

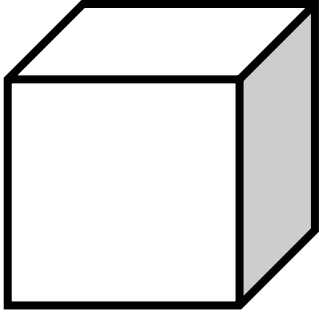
Volume

(Elevations included at end)

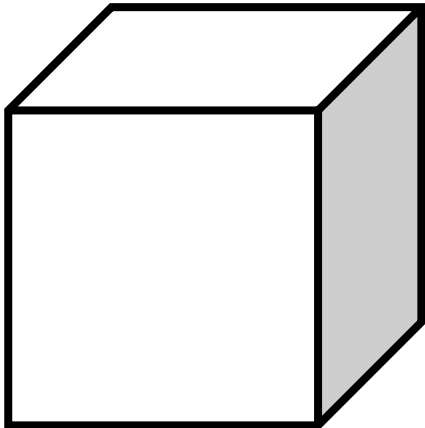
[CONTENTS](#)

Worked example

Calculate the volume of the cube:



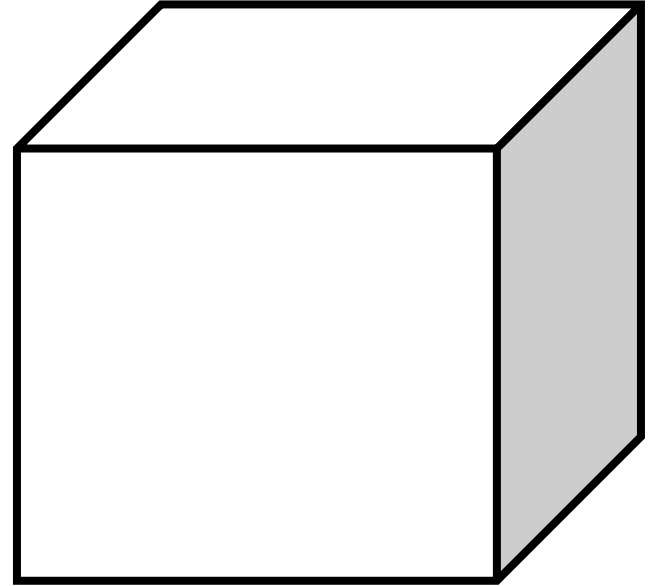
3 cm



4 cm

Your turn

Calculate the volume of the cube:

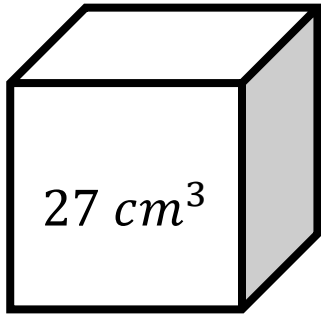


5 cm

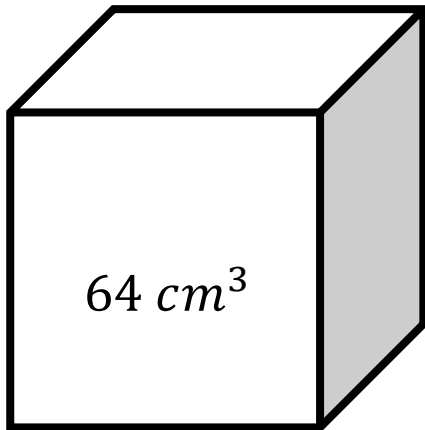
125 cm^3

Worked example

Find x , given that the volume of the cube is:



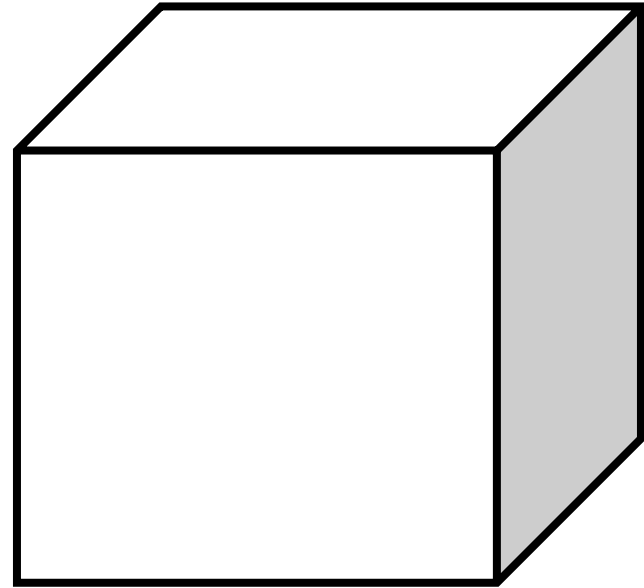
$x \text{ cm}$



$x \text{ cm}$

Your turn

Find x , given that the volume of the cube is 125 cm^3

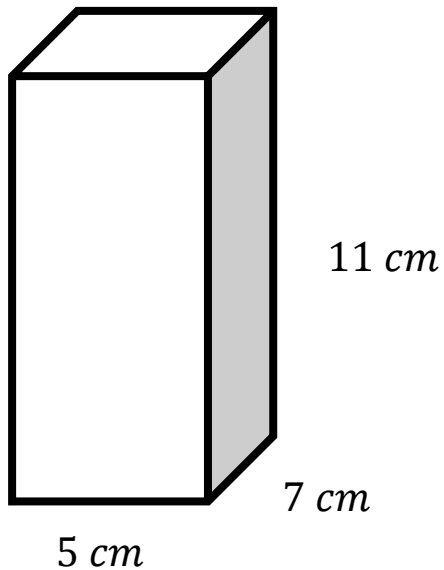
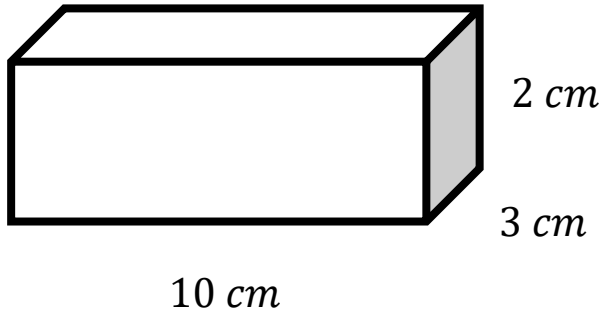


$x \text{ cm}$

$$x = 5$$

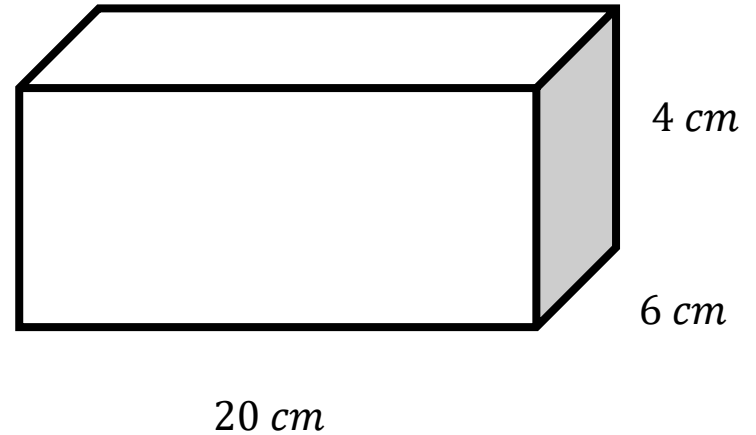
Worked example

Calculate the volume of the cuboid:



Your turn

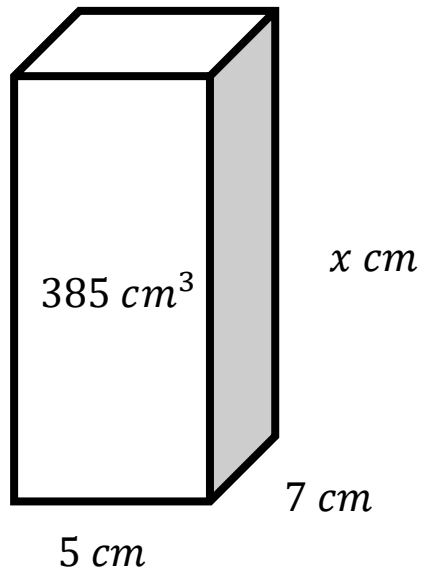
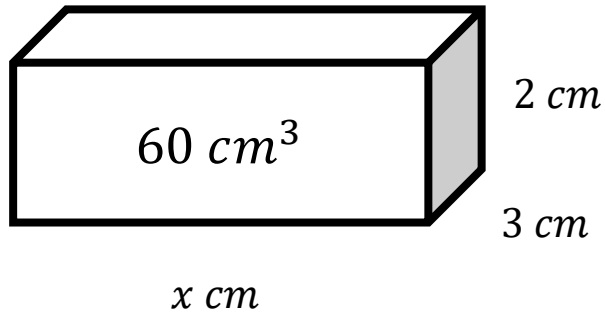
Calculate the volume of the cuboid:



480 cm^3

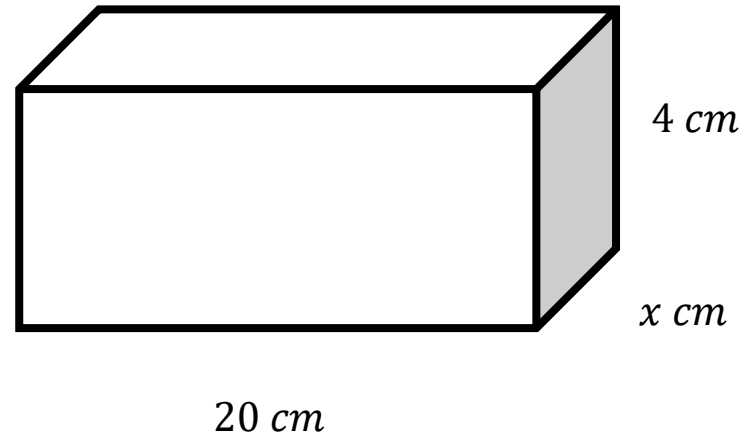
Worked example

Find x , given that the volume of the cuboid is:



Your turn

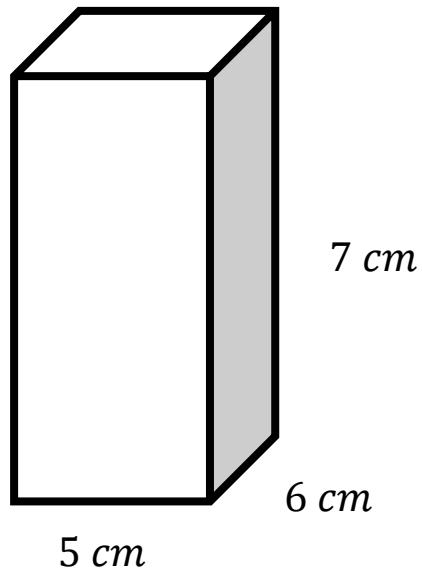
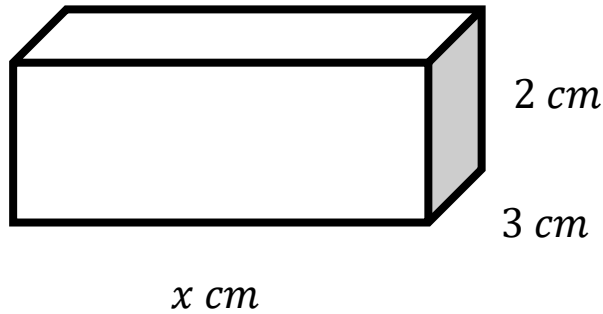
Find x , given that the volume of the cuboid is 480 cm^3



$$x = 6$$

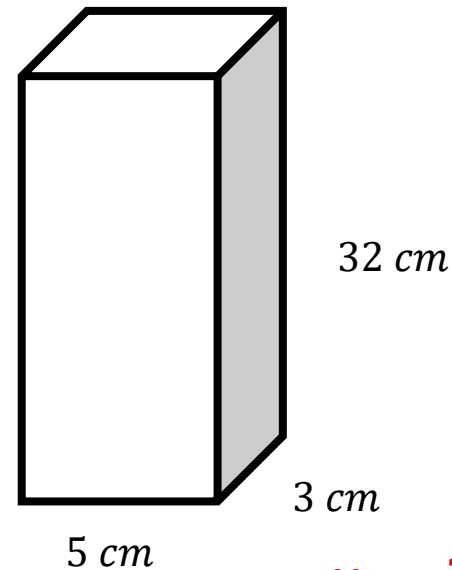
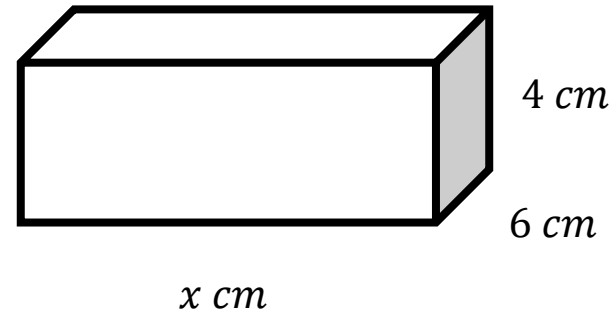
Worked example

Find x , given that the two cuboids have equal volume



Your turn

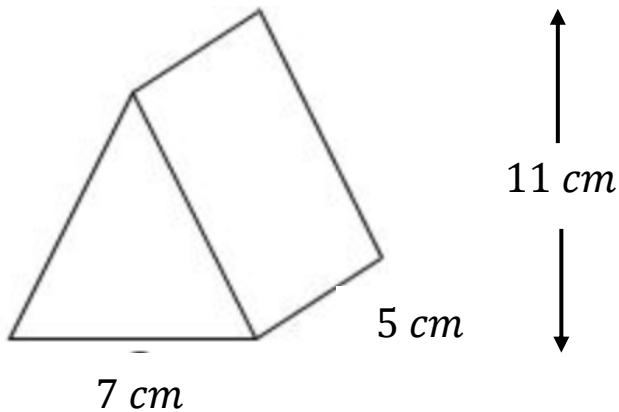
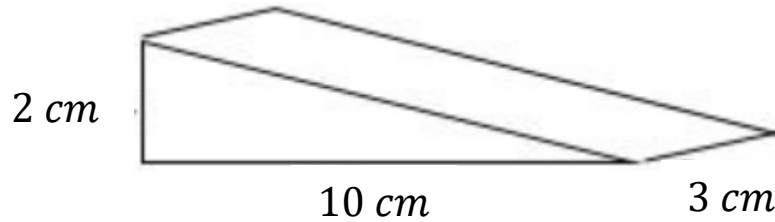
Find x , given that the two cuboids have equal volume



$$x = 20$$

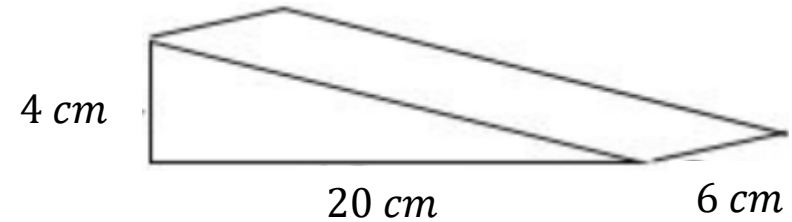
Worked example

Calculate the volume of the triangular prism:



Your turn

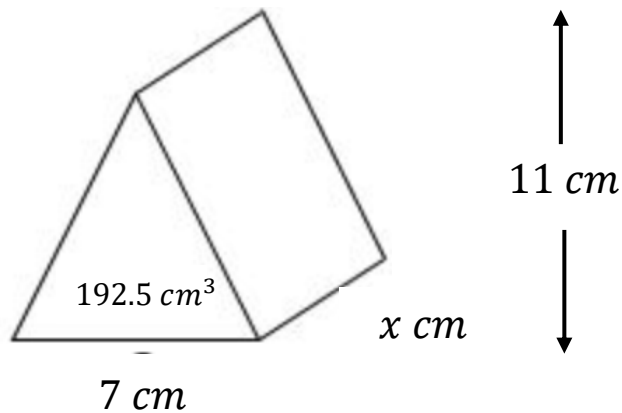
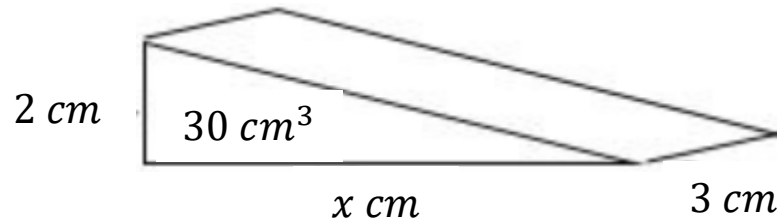
Calculate the volume of the triangular prism:



$$240\text{ cm}^3$$

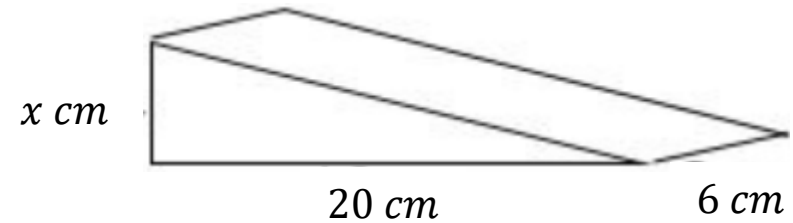
Worked example

Find x , given that the volume of the triangular prism is:



Your turn

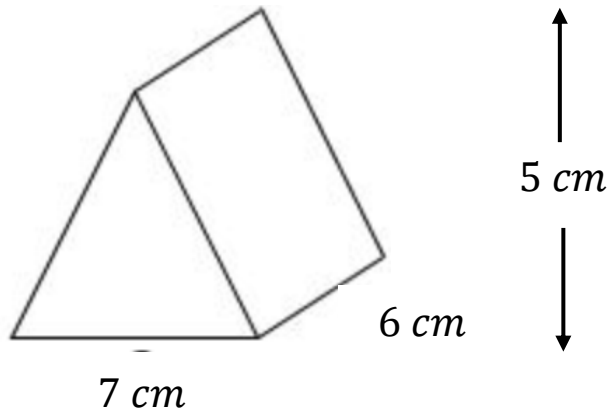
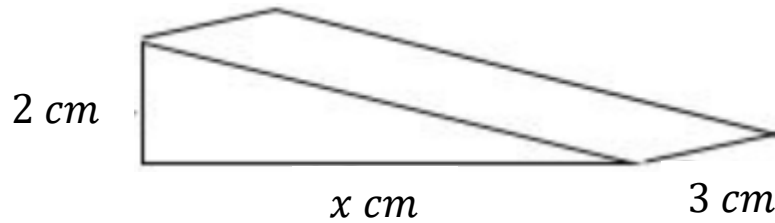
Find x , given that the volume of the triangular prism is 240 cm^3 :



$$x = 4$$

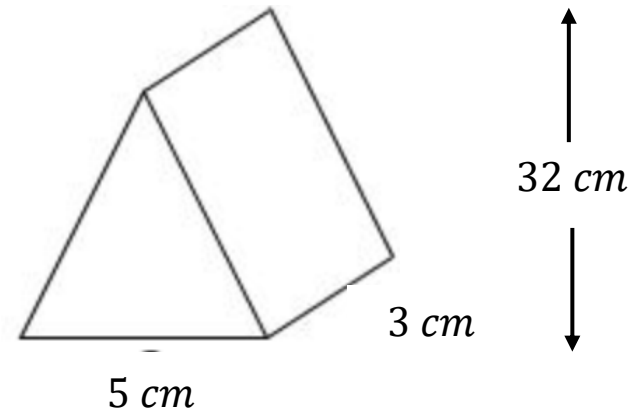
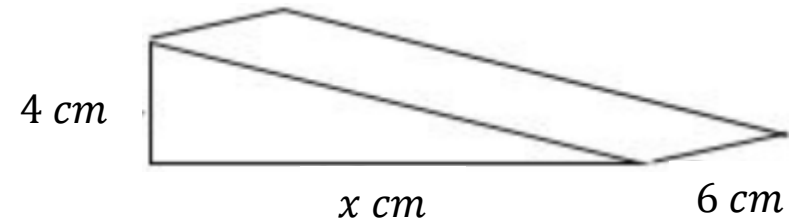
Worked example

Find x , given that the two triangular prisms have equal volume



Your turn

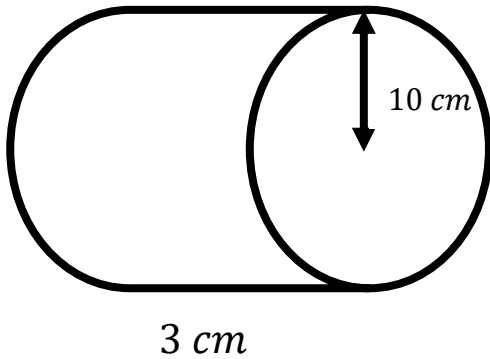
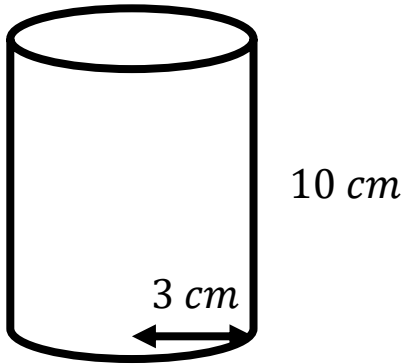
Find x , given that the two triangular prisms have equal volume



$$x = 20$$

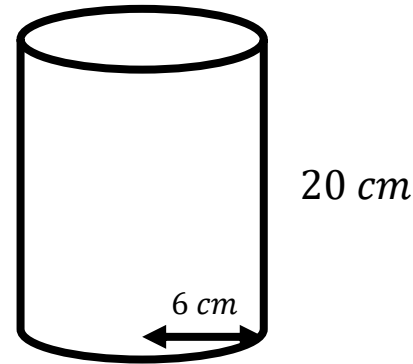
Worked example

Calculate the volume of the cylinder:



Your turn

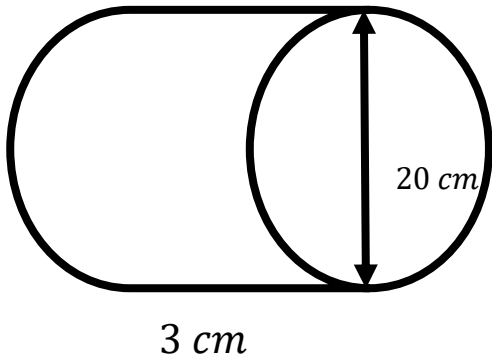
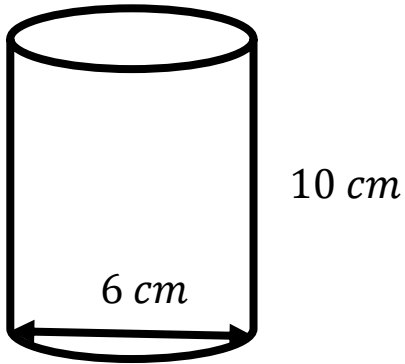
Calculate the volume of the cylinder:



$$720\pi = 2261.95\text{ cm}^3 \text{ (2 dp)}$$

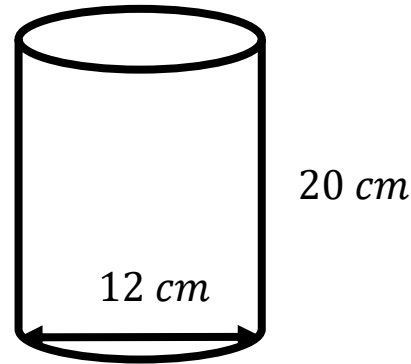
Worked example

Calculate the volume of the cylinder:



Your turn

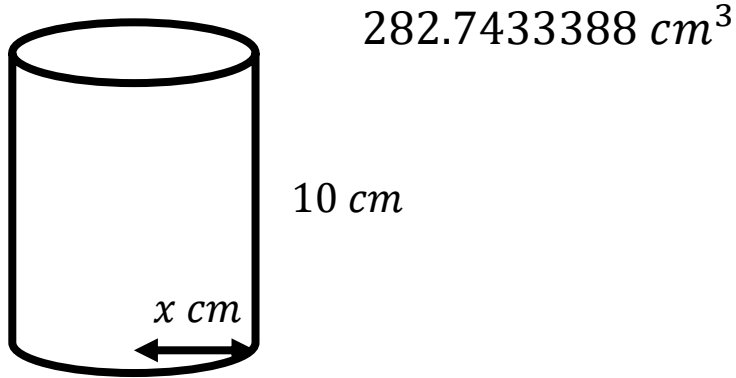
Calculate the volume of the cylinder:



$$720\pi = 2261.95\text{ cm}^3 \text{ (2 dp)}$$

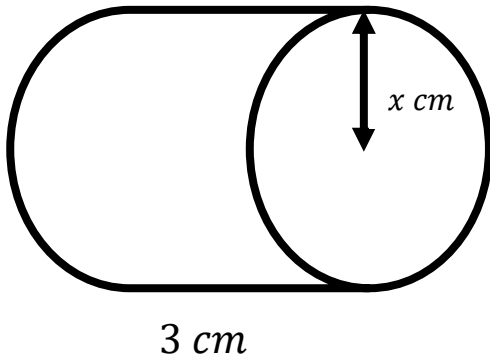
Worked example

Find x , given that the volume of the cylinder is:



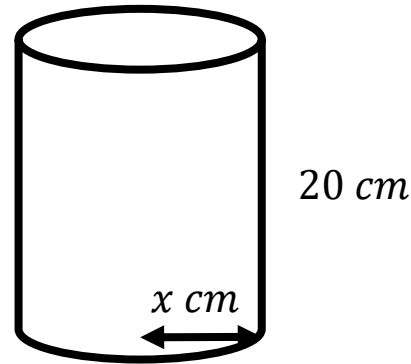
$$282.7433388\text{ cm}^3$$

$$942.4777961\text{ cm}^3$$



Your turn

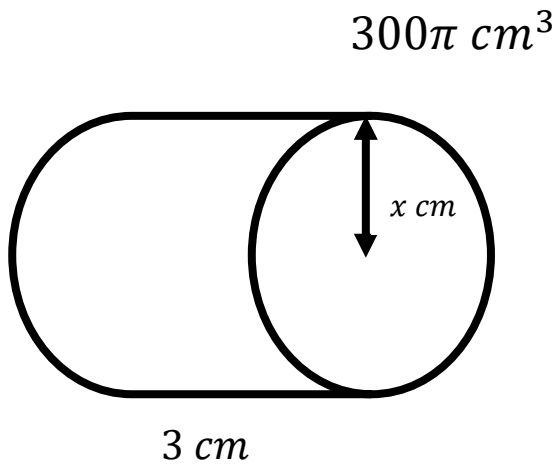
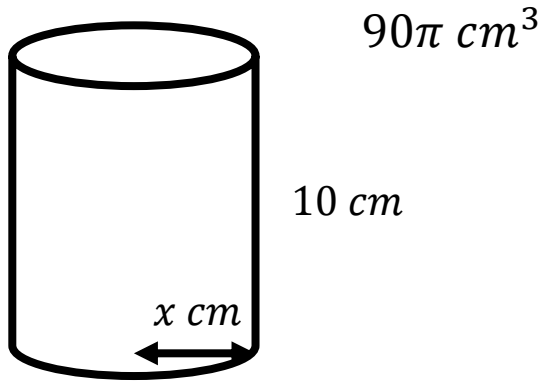
Find x , given that the volume of the cylinder is 2261.946711 cm^3



$$x = 6$$

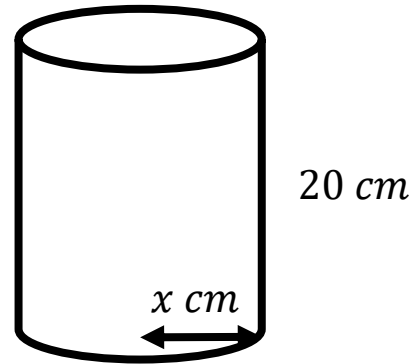
Worked example

Find x , given that the volume of the cylinder is:



Your turn

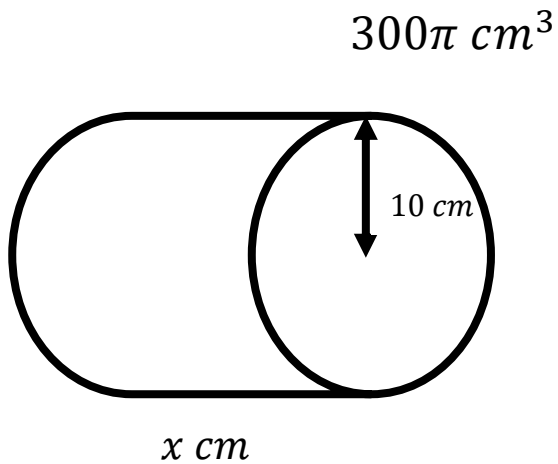
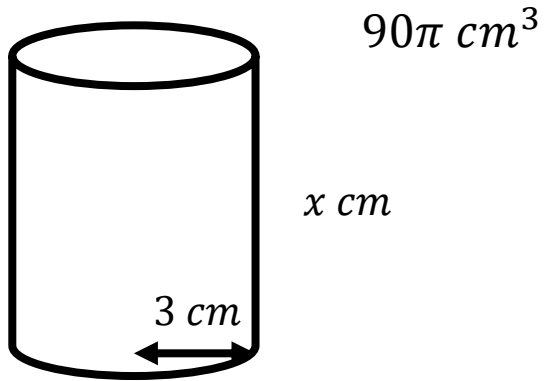
Find x , given that the volume of the cylinder is $720\pi \text{ cm}^3$



$$x = 6$$

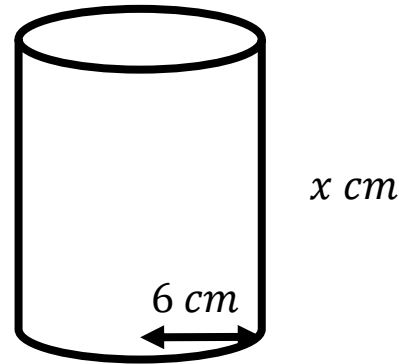
Worked example

Find x , given that the volume of the cylinder is:



Your turn

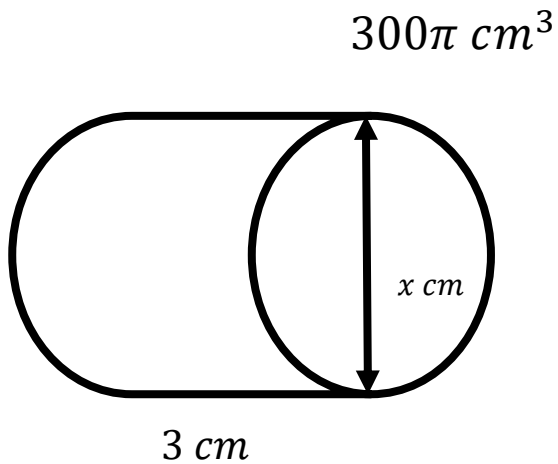
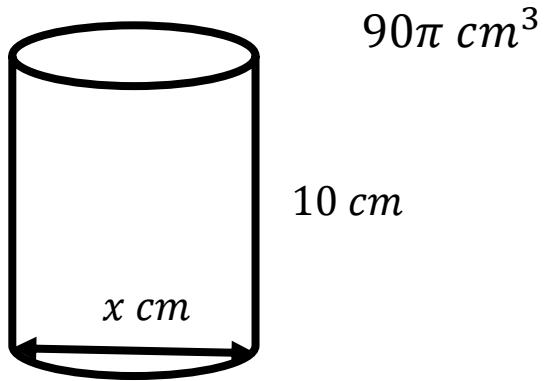
Find x , given that the volume of the cylinder is $720\pi\text{ cm}^3$



$$x = 20$$

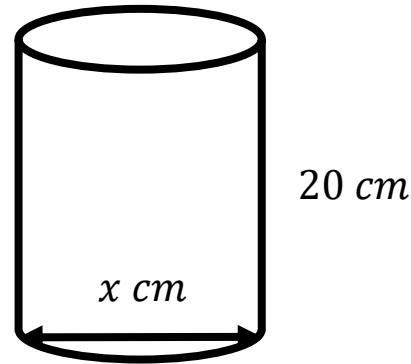
Worked example

Find x , given that the volume of the cylinder is:



Your turn

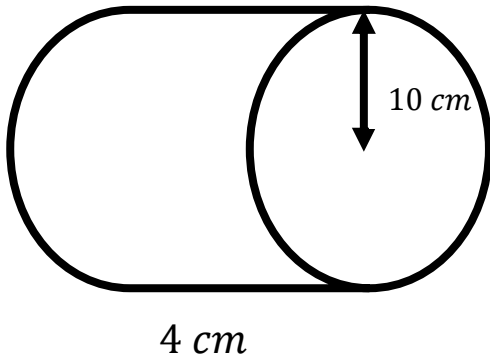
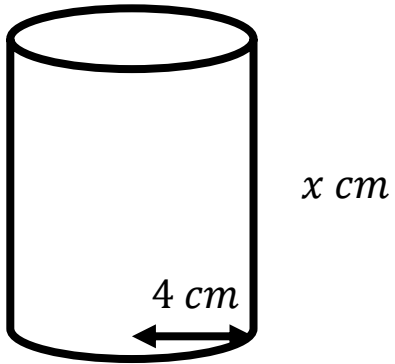
Find x , given that the volume of the cylinder is $720\pi \text{ cm}^3$



$$x = 12$$

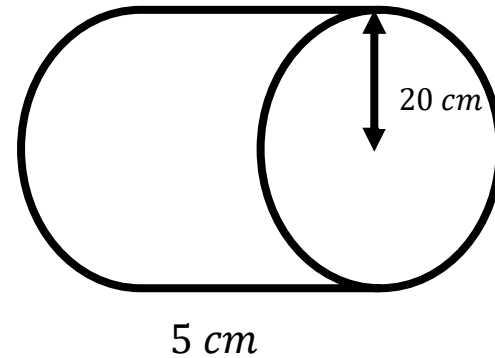
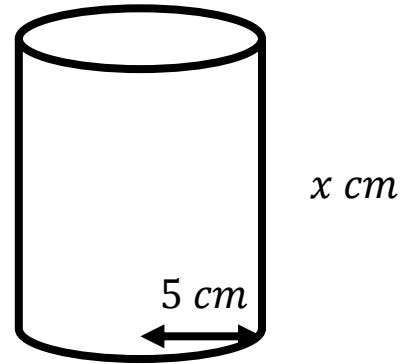
Worked example

Find x , given that the two cylinders have equal volume



Your turn

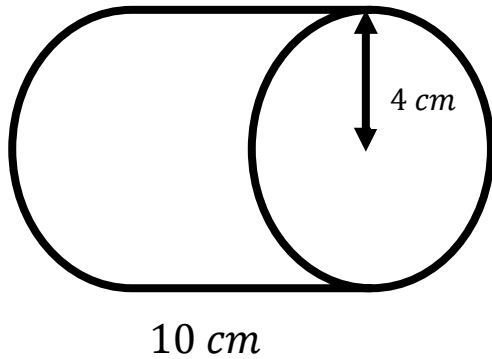
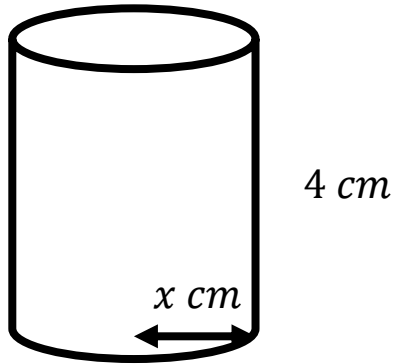
Find x , given that the two cylinders have equal volume



$$x = 80$$

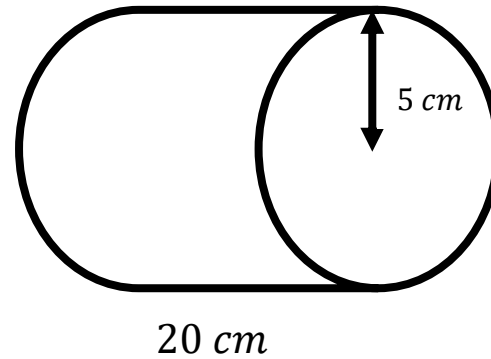
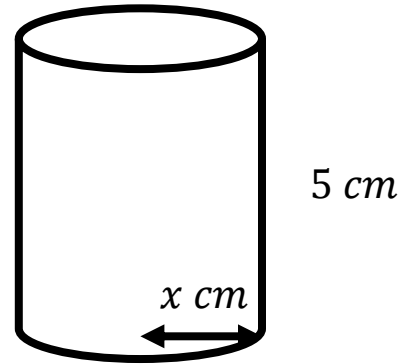
Worked example

Find x , given that the two cylinders have equal volume



Your turn

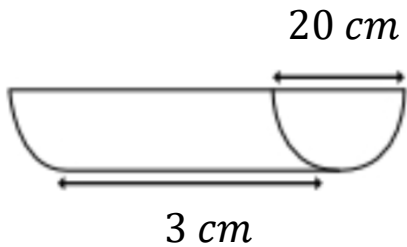
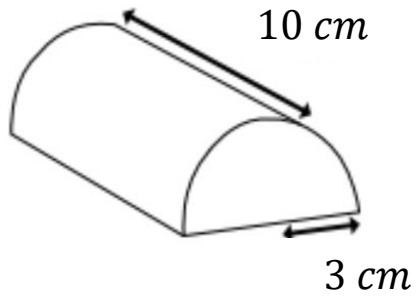
Find x , given that the two cylinders have equal volume



$$x = 10$$

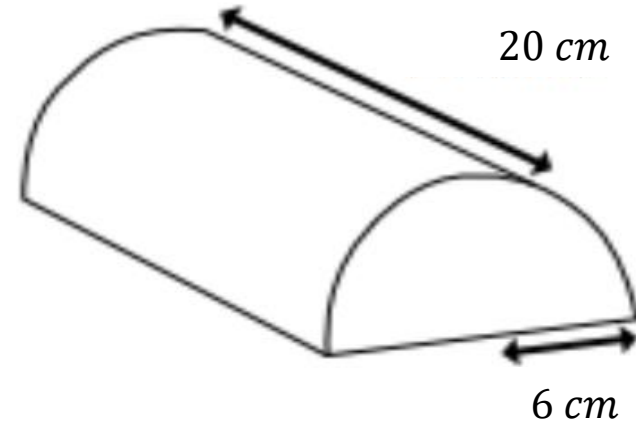
Worked example

Calculate the volume of:



Your turn

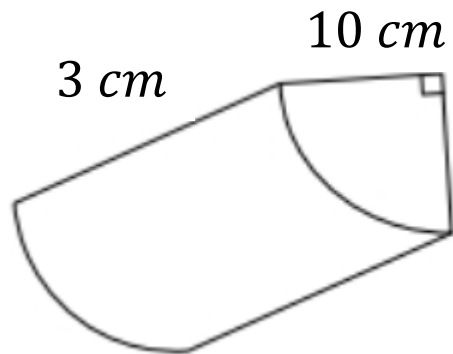
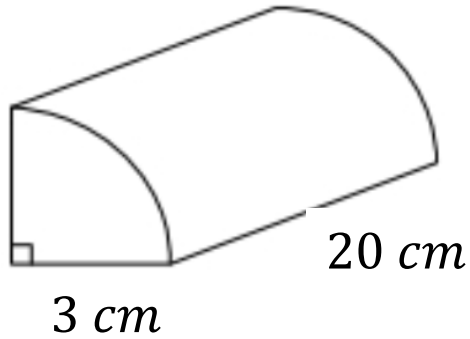
Calculate the volume of:



$$360\pi = 1130.97\text{ cm}^3 \text{ (2 dp)}$$

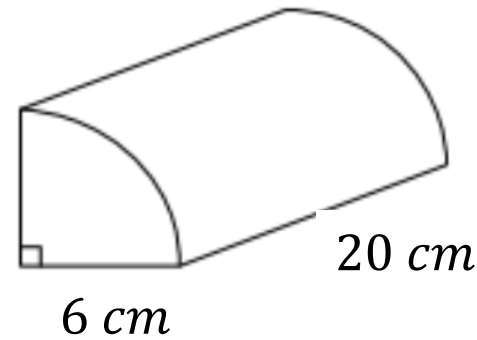
Worked example

Calculate the volume of:



Your turn

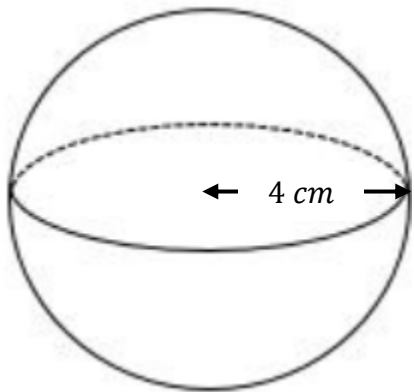
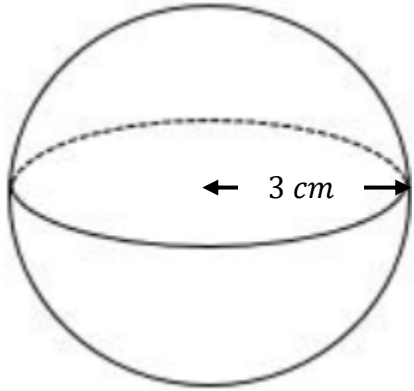
Calculate the volume of:



$$180\pi = 565.49 \text{ cm}^3 \text{ (2 dp)}$$

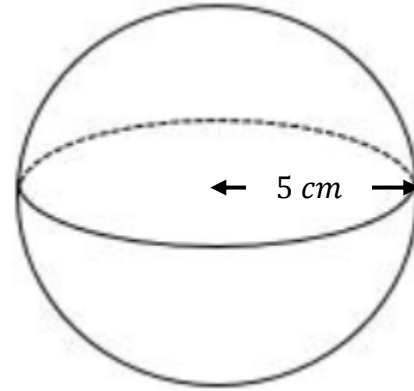
Worked example

Calculate the volume of the sphere:



Your turn

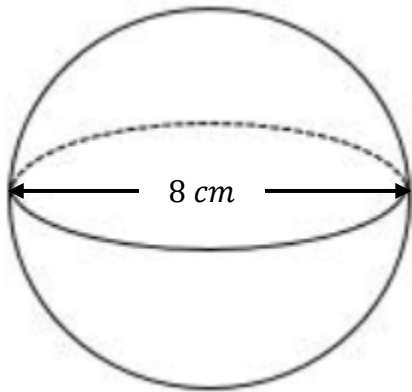
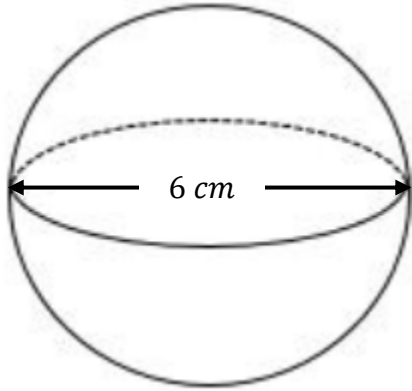
Calculate the volume of the sphere:



$$\frac{500}{3}\pi = 523.56 \text{ cm}^3 \text{ (2 dp)}$$

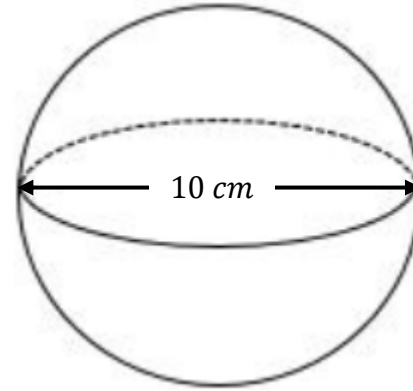
Worked example

Calculate the volume of the sphere:



Your turn

Calculate the volume of the sphere:

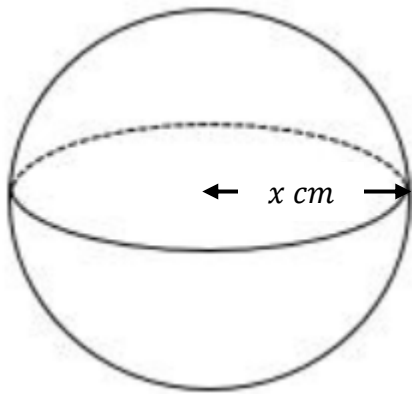
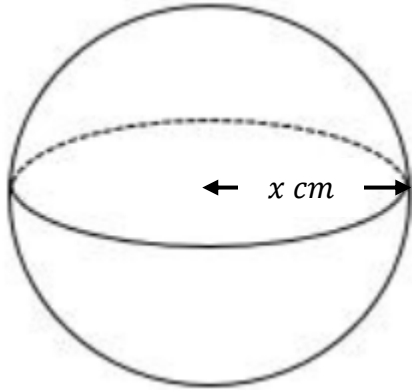


$$\frac{500}{3}\pi = 523.56 \text{ cm}^3 \text{ (2 dp)}$$

Worked example

Find x , given that the volume of the sphere is:

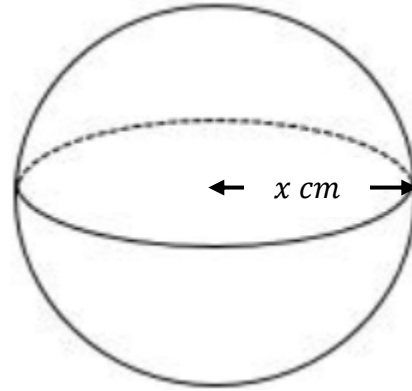
$$113.0973355 \text{ cm}^3$$



$$\frac{256}{3} \pi \text{ cm}^3$$

Your turn

Find x , given that the volume of the sphere is 523.5987756 cm^3

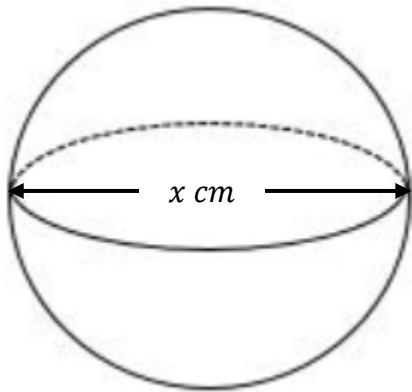
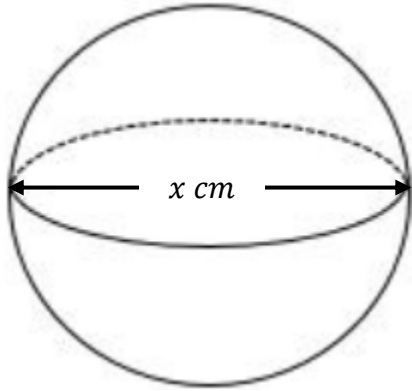


$$x = 5$$

Worked example

Find x , given that the volume of the sphere is:

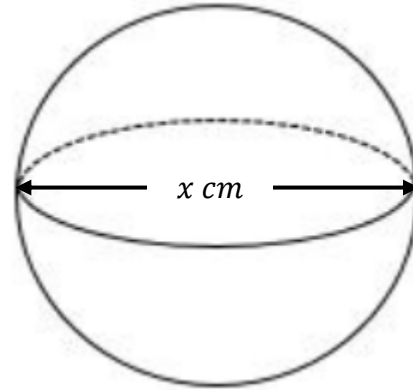
$$113.0973355 \text{ cm}^3$$



$$\frac{256}{3} \pi \text{ cm}^3$$

Your turn

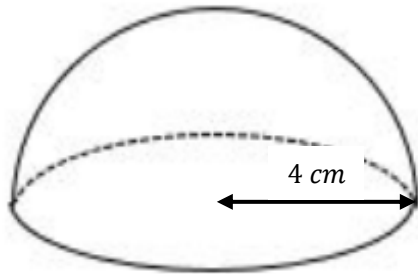
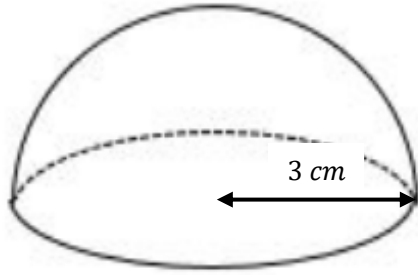
Find x , given that the volume of the sphere is 523.5987756 cm^3



$$x = 10$$

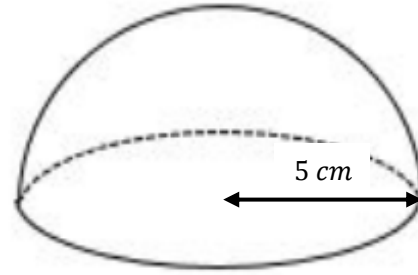
Worked example

Calculate the volume of the hemisphere:



Your turn

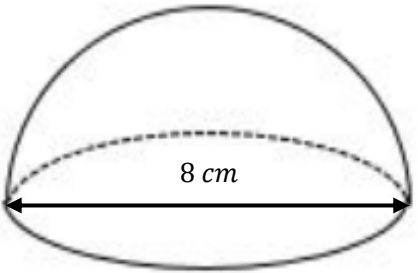
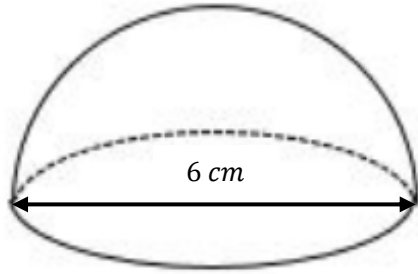
Calculate the volume of the hemisphere:



$$\frac{250}{3}\pi = 261.80 \text{ cm}^3 \text{ (2 dp)}$$

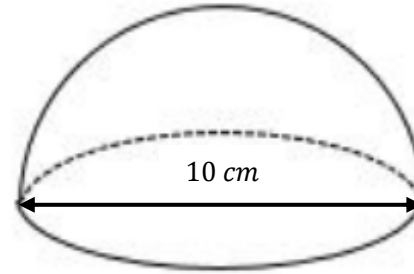
Worked example

Calculate the volume of the hemisphere:



Your turn

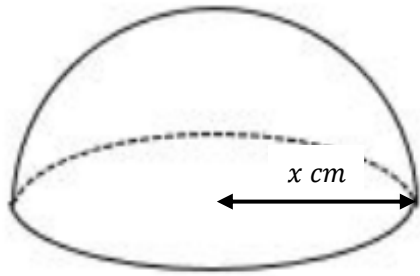
Calculate the volume of the hemisphere:



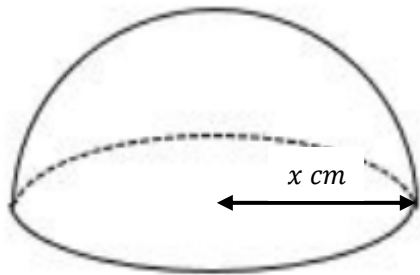
$$\frac{250}{3}\pi = 261.80 \text{ cm}^3 \text{ (2 dp)}$$

Worked example

Find x , given that the volume of the hemisphere is:



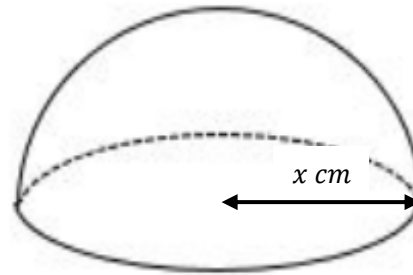
$$56.54866776 \text{ cm}^3$$



$$\frac{128}{3} \pi \text{ cm}^3$$

Your turn

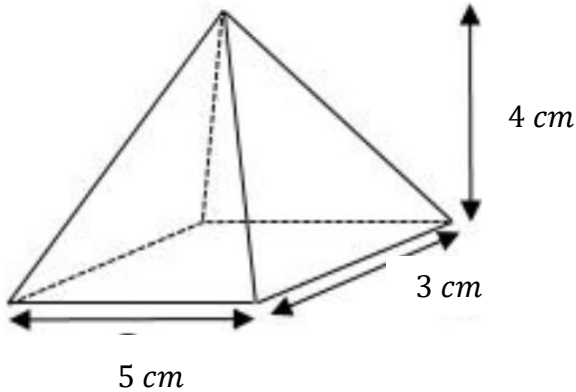
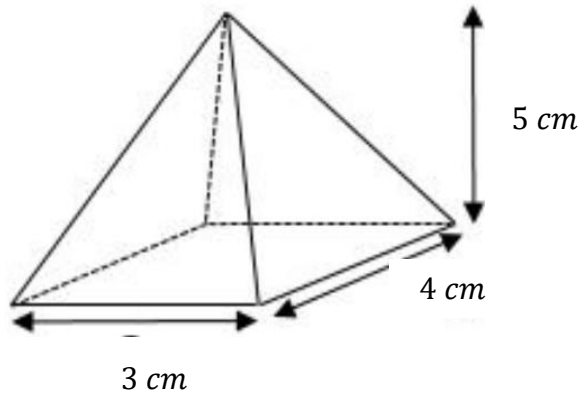
Find x , given that the volume of the hemisphere is 261.7993878 cm^3



$$x = 5$$

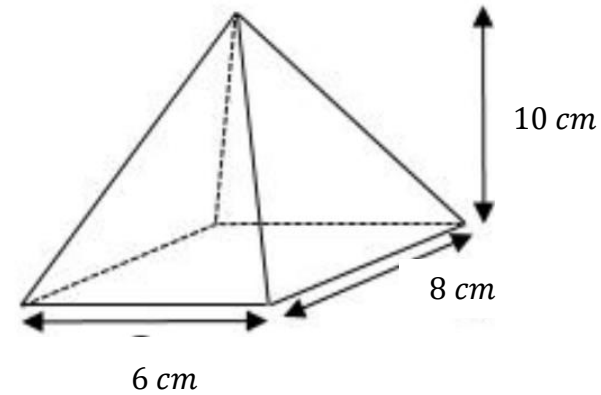
Worked example

Calculate the volume of the rectangular-based pyramid:



Your turn

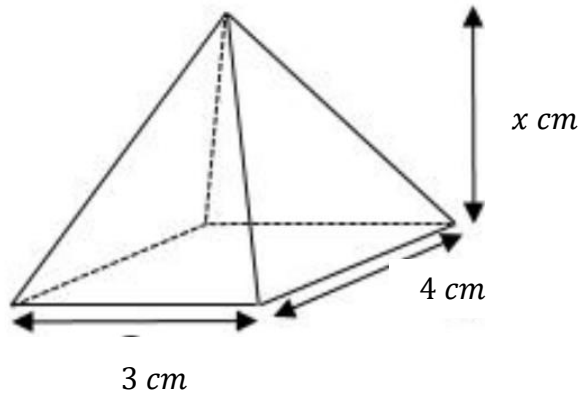
Calculate the volume of the rectangular-based pyramid:



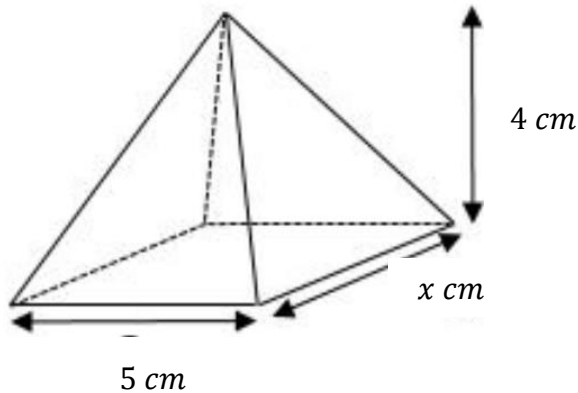
160 cm^3

Worked example

Find x , given that the volume of the rectangular-based pyramid is:



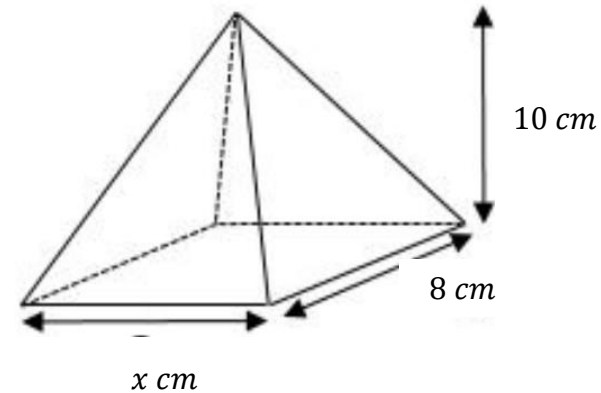
20 cm^3



20 cm^3

Your turn

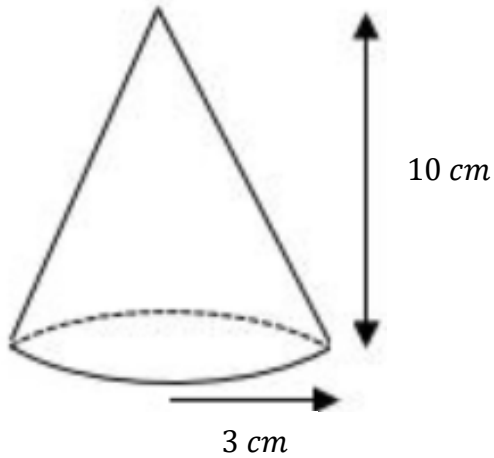
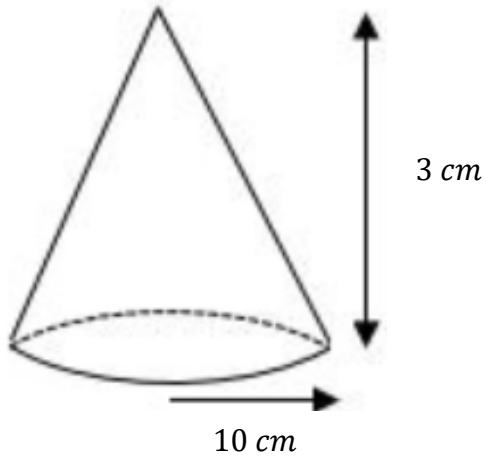
Find x , given that the volume of the rectangular-based pyramid is 160 cm^3



$$x = 6$$

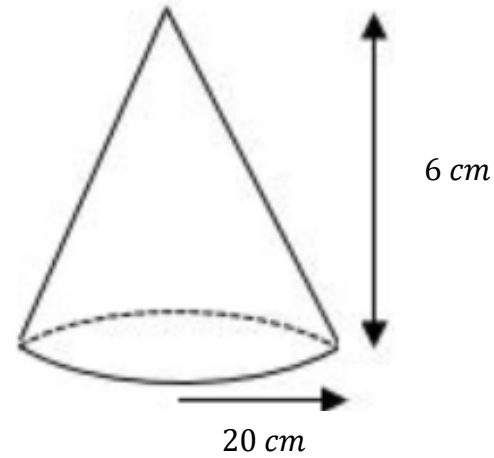
Worked example

Calculate the volume of the cone:



Your turn

Calculate the volume of the cone:

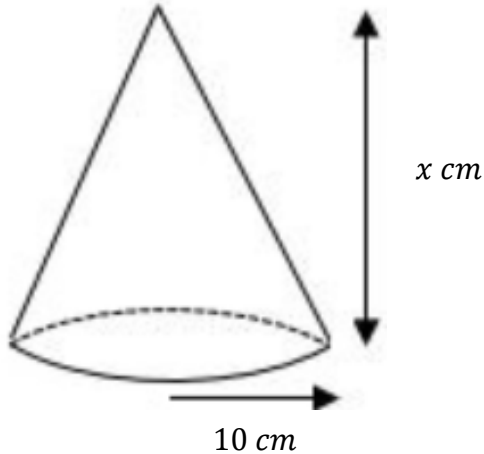


$$800\pi = 2513.27\text{ cm}^3 \text{ (2 dp)}$$

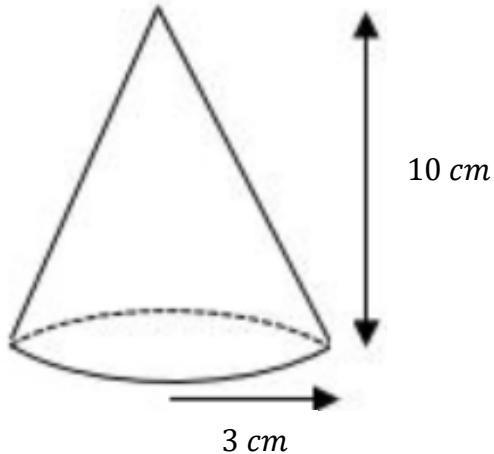
Worked example

Find x , given that the volume of the cone is:

$$314.1592654 \text{ cm}^3$$

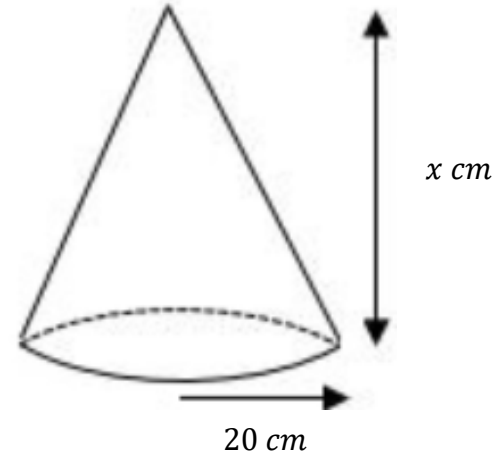


$$30\pi \text{ cm}^3$$



Your turn

Find x , given that the volume of the cone is 2513.274123 cm^3

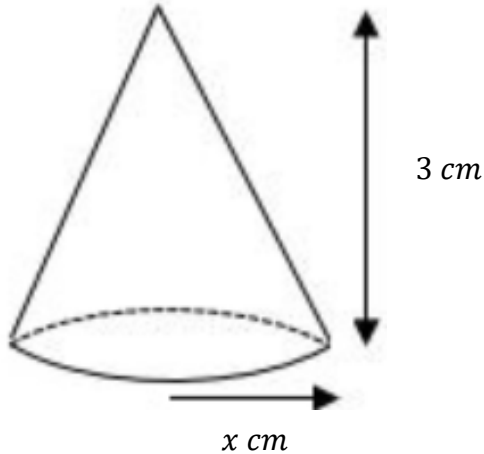


$$x = 6$$

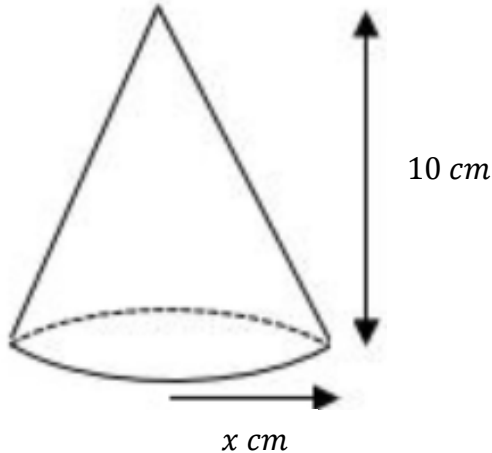
Worked example

Find x , given that the volume of the cone is:

$$314.1592654 \text{ cm}^3$$

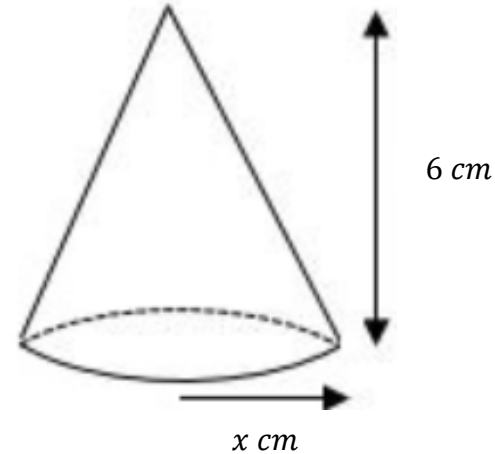


$$30\pi \text{ cm}^3$$



Your turn

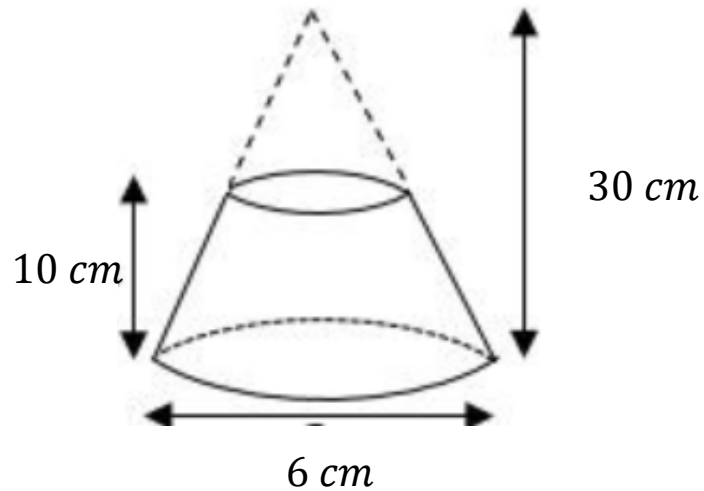
Find x , given that the volume of the cone is 2513.274123 cm^3



$$x = 20$$

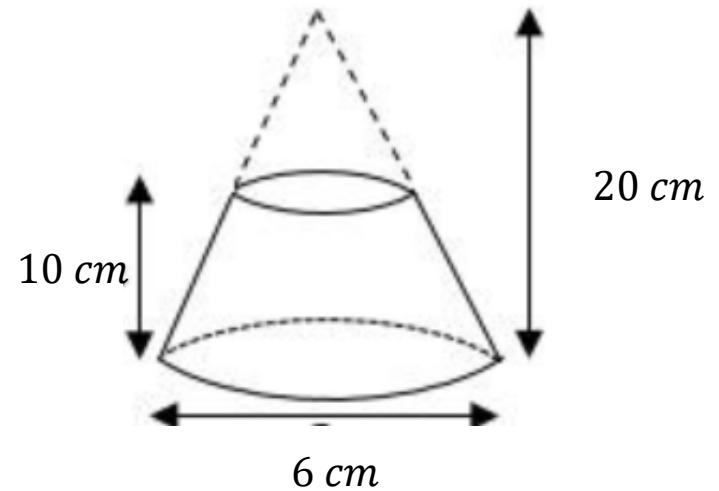
Worked example

Calculate the volume of the frustum:



Your turn

Calculate the volume of the frustum:

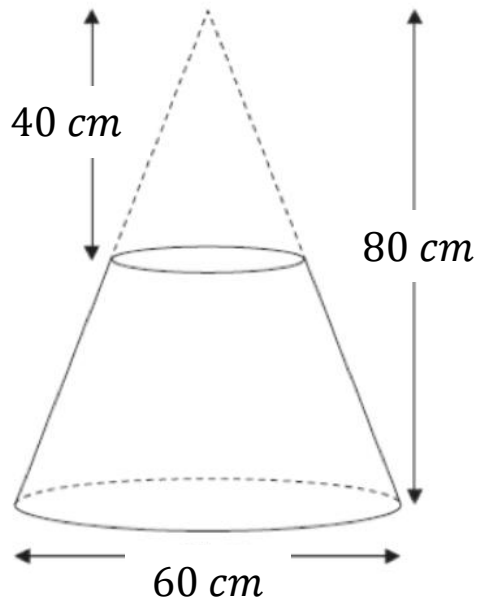


$$\frac{105}{2}\pi = 164.93 \text{ cm}^3 \text{ (2 dp)}$$

Worked example

A frustum is made by removing a small cone from a similar large one.

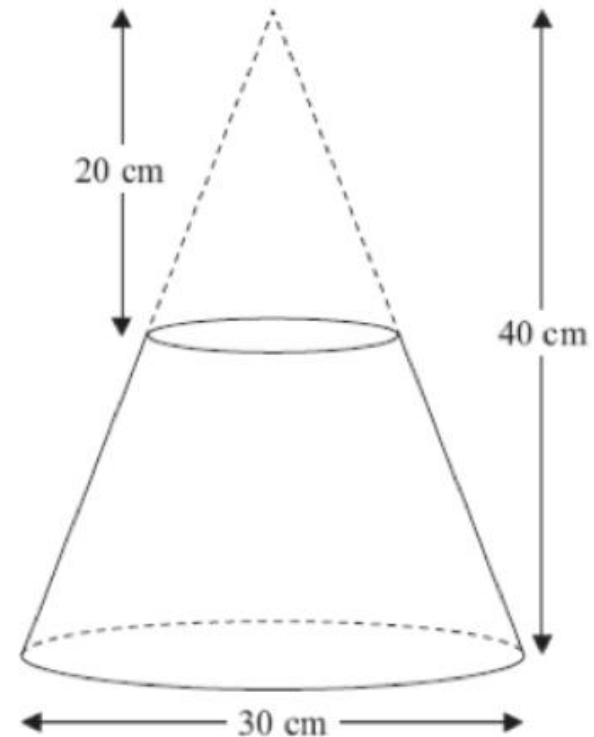
Work out the volume of the frustum.



Your turn

A frustum is made by removing a small cone from a similar large one.

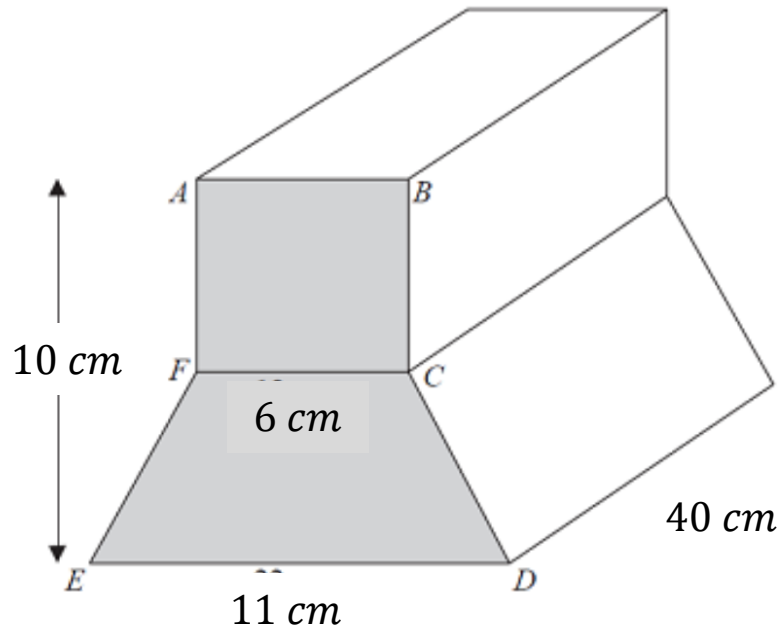
Work out the volume of the frustum.



$$8246.68 \text{ cm}^3 \text{ (2 dp)}$$

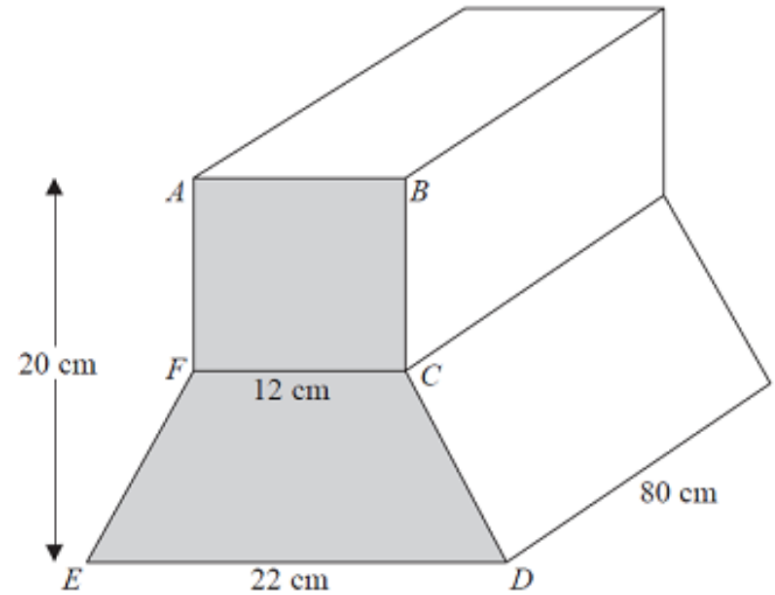
Worked example

Calculate the total volume of this prism



Your turn

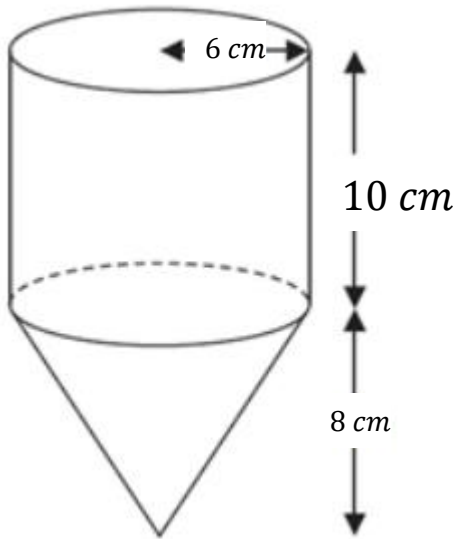
Calculate the total volume of this prism



$$22400\text{ cm}^3$$

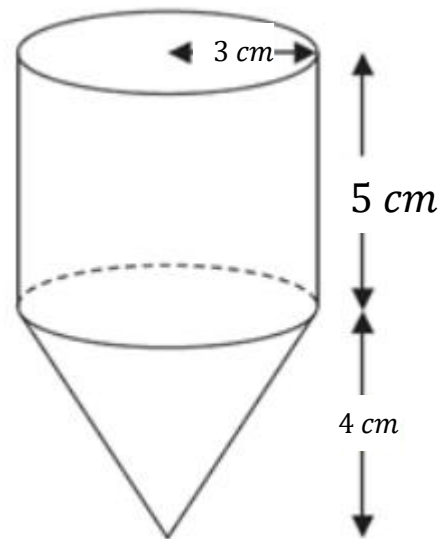
Worked example

Calculate the volume of this composite shape



Your turn

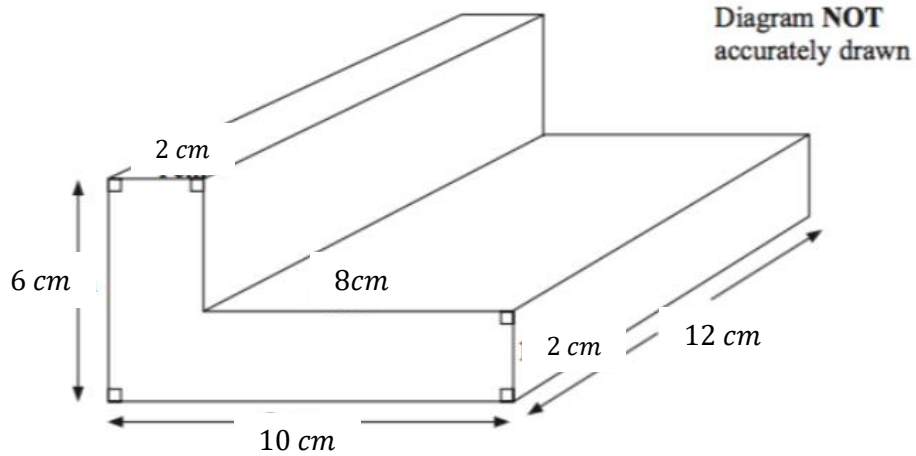
Calculate the volume of this composite shape



$$57\pi = 179.07 \text{ cm}^3 \text{ (2 dp)}$$

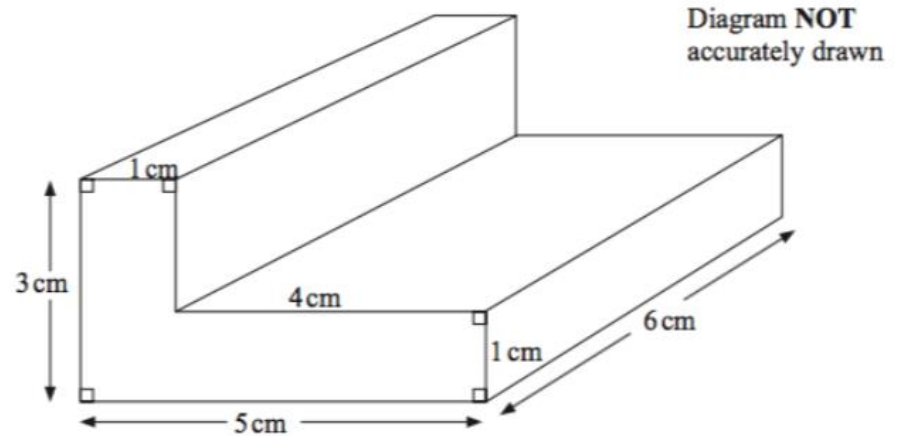
Worked example

Calculate the total volume of this L-shaped prism



Your turn

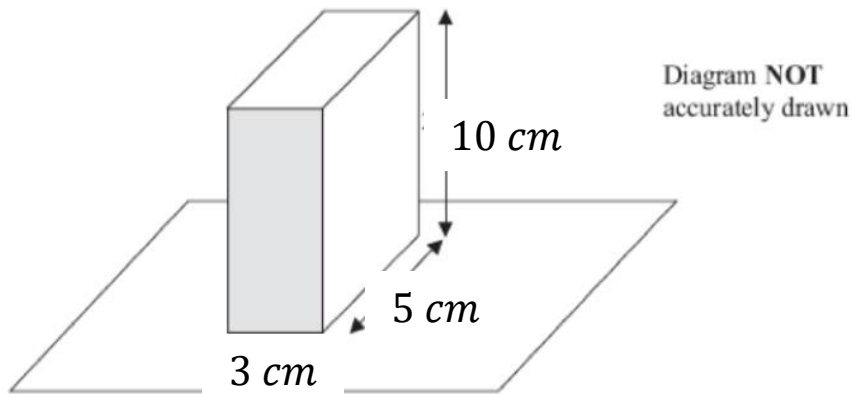
Calculate the total volume of this L-shaped prism



$$42 \text{ cm}^3$$

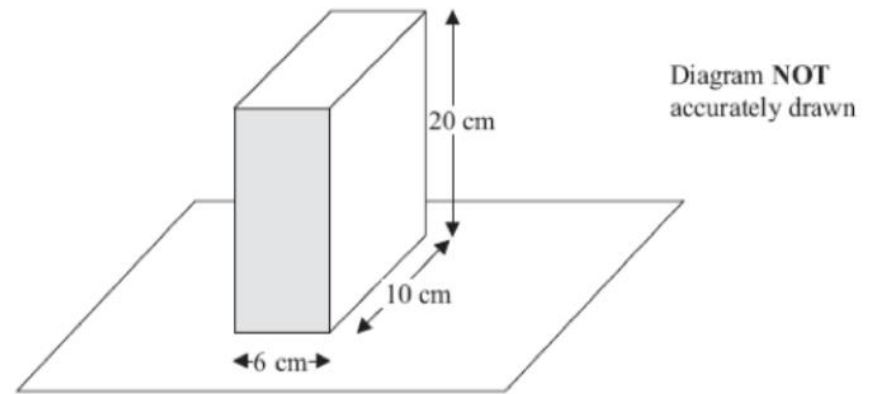
Worked example

There is liquid in the cuboid.
The depth of the liquid is 4 cm .
The cuboid is turned over so that it stands on the shaded face. Work out the depth of the liquid in the cuboid now.



Your turn

There is liquid in the cuboid.
The depth of the liquid is 8 cm .
The cuboid is turned over so that it stands on the shaded face. Work out the depth of the liquid in the cuboid now.



4 cm

Worked example

A cuboid is full of water.
The cuboid has length 30 cm ,
width 20 cm and depth 1 cm .
The water is poured into an
empty cylinder of diameter 4 cm .
Calculate the depth of water in
the cylinder

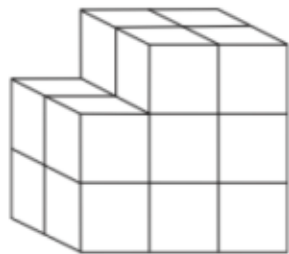
Your turn

A cuboid is full of water.
The cuboid has length 60 cm ,
width 40 cm and depth 2 cm .
The water is poured into an
empty cylinder of diameter 8 cm .
Calculate the depth of water in
the cylinder

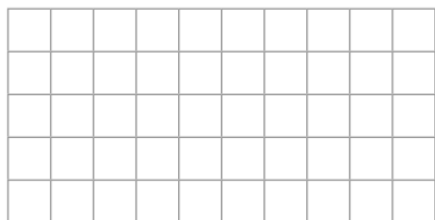
95.49 cm

Worked example

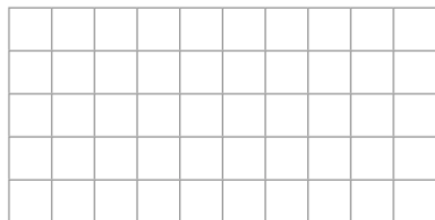
A shape is made of centimeter cubes. On the centimeter square grid, draw the elevations:



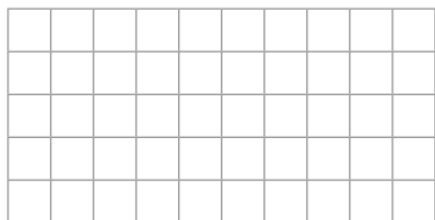
Front:



Side:

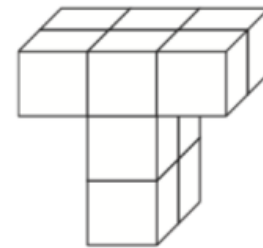


Plan

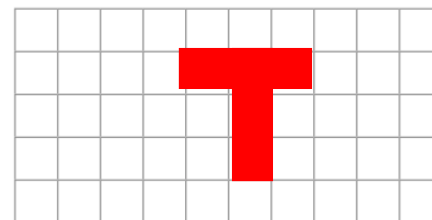


Your turn

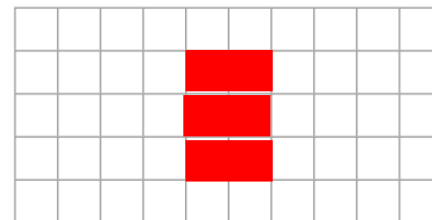
A shape is made of centimeter cubes. On the centimeter square grid, draw the elevations:



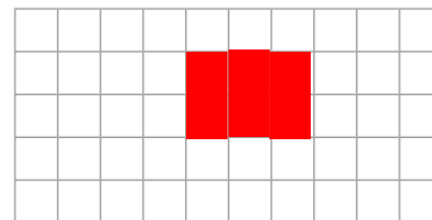
Front:



Side:

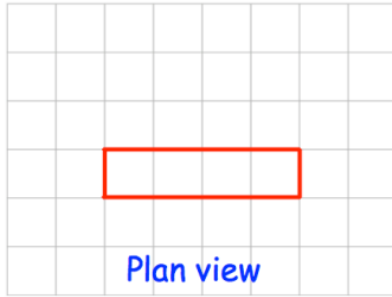
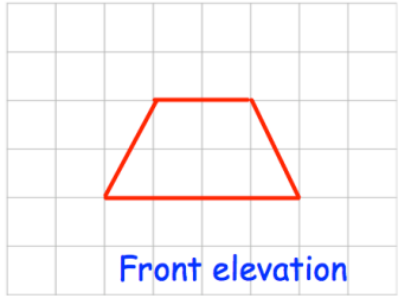


Plan



Worked example

Given the elevations



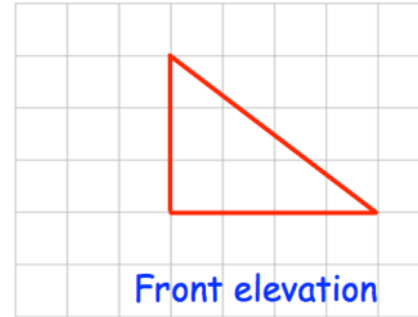
Draw the plan view



Sketch the solid shape

Your turn

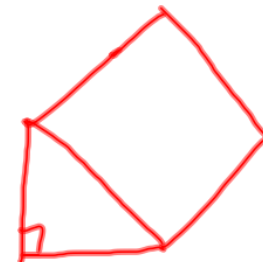
Given the elevations



Draw the plan view

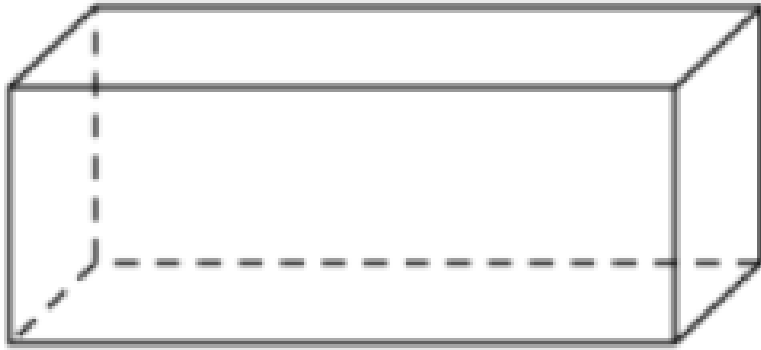


Sketch the solid shape



Worked example

For the cuboid, write down the:



Number of faces (F)

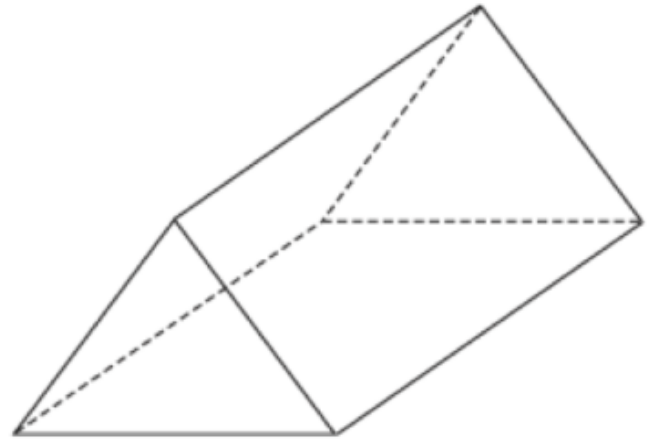
The number of edges (E)

The number of vertices (V)

Calculate $V + E - F$

Your turn

For the cuboid, write down the:



Number of faces (F) **5**

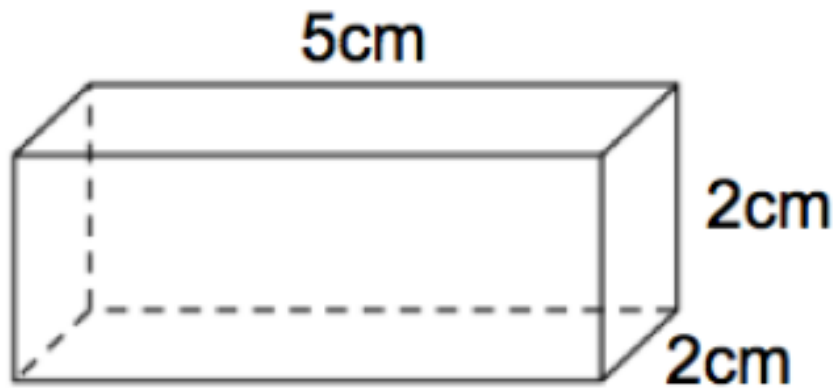
The number of edges (E) **9**

The number of vertices (V) **6**

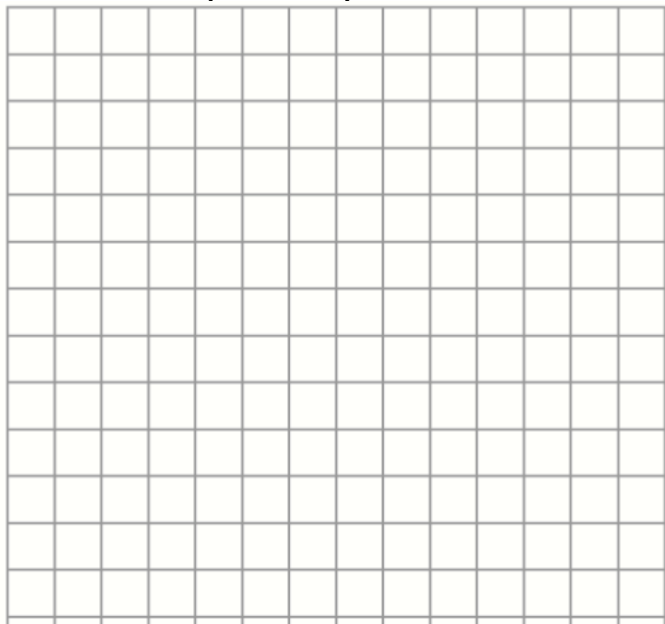
Calculate $V + E - F$ **2**

Worked example

Draw a net for the cuboid.

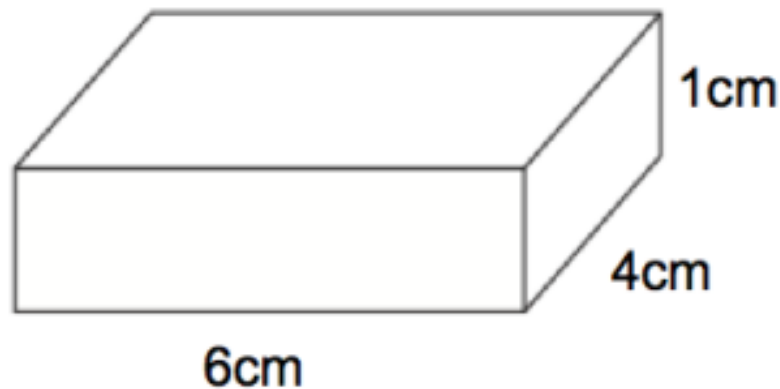


Each square represents 1 cm^2

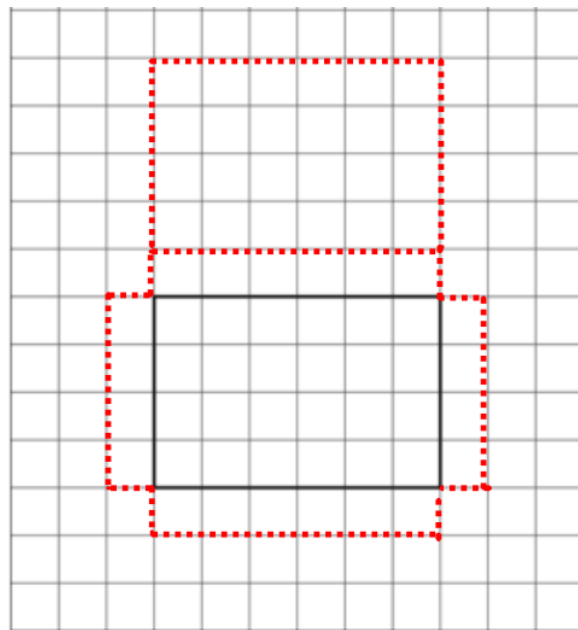


Your turn

Draw a net for the cuboid.

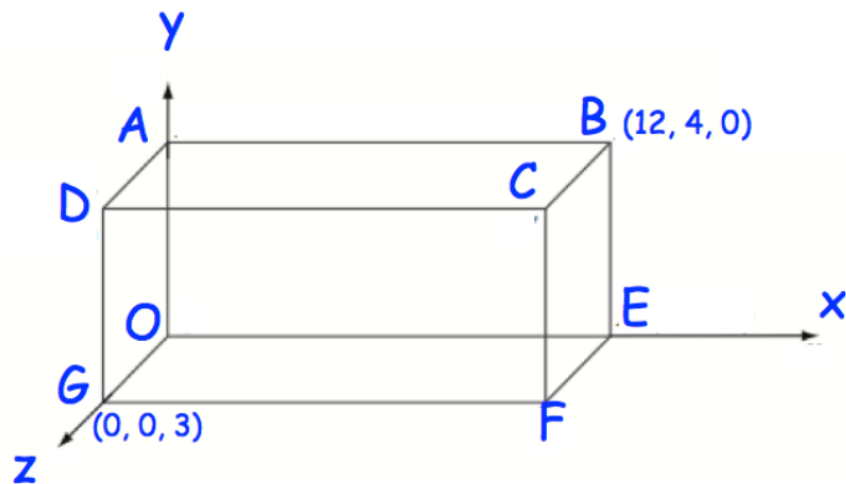


Each square represents 1 cm^2



Worked example

A cuboid is drawn on a 3D grid



Write the coordinates of:

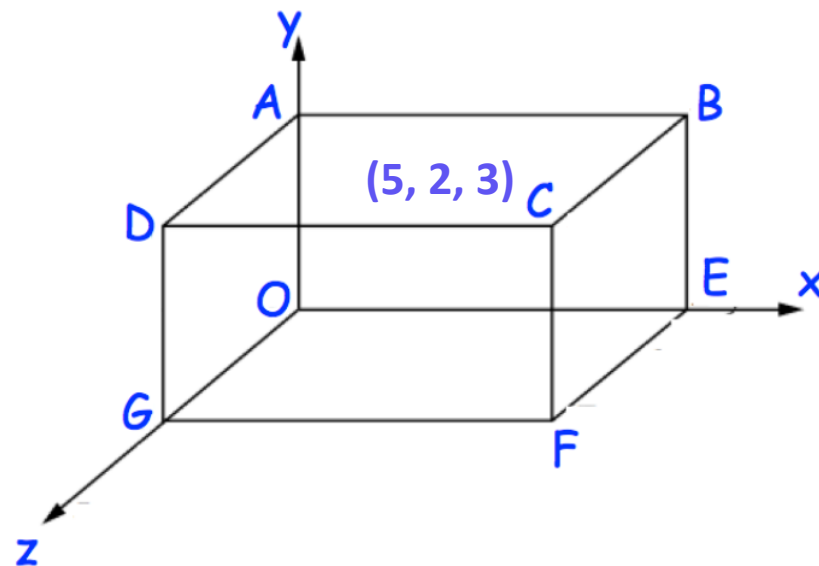
A

C

F

Your turn

A cuboid is drawn on a 3D grid



Write the coordinates of:

A (0, 2, 0)

E (5, 0, 0)

D (0, 2, 3)