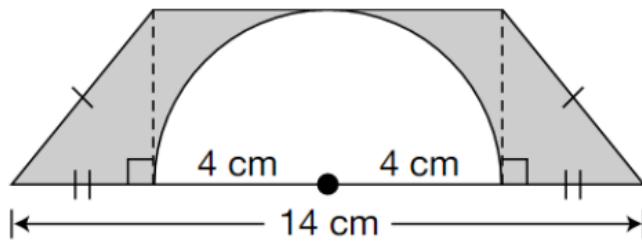*****SHOW ALL OF YOUR WORK FOR FULL MARKS*****

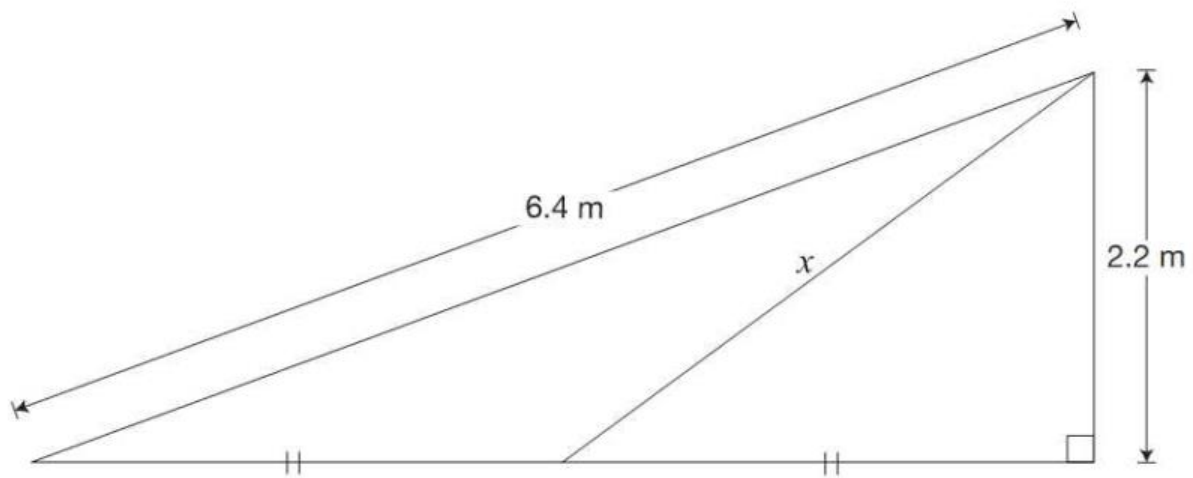**<u>A correct answer with no work shown earns 1/5.</u>**

The semicircle in the diagram below has a radius of 4 cm.

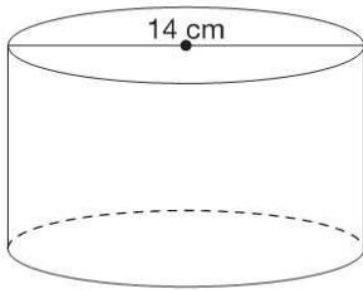What is the area of the shaded region?

Show your work.

The diagram below shows a small right triangle inside a large right triangle.

Determine the value of x.

Show your work.
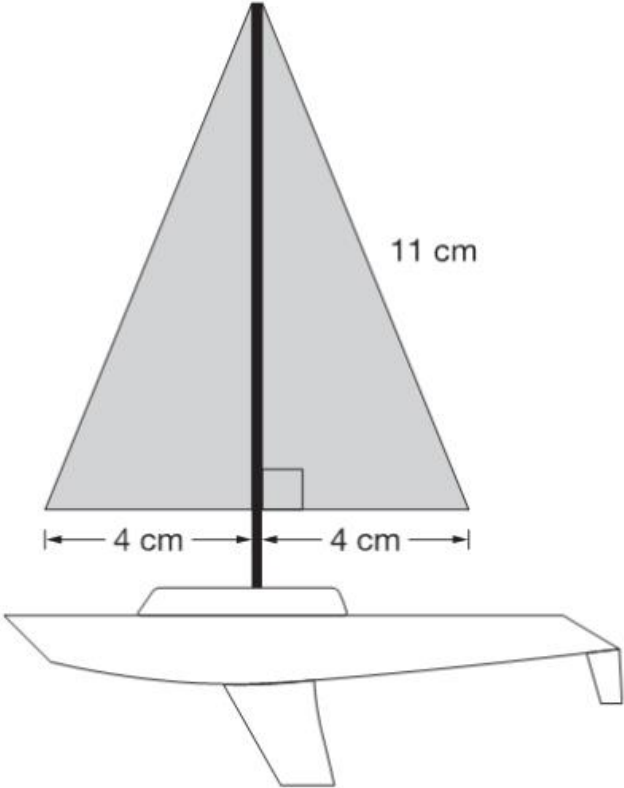
The cylinder pictured below has a surface area of 660 cm².

14 cm

Use the following formula to determine the height of the cylinder:

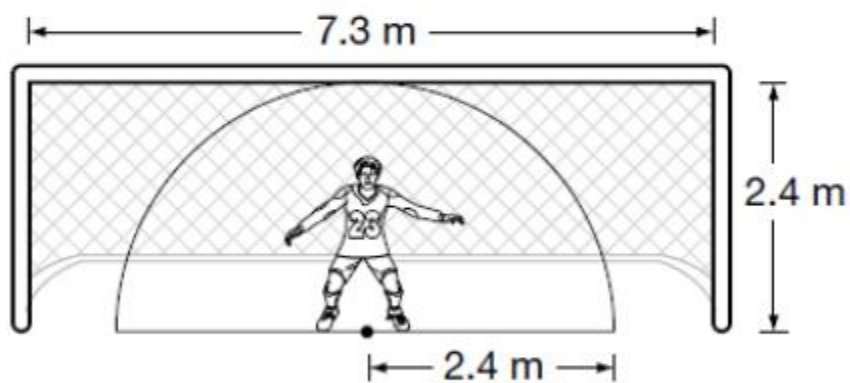Surface area = $2\pi r^2 + 2\pi rh$

Show your work.

Emelina makes toy sailboats as shown below.
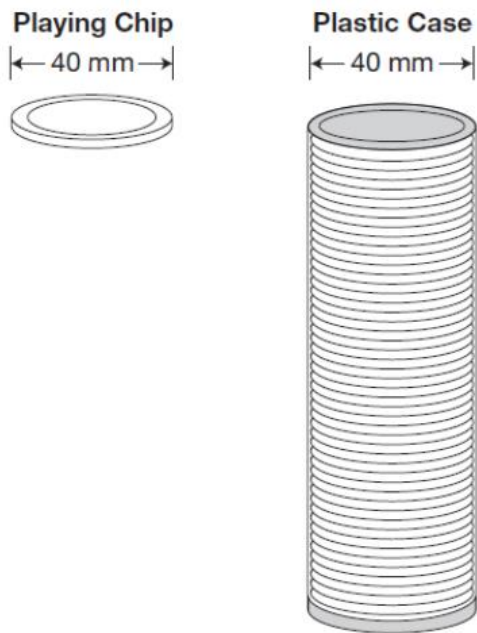

Determine the total area of the shaded sails.

Show your work.

A soccer goalie is standing in a goal opening. From this position, she can guard the area represented by the semicircle below.
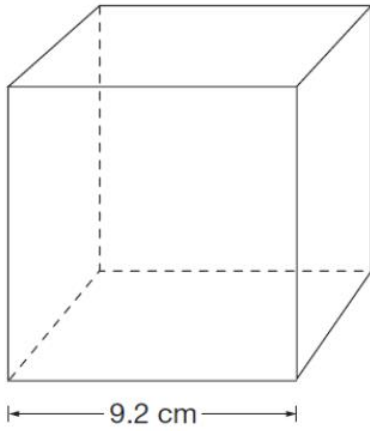

7.3 m

2.4 m

2.4 m

How much of the goal opening is she not guarding?

The playing chips of a board game are stored in cylindrical plastic cases. The plastic cases have a volume of 25 120 mm³ and a diameter of 40 mm.

Playing Chip

|← 40 mm →|

Plastic Case

|← 40 mm →|

What is the height of 1 playing chip if 50 playing chips fit tightly into the plastic case as shown above?

A decoration is packed in a box shaped like
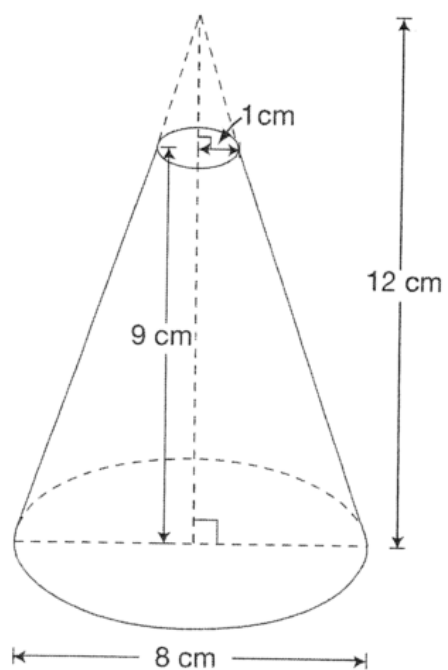a cube as shown below.

|————— 9.2 cm —————|

The decoration has a volume of 651 cm^3.

How much empty space remains in the box?

The figure pictured below is a cone with its top portion removed.

1 cm

12 cm

9 cm

8 cm

Determine the volume of this figure.

Show your work.