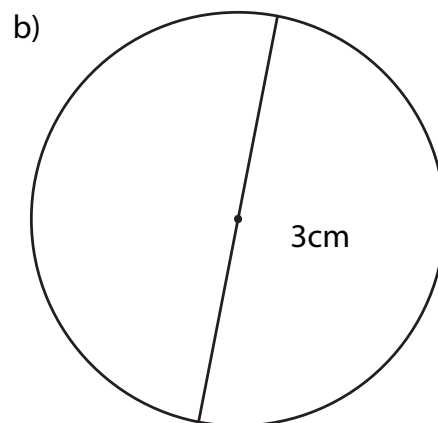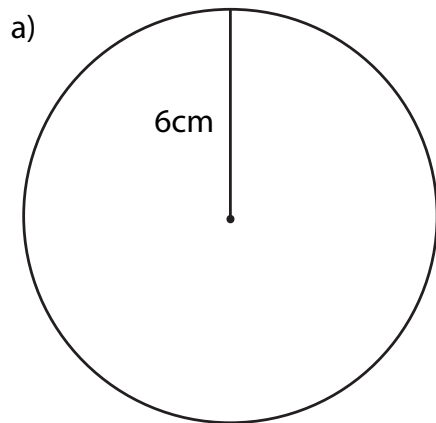# Grade 6 Math Circles
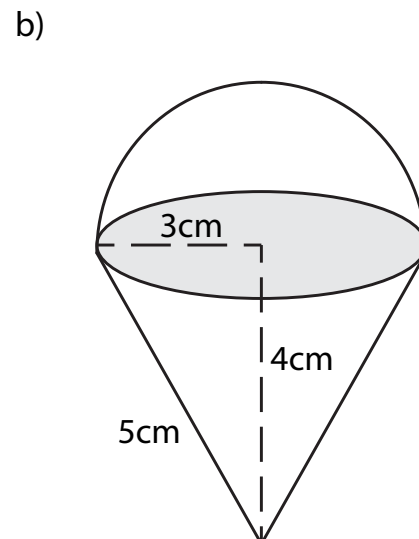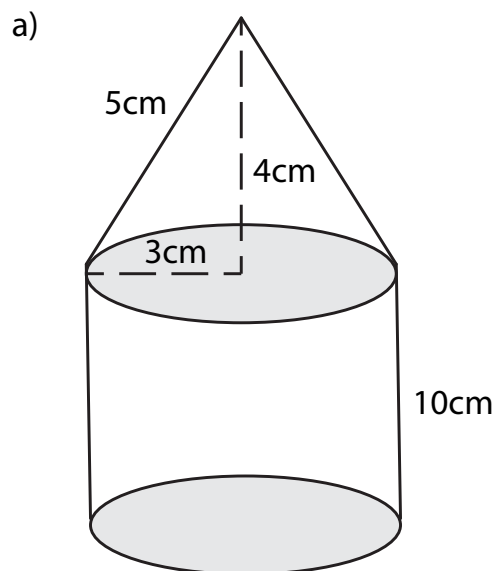**February 23rd, 2022**
Circles Problem Set

1. Calculate the area and circumference of the circles below. Round to one decimal point.

a)

6cm

b)

3cm

2. Calculate the volume and surface area of the 3D shapes below. Round to one decimal point.

a)

5cm

4cm

3cm

10cm

b)

3cm

4cm

5cm

3. We learned that π is a special number related to circles. Research where the number π comes from and explain it in your own words.

4. In the diagram below, both circles have the same centre. If the radius of the outer circle is 9cm and the radius of the inner circle is $\frac{1}{3}$ of that, what is the area of the shaded region? Furthermore, what percentage of the larger circle is shaded? Round to one decimal point for both answers.
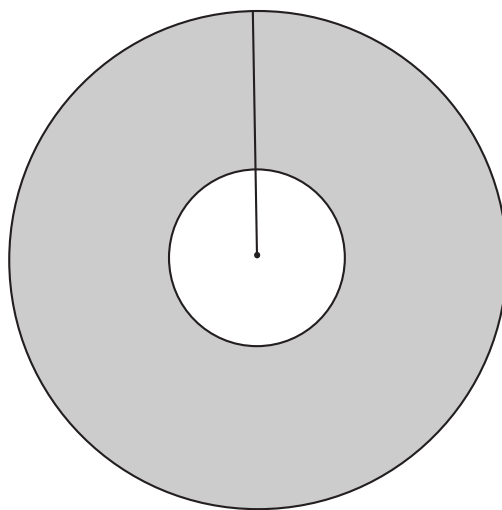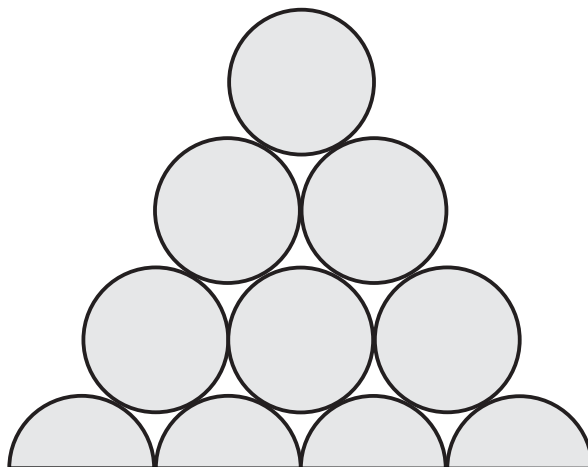

5. In the diagram below, the square has an area of 9cm^2. What is the area of the circle? Round to one decimal point.
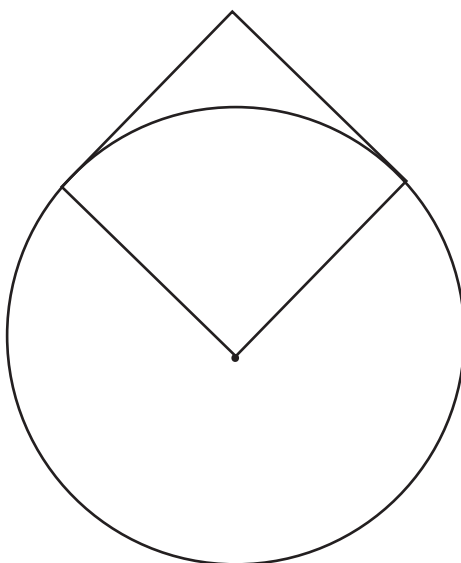
6. In the diagram below, each circle and semi-circle have a radius of 2cm. What is the total area of the shaded regions? Round to one decimal point.

7. A circle has an area of Mcm^2 and a circumference of Ncm. If $\frac{M}{N} = 20$, what is the radius of the circle, in cm?

8. The two circles below each have the same radius. The area of the shaded region equals the sum of the areas of the two unshaded regions. If the area of the shaded region is approximately 678.24cm^2, what is the circumference of each circle? Use 3.14 instead of π and round the final answer to one decimal point.