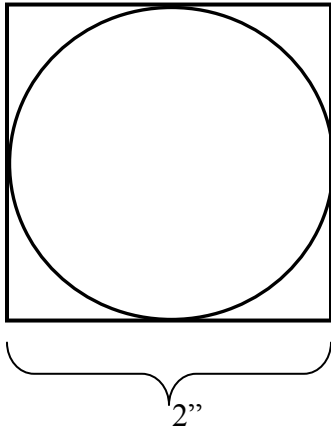


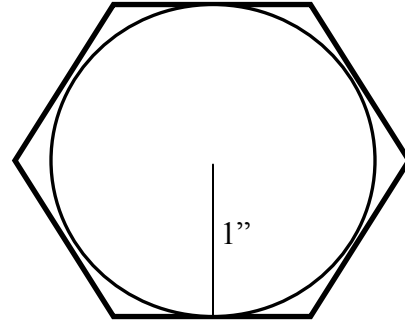
**Investigation: Circles and Area and Circumference**

Key Terms to discuss: Area, Perimeter, and Circumference



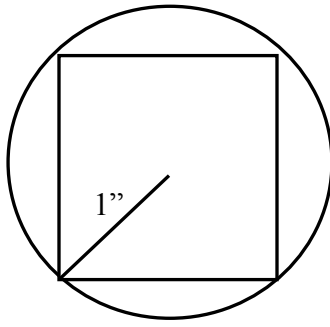
You are looking at a circumscribed square. That is, a square AROUND a circle.

- 1.) What is the Perimeter of the Square?
- 2.) What is the Area of the Square?
- 3.) How would you expect the circle's circumference and area to compare to that of the square?



You are looking at a circumscribed regular hexagon. That is, a hexagon is AROUND a circle.

- 4.) What is the Perimeter of the hexagon?
- 5.) What is the Area of the hexagon?
- 6.) How would you expect the circle's circumference and area to compare to that of the hexagon?

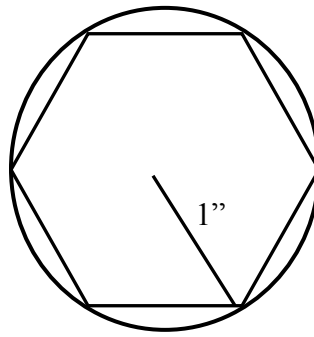


You are looking at an inscribed square. That is, the square is INSIDE the circle.

7.) What is the Perimeter of the Square?

8.) What is the Area of the Square?

9.) How would you expect the circle's circumference and area to compare to that of the square?



You are looking at an inscribed regular hexagon. That is, the hexagon is INSIDE the circle.

10.)What is the Perimeter of the hexagon?

11.)What is the Area of the hexagon?

12.)How would you expect the circle's circumference and area to compare to that of the hexagon?

Let's Review, shall we:

13.) Inscribed hexagon's perimeter =

16.) Inscribed hexagon's area =

14.) Circumscribed hexagon's perimeter =

17.) Circumscribed hexagon's area =

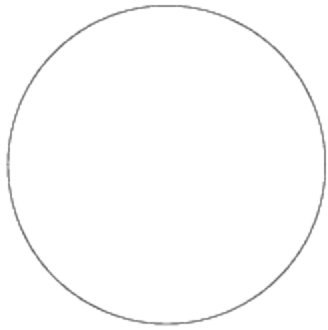
15.) Average of these hexagon perimeter calculations will more closely approximate the circle they border, so:

18.) Average of these hexagon area calculations will more closely approximate the circle they border, so:

**Average hexagon PERIMETER =**

**Average hexagon AREA=**

19.) What would we have to do to get a polygon to more closely "hug" a circle than using our hexagon?



What do you see here? While it looks circular, looks can be deceiving. This is a **regular hectogon**, aka a 100-gon! Upon close magnification, you would indeed see 100 equal sides!

This shape “hugs” a circle *much* more closely! Can we calculate its Perimeter and Area??

**In the end, a Circle’s TRUE Circumference and Area are given by the formulas:**

**C =**

**A =**