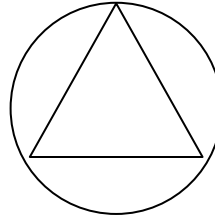


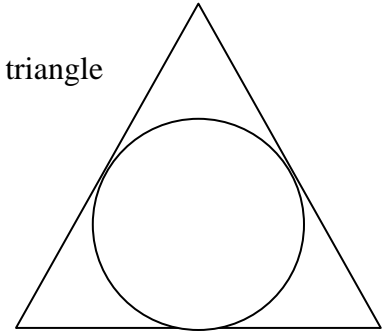
Name _____

APPROXIMATION OF π

1. Use trigonometric ratios to find the perimeter of an equilateral triangle inscribed in a circle with radius 1.



2. Use trigonometric ratios to find the perimeter of an equilateral triangle circumscribed around a circle with radius 1.



3. Use a similar method to fill in the following chart.

n = number of sides of a regular polygon	Perimeter of polygon inscribed in circle	Perimeter of polygon circumscribed around circle
3		
4		
5		
6		
7		
8		
9		
10		
12		
100		
1000		
10000		
n		

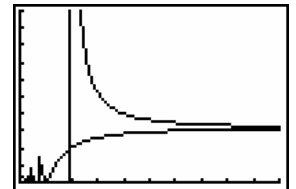
4. Find a general equation for the perimeter of a regular polygon inscribed in a circle of radius 1.
5. Find a general equation for the perimeter of a regular polygon circumscribed around a circle of radius 1.
6. Do the values in the second and third columns of the chart above appear to be converging? If so, to what value are they converging?
7. Explain why your answer to question #6 is what it is.
8. From your answers to #4 and #5, write a general equation for a polygon inscribed in a circle of diameter 1 and circumscribed around a circle of diameter 1.

9. Graph both of these equations on your calculator.

```

WINDOW
Xmin=0
Xmax=10
Xscl=1
Ymin=0
Ymax=10
Yscl=1
Xres=1

```



10. Why do the graphs jump around for values of x between 1 and 3?
11. Choose a larger horizontal viewing window and trace each graph. For what value of x does each equation approximate π to two decimal places? Three decimal places? Four decimal places? Five?