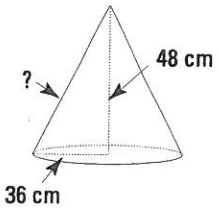
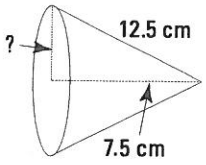
3. Find the missing dimension.

a)



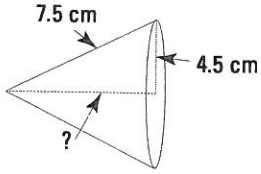
60 cm

b)



10 cm

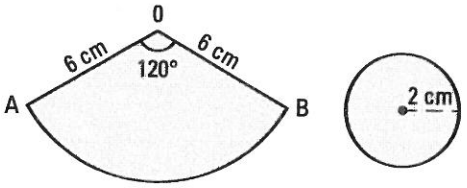
c)



6 cm

ACTIVITY 4 Net of a cone (Constructing cones)

The net of a cone is composed of a circular sector and a disc.



a) Draw on construction paper

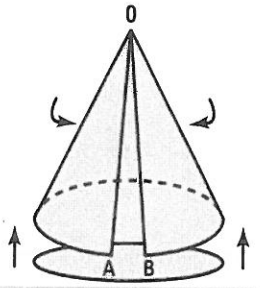
1. a circular sector with a radius of 6 cm and a central angle measuring 120°.
2. a disc with a 2 cm radius.

b) 1. Calculate the length of the arc AB. *4π cm*

2. Calculate the circumference of the circle with a 2 cm radius. *4π cm*
3. Verify that the length of the arc AB is equal to the circumference of the circle.

c) 1. Cut out the circular sector and fold it as illustrated on the right.

2. Cut out the disc and glue it to the arc of the circular sector to complete the construction of the cone.

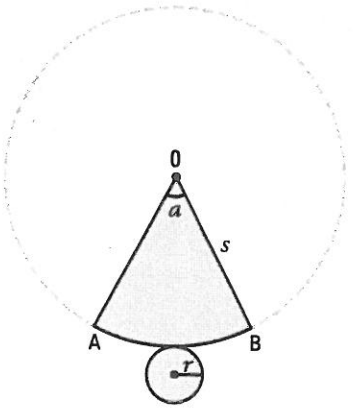


d) What do the following become for the cone?

1. The surface of the circular sector AOB. *The lateral surface of the cone*
2. The radius of the circular sector AOB. *The slant height of the cone*

ACTIVITY 5 Net of a cone (Finding the angle of the circular sector)

The net of a cone with slant height $s = 4$ cm and radius $r = 0.8$ cm is represented on the right.



a) 1. What can be said about the measure of the arc AB and the circumference of the cone's base? *They are equal.*

2. What is the measure of the arc AB? *1.6π cm*

b) Determine the circumference C of the large disc with radius s (represented as dotted). *8π cm*

c) The central angle a, the measure of the arc AB and the circumference C of the large disc form the proportion:

$$\frac{a}{360°} = \frac{\text{m}\overset{\frown}{\text{AB}}}{\text{C}}$$

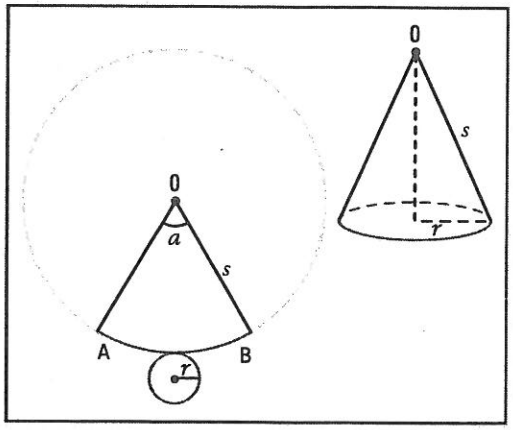
Determine the measure of the angle a using this proportion. $\frac{a}{360°} = \frac{1.6\pi}{8\pi} \Rightarrow a = 72°$

d) Verify the proportion $\frac{a}{360°} = \frac{r}{s}$ $\frac{72°}{360°} = \frac{0.8}{4}$ *True*

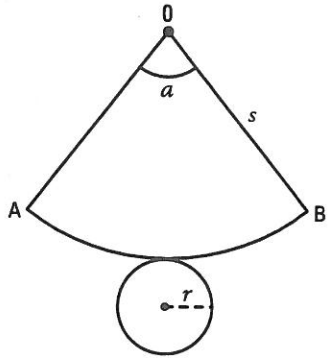
NET OF A CONE

- The net of a cone with radius r and slant height s includes:
  - a circular sector of radius s (slant height of the cone) and central angle a, representing the conical surface.
  - a disc of radius r, representing the base of the cone.
- The following proportions are obtained:

$$\frac{a}{360°} = \frac{\text{m}\overset{\frown}{\text{AB}}}{2\pi s} \quad \text{and} \quad \frac{a}{360°} = \frac{r}{s}$$



4. Complete the following table using the given net of a cone and the proportion $\frac{r}{s} = \frac{a}{360°}$.



a (°)	r (cm)	s (cm)	$\text{m}\overset{\frown}{\text{AB}}$ (cm)
60°	2	***12***	***4π***
90°	***3***	12	***6π***
45°	***0.5***	4	π
30°	2	24	***4π***
45°	***1***	8	2π

5. Explain the procedure for constructing a cone with a 3 cm radius and height of 4 cm.

1. ***Calculate the slant height of the cone: $s^2 = h^2 + r^2$; $s^2 = 25$; $s = 5$ cm.***
2. ***Calculate the central angle of the circular sector.***

   $\frac{a}{360°} = \frac{r}{s} \Rightarrow \frac{a}{360°} = \frac{3}{5} \Rightarrow a = 216°$

3. ***Draw this circular sector with a 5 cm radius (slant height of the cone).***
4. ***Draw a disc with a 3 cm radius.***