- a given 2D shape
- Solving a scale diagram problem by applying the properties of similar triangles, including measurements
- Integration of scale for First Peoples mural work, use of traditional design in current First Peoples fashion design, use of similar triangles to create longhouses / models
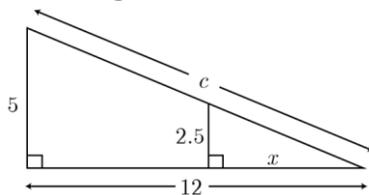
1. How many cm in 2 meters?

2. How many mm in a km?

3. If a 10 cm long toy car is at a scale of 1:20 how long is the car in real life?

4. A picture of the COVID virus is 5 cm long. If the virus is 100 nanometers long in real life, what is the scale of this picture? (ex. 200:1, 1:2000, etc.)
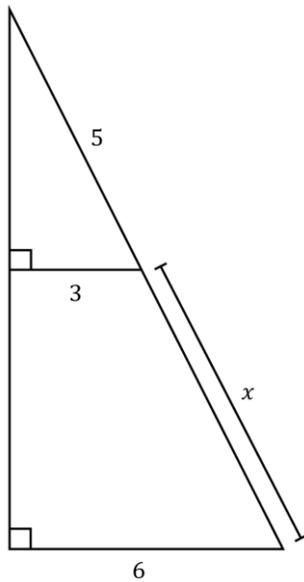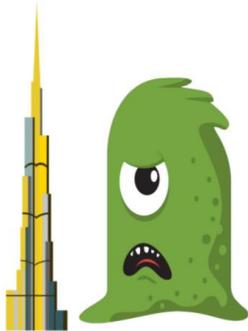
5. See triangle below:
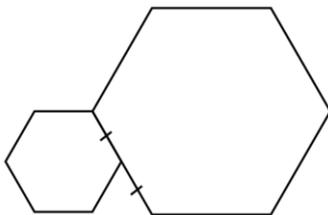

   a. Find c

   b. Find x

6. Find x in the diagram below:

7. The Burj Khalifa is about 830 m tall. The ruler measurement of a picture of this building is 6 cm. The ruler measurement of the picture of the monster is 4.25 cm. How tall is the monster in real life?
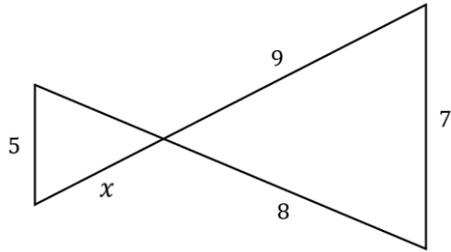

8. The perimeter of the small hexagon in the diagram below is 12 m.

   a. Find the side length of the large hexagon.

    b. Express the perimeter of the smaller hexagon to the perimeter of the larger hexagon as a simplified ratio.
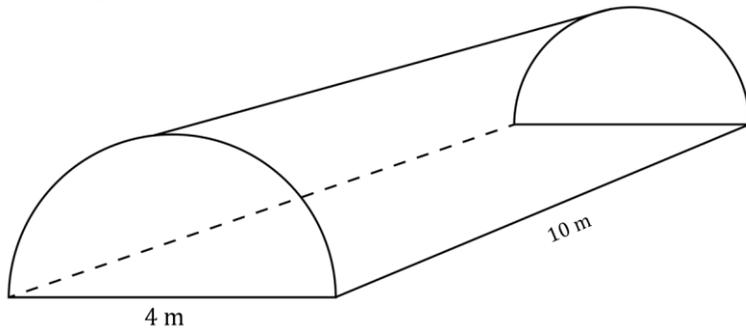
9. Find x in the diagram below:

10. Challenge 1: 360 degrees is equal to 2π radians. The formula for the circumference of a circle is $C = 2\pi r$ and the area of a circle is $A = \pi r^2$. Show that the arc length of a sector of a circle is $arc = \theta r$.

11. Challenge 2: Why is the area of the sector below $A_{sector} = \frac{\theta r^2}{2}$?
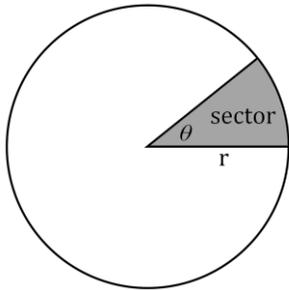
12. Challenge 3: See the Pit House below:

4 m

10 m

    a.   How many times does the volume of the Pit House grow by doubling the dimensions?

    b.   How many times does the area of the Pit House grow by doubling the dimensions?

    c.   How large does the Pit House's area scale up by increasing the dimensions by a factor of n?

    d.   How large does the Pit House's volume scale up by increasing the dimensions by a factor of n?

    e.   Does this scaling ratio increase for all types of shapes?