5 a.)\_\_\_\_ 7.)8,8 a.)\_\_\_\_

b.)\_\_\_\_\_

8.) Regents Exam Question:

In the diagram below of  $\triangle ABC$ , D is a point on  $\overline{AB}$ , AC = 7, AD = 6, and BC = 18.



The length of  $\overline{DB}$  could be

- (1) 5 (3) 19
- (2) 12 (4) 25

Polygon:						
Regular Polygon:						
Convex Polygon:						
Example:						
Concave Polygon:						
Example:						
				Regular poly	rgons only	
Picture/Name	# of	#of	Sum of Interior	ONE Interior	One Extenion (	Sum of
	01062					
In General: If a shape has $n$ sides.						

## **EXTERIOR ANGLES IN POLYGONS**

- 1.) a.) What is the sum of the interior angles in an octagon?
- b.) What is the measure of one interior angle in a regular octagon?
- c.) Find one exterior angle in an octagon: (hint: an interior angle and an exterior angle are supplementary)



d.) Find the sum of all of the exterior angles in an octagon. (hint: how many exterior angles would there be? Use the picture below to help)



## EXAMPLES:

- 1.) What is the sum of the angles in a closed figure that has 15 sides?
- 2.) If one interior angle of a regular polygon is  $120^{\circ}$ , how many sides does the figure have?
- 3.) If one of the exterior angles of a regular polygon is  $30^{\circ}$ , how many sides does it have?
- 4.) If an interior angle of a regular polygon is 162°, what is the exterior angle? **AND** how many sides does it have?

#### ANGLES IN POLYGONS PRACTICE

Find the values of the variables for each polygon. Each is a regular polygon.



#### For a regular 12-sided polygon, find each of the following.

7. the measure of an exterior angle

8. the measure of an interior angle

#### The measure of an interior angle of a regular polygon is given. Find the number of sides.

**9.** 120

**10.** 108