

Measuring Prisms and Cylinders

Just for Fun

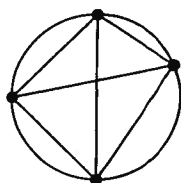
Handshakes

People are standing in a circle.
Each person shakes hands with every other person in the circle.

Draw a circle.

Then draw dots to represent the people.

Join any 2 dots to represent a handshake.



Record your results in the table.

Write a pattern for the number of handshakes.

Number of People	Number of Handshakes
1	0
2	1
3	3
4	
5	
6	
7	

Word Search

- Find the list of words in the word search table on the right. Words can be horizontal, vertical, or diagonal.

ANGLE, AREA, BASE, BOX, CAPACITY, CUBE, DECAGON, FOUR, HEXAGON, METRE, NETS, ONE, PRISM, PYRAMID, RECTANGLE, SQUARE, TWO

- Write all unused letters in order, row by row, from left to right. Separate the letters to form a phrase.

C	U	B	E	E	M	S	A	T
R	U	O	F	L	H	T	D	I
N	S	X	G	G	G	E	I	H
O	N	E	R	N	S	N	M	E
G	S	Q	U	A	R	E	A	X
A	E	A	B	T	A	E	R	A
C	A	P	A	C	I	T	Y	G
E	E	R	T	E	M	W	P	O
D	M	S	I	R	P	O	T	N

Activating Prior Knowledge

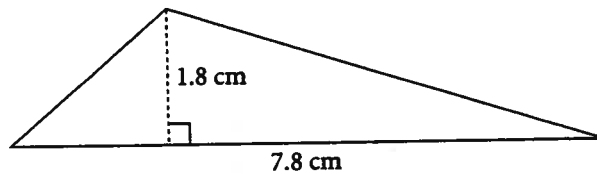
Area of Two-Dimensional Shapes

To calculate the area of this triangle, use the formula $\text{Area} = \frac{1}{2} \times \text{base} \times \text{height}$ or $A = \frac{1}{2}bh$.

Substitute $b = 7.8$ and $h = 1.8$.

$$A = \frac{1}{2}bh = \frac{1}{2}(7.8 \times 1.8) = 7.02$$

The area is about 7 cm^2 , to the nearest square centimetre.



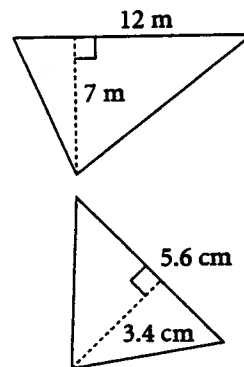
1. Calculate the area of each triangle.

a) $A = \frac{bh}{2} = \frac{\boxed{}}{2} = \underline{\hspace{2cm}}$

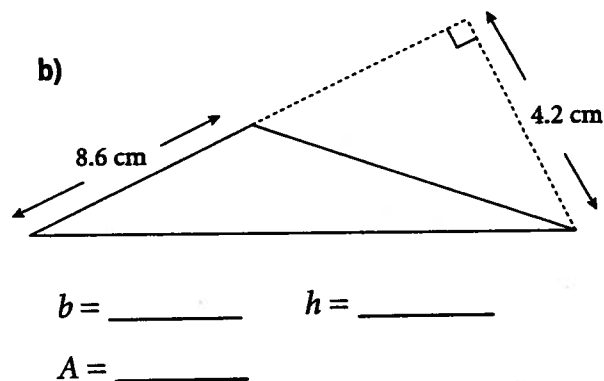
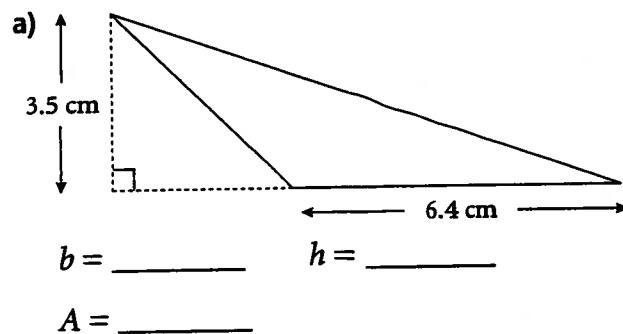
The area is $\underline{\hspace{2cm}} \text{ m}^2$.

b) $A = \frac{bh}{2}$

The area is $\underline{\hspace{2cm}}$.



2. Calculate the area of each triangle.



To calculate the area of a circle with diameter 14 cm, use the formula $\text{Area} = \pi \times \text{radius}^2$ or $A = \pi r^2$. The diameter of the circle is 14 cm, so the radius is 7 cm.

Substitute $r = 7 \text{ cm}$.

$$A = \pi r^2 = \pi \times 7^2 \approx 153.938$$

The area is about 154 cm^2 , to the nearest square centimetre.

Tip

For π , use the π key on a calculator.



3. Calculate the area of each circle, to the nearest square unit.

a) diameter = 24 cm

$$r = \frac{d}{2} = \frac{\square}{2} = \underline{\hspace{2cm}}$$

$A = \pi r^2 \doteq \underline{\hspace{2cm}}$ The area of the circle is $\underline{\hspace{2cm}}$, to the nearest square $\underline{\hspace{2cm}}$.

b) radius = 9 m

$A = \pi r^2 \doteq \underline{\hspace{2cm}}$ The area of the circle is $\underline{\hspace{2cm}}$, to the nearest square $\underline{\hspace{2cm}}$.

c) diameter = 11 mm The area of the circle is $\underline{\hspace{2cm}}$, to the nearest square $\underline{\hspace{2cm}}$.

d) radius = 8 km The area of the circle is $\underline{\hspace{2cm}}$, to the nearest square $\underline{\hspace{2cm}}$.

Circumference of a Circle

To calculate the circumference of a circle with diameter 4.8 cm, use the formula
Circumference = $\pi \times$ diameter, or $C = \pi d$.

Substitute $d = 4.8$.

$$C = \pi \times d = \pi \times 4.8 \doteq 15.080$$

The circumference of the circle is about 15.1 cm, to one decimal place.

To calculate the circumference of a circle with radius 5.2 cm, use the formula
Circumference = $2 \times \pi \times$ radius or $C = 2\pi r$.

Substitute $r = 5.2$.

$$C = 2 \times \pi \times r = 2 \times \pi \times 5.2 \doteq 32.673$$

The circumference of the circle is about 32.7 cm, to one decimal place.



4. Calculate the circumference of each circle, to one decimal place.

a) $d = 12$ cm $C = \pi \times d = \pi \times \underline{\hspace{2cm}} \doteq \underline{\hspace{2cm}}$

The circumference of the circle is $\underline{\hspace{2cm}}$, to one decimal place.

b) $r = 8$ m $C = 2 \times \pi \times r = 2 \times \pi \times \underline{\hspace{2cm}} \doteq \underline{\hspace{2cm}}$

The circumference of the circle is $\underline{\hspace{2cm}}$, to one decimal place.

c) $d = 5.6$ mm The circumference of the circle is $\underline{\hspace{2cm}}$, to one decimal place.

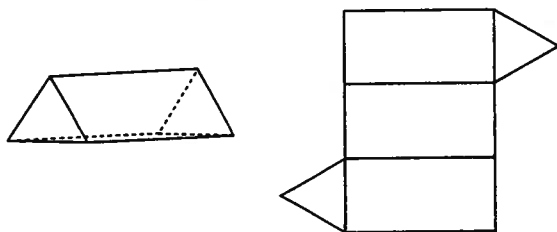
d) $r = 3.8$ m The circumference of the circle is $\underline{\hspace{2cm}}$, to one decimal place.



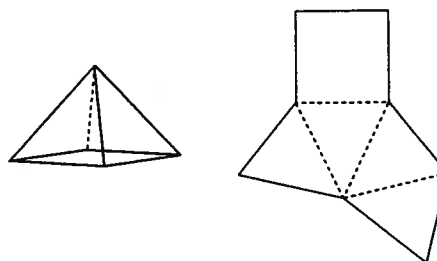
Quick Review

- A prism has two congruent bases and is named for its bases.
A pyramid has one base and the other faces are congruent triangles.
- A net is a diagram that can be folded to make an object.

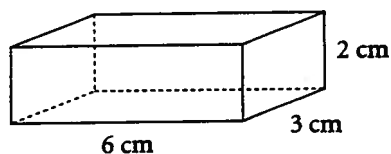
The diagram shows a triangular prism and its net.



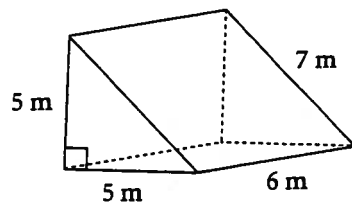
The diagram shows a square pyramid and its net.



1. Sketch a net for the right rectangular prism. Identify and name each face.



2. Sketch a net for the right triangular prism. Identify and name each face.



3. Which of the following diagrams is **not** the net of a cube?

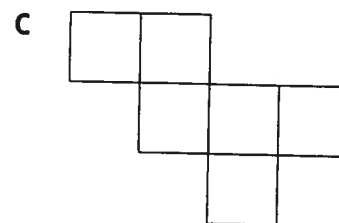
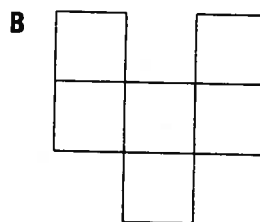
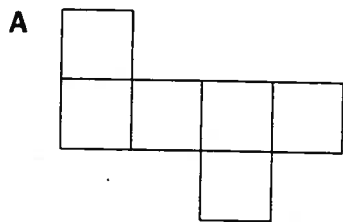
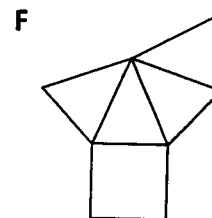
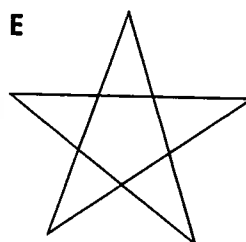
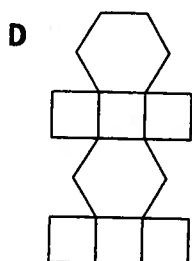
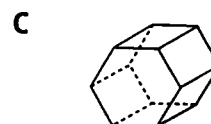
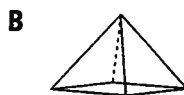


Diagram _____ is not the net of a cube.

4. a) Match each object to its net.



b) Identify and name each face of each object.

5. Use the descriptions to identify the object that has each set of faces.

a) six congruent triangles and one hexagon _____

b) four congruent equilateral triangles _____

c) two congruent squares and four congruent rectangles _____

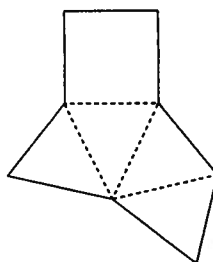
d) two congruent triangles and three rectangles _____



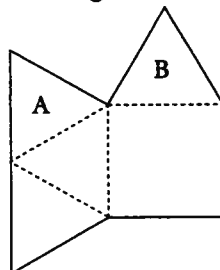
Quick Review

- To determine if a diagram is a net for an object, look at each shape and at how the shapes are arranged.

This is the net of a square pyramid.

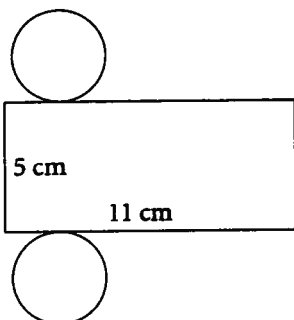


This is not the net of a square pyramid. If the design is cut out and folded, triangles A and B will coincide.

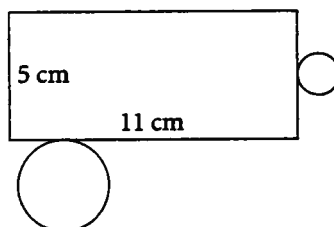


1. Which of the following diagrams is not the net of a right cylinder?

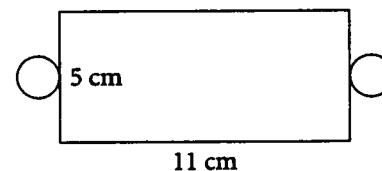
A



B



C



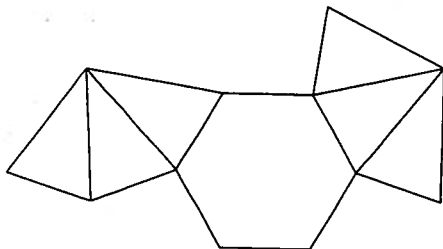
The figure in part ____ is not the net of a right cylinder.

2. Is each diagram the net of an object?

If your answer is yes, name and describe the object.

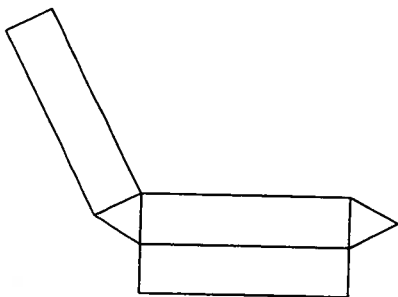
If your answer is no, what changes could you make so it could be a net?

a)



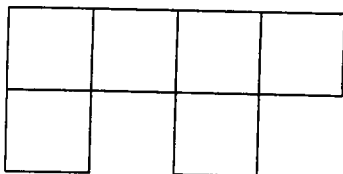
The diagram _____ the net of an object. _____

b)



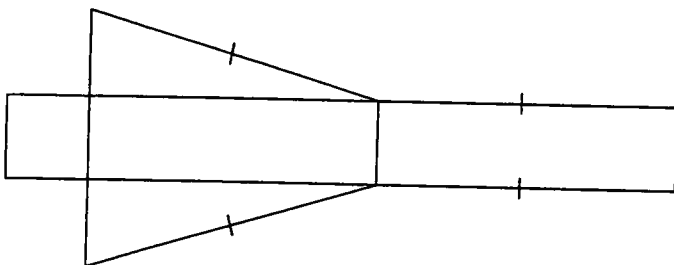
The diagram _____ the net of an object. _____

c)



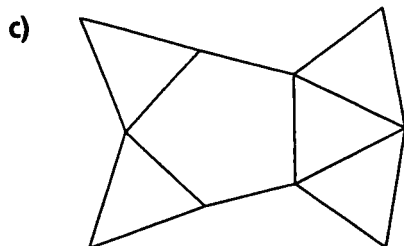
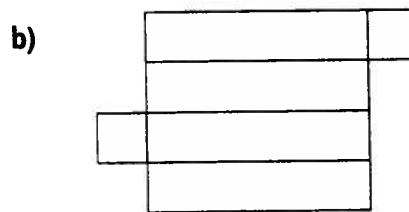
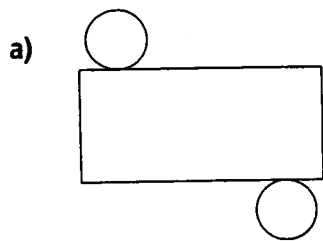
The diagram _____ the net of an object. _____

3. Name and describe the object that can be made from the net.

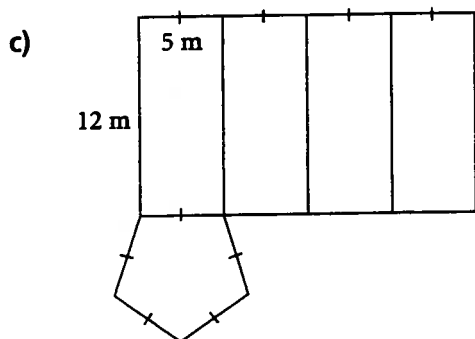
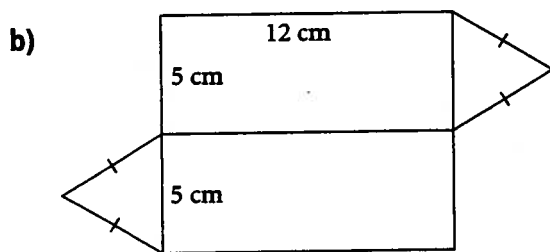
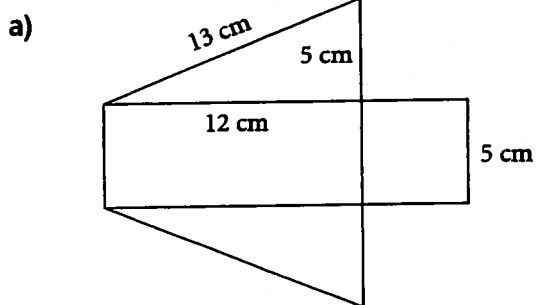


The object is a _____

4. Identify the object that each net folds to form.



5. Describe the changes that have to be made to each diagram to make it a net. Name the object that can be made from the new net.

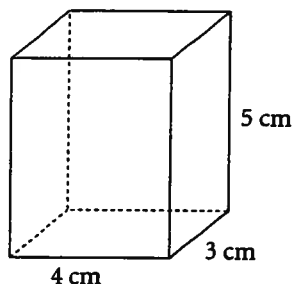




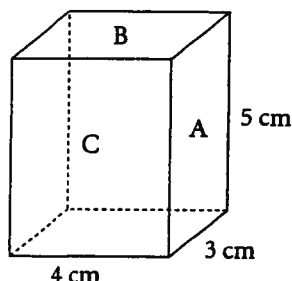
Quick Review

- The surface area of a rectangular prism is the sum of the areas of its rectangular faces. The surface area is the same as the area of the prism's net.

To determine the surface area of this rectangular prism:



Identify each rectangle with a letter.



Rectangle A has area $3 \text{ cm} \times 5 \text{ cm} = 15 \text{ cm}^2$

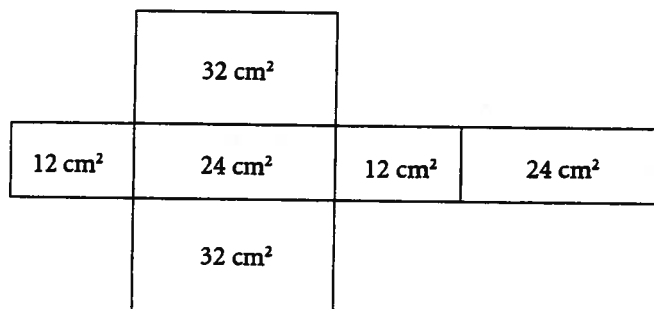
Rectangle B has area $4 \text{ cm} \times 3 \text{ cm} = 12 \text{ cm}^2$

Rectangle C has area $4 \text{ cm} \times 5 \text{ cm} = 20 \text{ cm}^2$

$$\begin{aligned}\text{Surface area} &= 2 \times 15 \text{ cm}^2 + 2 \times 12 \text{ cm}^2 + 2 \times 20 \text{ cm}^2 \\ &= 30 \text{ cm}^2 + 24 \text{ cm}^2 + 40 \text{ cm}^2 \\ &= 94 \text{ cm}^2\end{aligned}$$

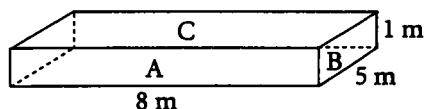
The surface area of the rectangular prism is 94 cm^2 .

1. The diagram shows the net of a right rectangular prism. The area of each face is given. Calculate the surface area of the prism.



Area = _____ + _____ + _____ + _____ + _____ + _____ = _____ cm^2

2. Determine the surface area of the rectangular prism.



Rectangle A has area _____ $\times$ _____ = _____

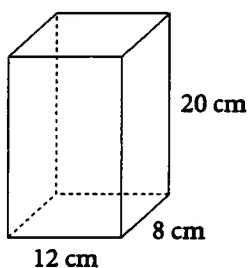
Rectangle B has area _____ $\times$ _____ = _____

Rectangle C has area _____ $\times$ _____ = _____

Surface area = $2 \times$ _____ $+ 2 \times$ _____ $+ 2 \times$ _____
= _____

3. Glenda and Louis each design a rectangular package.
Whose package has the greater surface area? Show your work.

Glenda's package:

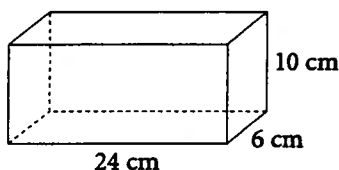


SA = _____ $+ \quad +$ _____ $+ \quad +$ _____

= _____

= _____

Louis's package:



SA = _____ $+ \quad +$ _____ $+ \quad +$ _____

= _____

= _____

_____ $>$ _____ So, _____ package has the greater surface area.

4. The surface area of a cube is 294 cm^2 .

- a) What is the area of each face of the cube?

Area of each face = _____ $\div$ _____ = _____

- b) What is the length of one edge of the cube?

Edge length = _____

5. An office building is in the shape of a right rectangular prism with height 200 m, length 60 m, and width 40 m. The top quarter of each vertical face of the building is to be covered with a large banner advertising a major sporting event. What is the total surface area to be covered with banners?

$\frac{1}{4} \times$ _____ = _____

Total area to be covered = $2 \times$ _____ $\times$ _____ $+ 2 \times$ _____ $\times$ _____ = _____



Quick Review

- To calculate the surface area of this right triangular prism, calculate the area of each face, and then sum the results.

Rectangle A has area $8 \text{ cm} \times 7 \text{ cm} = 56 \text{ cm}^2$

Rectangle B has area $14 \text{ cm} \times 7 \text{ cm} = 98 \text{ cm}^2$

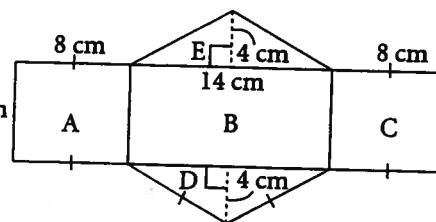
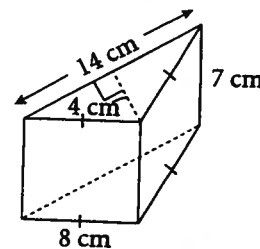
Rectangle C has area $8 \text{ cm} \times 7 \text{ cm} = 56 \text{ cm}^2$

Triangle D has area $= \frac{1}{2} \times 14 \text{ cm} \times 4 \text{ cm} = 28 \text{ cm}^2$

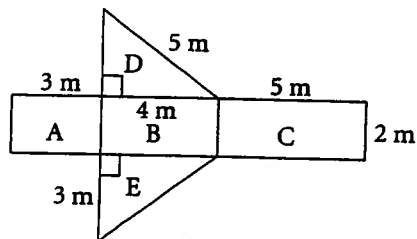
Triangle E has area $= \frac{1}{2} \times 14 \text{ cm} \times 4 \text{ cm} = 28 \text{ cm}^2$

$$\begin{aligned} \text{Surface area} &= 56 \text{ cm}^2 + 98 \text{ cm}^2 + 56 \text{ cm}^2 + 28 \text{ cm}^2 \\ &\quad + 28 \text{ cm}^2 \\ &= 266 \text{ cm}^2 \end{aligned}$$

The surface area of the triangular prism is 266 cm^2 .



1. The diagram shows the net of a right triangular prism.



Calculate the area of the net.

Rectangle A has area _____ $\times$ _____ = _____

Rectangle B has area _____ $\times$ _____ = _____

Rectangle C has area _____ $\times$ _____ = _____

Triangle D has area $\frac{1}{2} \times$ _____ $\times$ _____ = _____

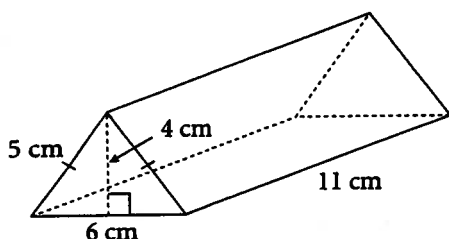
Triangle E has area $\frac{1}{2} \times$ _____ $\times$ _____ = _____

Area = _____ + _____ + _____ + _____ + _____ = _____

The area of the net is _____ m^2 .

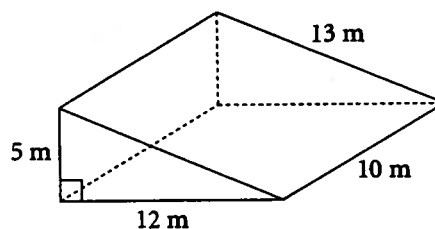
2. Calculate the surface area of each prism.

a)



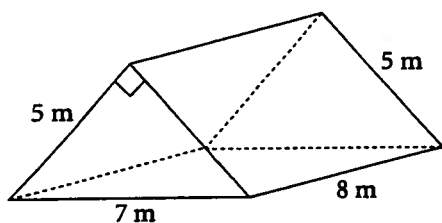
The surface area is _____ cm^2 .

b)



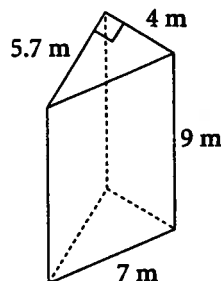
The surface area is _____ m^2 .

c)



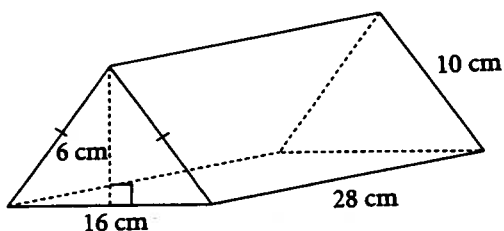
The surface area is _____ cm^2 .

d)



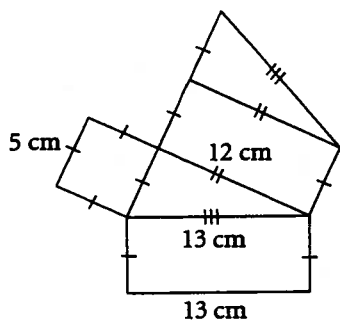
The surface area is _____ m^2 .

3. Calculate the total surface area of the right triangular prism.



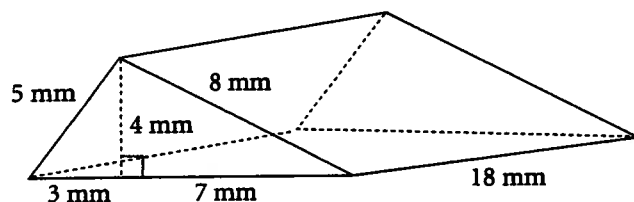
The surface area is _____ cm^2 .

4. Calculate the area of the net of a prism.



The area of the net is _____.

5. Calculate the surface area of the prism.



The surface area is _____.



Quick Review

- To find the volume of this rectangular prism:

Let the base be one of the rectangles with length 10 cm and width 4 cm.

$$\begin{aligned} A &= 10 \times 4 \\ &= 40 \end{aligned}$$

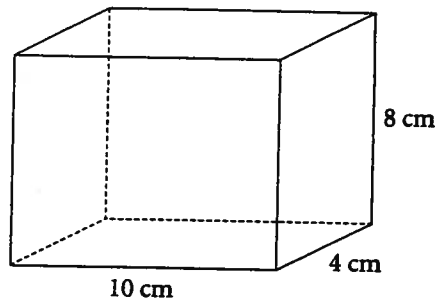
The area of the base is 40 cm^2 .

The height of the prism is 8 cm.

Use the formula $V = Ah$.

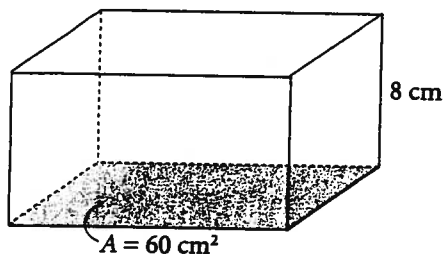
$$\begin{aligned} V &= 40 \times 8 \\ &= 320 \end{aligned}$$

The volume of the prism is 320 cm^3 .



1. The area of the base and the height are shown on each rectangular prism. Determine the volume of each prism.

a)



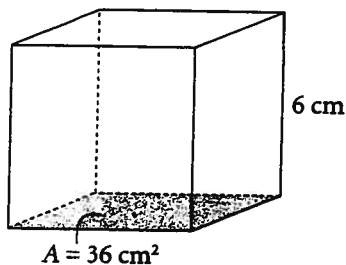
$$V = Ah$$

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

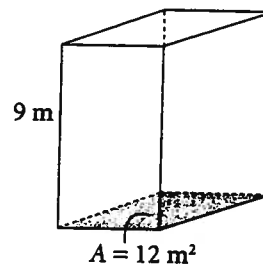
The volume is $\underline{\hspace{2cm}} \text{ cm}^3$.

b)



The volume is $\underline{\hspace{2cm}} \text{ cm}^3$.

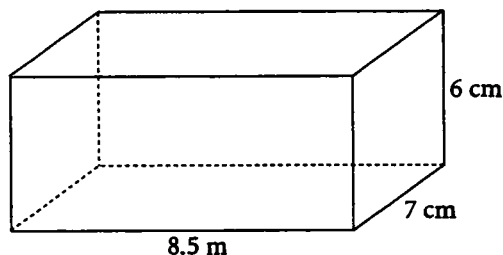
c)



The volume is $\underline{\hspace{2cm}} \text{ m}^3$.

2. Determine the volume of each prism.

a)



$$A = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

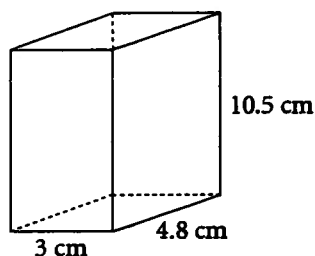
$$V = Ah$$

$$= \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

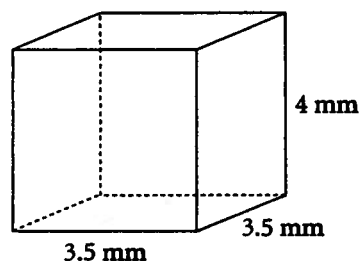
The volume is $\underline{\hspace{2cm}}$ m³.

b)



The volume is $\underline{\hspace{2cm}}$ cm³.

c)



The volume is $\underline{\hspace{2cm}}$ mm³.

3. A right rectangular prism has length 16 cm, width 12 cm, and height 5 cm.

a) What is the volume of the prism?

The volume is $\underline{\hspace{2cm}}$.

b) If the length is halved and the height is doubled, what is the new volume?

The new length is $\underline{\hspace{2cm}}$ and the new height is $\underline{\hspace{2cm}}$.

The new volume is $\underline{\hspace{2cm}}$.

4. Which right rectangular prism has the greater volume?

A length 6 m, width 4.5 m, height 3.6 m

The volume is $\underline{\hspace{2cm}}$.

B a cube with edge 4.6 m

The volume is $\underline{\hspace{2cm}}$.

The volume of prism $\underline{\hspace{1cm}}$ is greater.

5. A fish pond in the shape of a rectangular prism is 4 m long, 3 m wide, and 2 m deep.

a) What is the volume of the empty pond?

The volume is $\underline{\hspace{2cm}}$.

b) If the pond is filled to a depth of 1.5 m, what is the volume of water in the pond, in litres? Remember that 1000 cm³ = 1 L.

The height for this calculation is $\underline{\hspace{2cm}}$.

Convert the dimensions to centimetres. The length is $\underline{\hspace{2cm}}$, the width is $\underline{\hspace{2cm}}$, and the height is $\underline{\hspace{2cm}}$.

The volume is $\underline{\hspace{2cm}}$. This is the same as $\underline{\hspace{2cm}}$ L.



Quick Review

- To determine the volume of this triangular prism:

The base of the triangle is $b = 9$.

The height of the triangle is $h = 5$.

The length of the prism is $\ell = 12$.

Use the formula $V = A\ell$.

First find A .

$$A = \frac{1}{2}bh \text{ or } A = \frac{bh}{2}$$

Substitute $b = 9$ and $h = 5$.

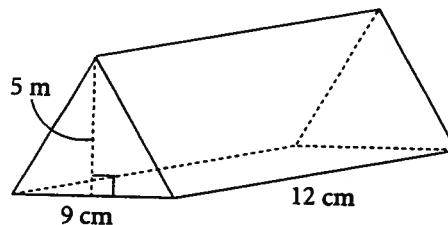
$$\begin{aligned} A &= \frac{1}{2} \times 9 \times 5 \\ &= 22.5 \end{aligned}$$

Now find V .

Substitute $A = 22.5$ and $\ell = 12$ into $V = A\ell$.

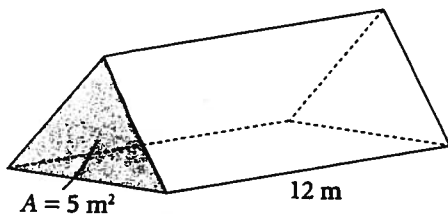
$$\begin{aligned} V &= 22.5 \times 12 \\ &= 270 \end{aligned}$$

The volume of the prism is 270 cm^3 .



1. The area of the base and the length of each prism are shown. Calculate the volume of each prism.

a)

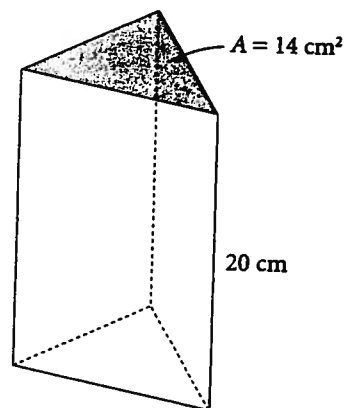


$$V = A\ell$$

$$\begin{aligned} &= \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} \end{aligned}$$

The volume is $\underline{\hspace{2cm}}$.

b)



The volume is $\underline{\hspace{2cm}}$.

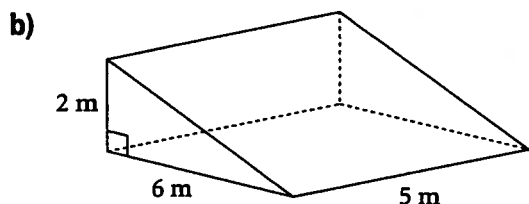
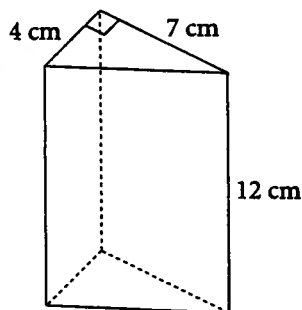
2. Determine the volume of each prism.

a) $A = \underline{\hspace{1cm}} bh$
 $= \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} \times \underline{\hspace{1cm}}$
 $= \underline{\hspace{1cm}}$

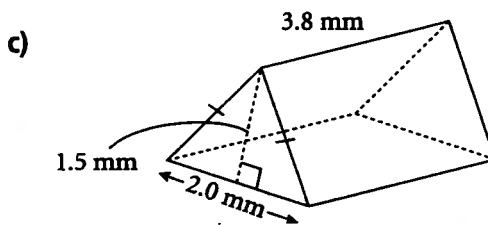
$V = A\ell$

$= \underline{\hspace{1cm}} \times \underline{\hspace{1cm}}$
 $= \underline{\hspace{1cm}}$

The volume is .



The volume is .



The volume is .

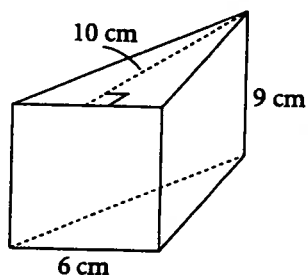
- 3.** The volume of a right triangular prism is 27.8 cm^3 . The length of the prism is 5 cm. What is the area of each triangular face?

$V = A\ell$, so $A = \underline{\hspace{1cm}}$.

The area of each triangular face is .

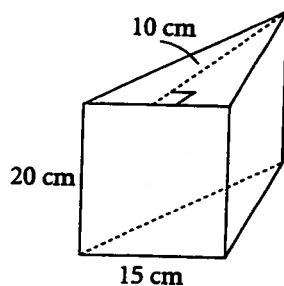
- 4.** The volume of a right triangular prism is 6 cm^3 . Determine the possible whole-number values for A and ℓ . How many different solutions can you find? Use a table to organize your solutions.

5. Determine the volume of the prism.



The volume is _____.

6. a) Determine the volume of the prism.



The volume is _____.

- b) Suppose the prism contains 1200 mL of water. What is the depth of the water?

Let ℓ represent the depth. Remember that $1 \text{ cm}^3 = 1 \text{ mL}$.

$$V = 1200 \text{ mL} = \underline{\hspace{2cm}} \text{ cm}^3$$

$$A = \frac{1}{2} \times \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

$$V = A\ell$$

$$\underline{\hspace{2cm}} = \underline{\hspace{2cm}} \times \ell$$

$$\ell = \underline{\hspace{2cm}}$$

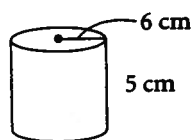
The depth of the water is _____.

Surface Area of a Right Cylinder

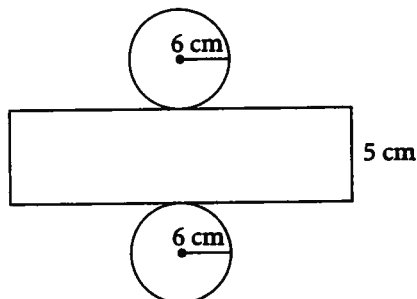


Quick Review

► To find the surface area of this cylinder:



Sketch the net.



Surface area = $2 \times$ area of one circle + area of the rectangle

The area of the circle is $A = \pi r^2$

Substitute $r = 6$.

$$A = \pi \times 6^2$$

$$\doteq 113.10$$

The area of the rectangle = circumference $\times$ height
 $= 2\pi r \times h$

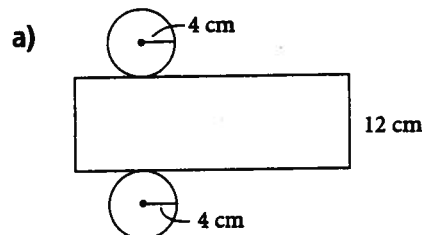
Substitute $r = 6$ and $h = 5$.

The area of the rectangle = $2\pi \times 6 \times 5$
 $\doteq 188.50$

Surface area $\doteq 2 \times 113.10 + 188.50$
 $= 414.70$

The surface area of the cylinder is about 415 cm^2 .

1. Determine the area of each net, to the nearest square centimetre.



Area of net = $2 \times$ area of one circle
 + area of the rectangle

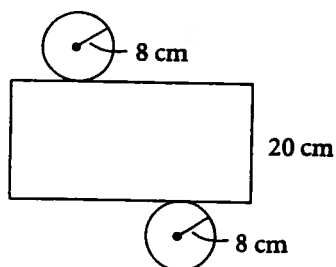
$$= 2 \times \pi r^2 + 2\pi r \times h$$

$$= 2 \times \pi \times \underline{\hspace{1cm}} + 2 \times \pi \times \underline{\hspace{1cm}} \times \underline{\hspace{1cm}}$$

$$\doteq \underline{\hspace{2cm}}$$

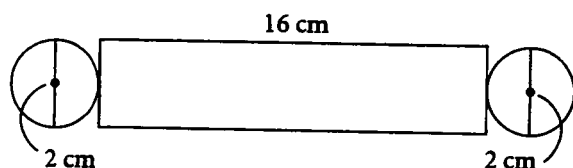
The area of the net is $\underline{\hspace{2cm}}$, to the nearest square centimetre.

b)



The area of the net is _____, to the nearest square centimetre.

c)



The diameter of each circle is _____, so the radius of each circle is _____.

The area of the net is _____, to the nearest square centimetre.

2. Calculate the surface area of each cylinder, to the nearest square unit.

a) radius 8 cm, height 12 cm

$$\begin{aligned} \text{Surface area of cylinder} &= 2 \times \text{area of one circle} + \text{area of the rectangle} \\ &= 2 \times \pi r^2 + 2\pi r \times h \\ &= 2 \times \pi \times \underline{\hspace{1cm}}^2 + 2 \times \pi \times \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} \\ &\doteq \underline{\hspace{2cm}} \end{aligned}$$

The surface area is _____, to the nearest square _____.

b) diameter 9 m, height 6.8 m

The diameter of each circle is _____, so the radius of each circle is _____.

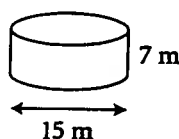
The surface area is _____, to the nearest square _____.

c) diameter 7.2 cm, height 9.3 cm

The surface area is _____, to the nearest square _____.

3. Calculate the outside surface area each cylinder, to one decimal place. The cylinders are open at one end.

a)

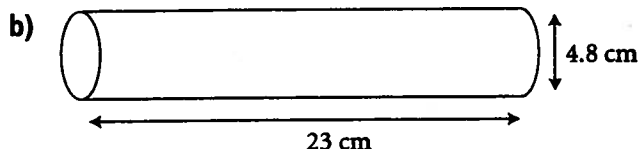


The diameter is _____, so the radius is _____.

Surface area of cylinder = area of circle + area of the rectangle

$$\begin{aligned} &= \pi r^2 + 2\pi r \times h \\ &= \pi \times \underline{\hspace{1cm}}^2 + 2 \times \pi \times \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} \\ &\doteq \underline{\hspace{2cm}} \end{aligned}$$

The surface area of the cylinder is _____, to one decimal place.



The diameter is _____, so the radius is _____.

The surface area of the cylinder is _____, to one decimal place.

4. Cylindrical rollers are used in a steel mill. One roller has diameter 1.8 m and length 2.6 m. What is the area of the curved surface of the roller?

The diameter is _____, so the radius is _____

Curved surface area of roller = area of the rectangle

$$= 2\pi r \times h$$

$$= 2 \times \pi \times \text{_____} \times \text{_____}$$

$$\doteq \text{_____}$$

The area of the curved surface of the roller is _____, to one decimal place.

5. A cylinder with no top and no bottom has an outside surface area of 377 cm^2 . The height of the cylinder is 10 cm.

- a) What is the circumference of the base of the cylinder?

Curved surface area of cylinder = circumference $\times$ height

$$\text{_____} = \text{circumference} \times \text{_____}$$

$$\text{_____} = \text{circumference}$$

The circumference of the base is _____.

- b) What is the radius of the base of the cylinder?

Circumference of base = $2\pi \times r$

$$\text{_____} = 2\pi \times r$$

$$r = \text{_____}$$

$$r \doteq \text{_____}$$

The radius of the base is _____.

Volume of a Right Cylinder



Quick Review

- Calculate the volume of a cylinder with base area 312 m^2 and height 9 m .

$$\begin{aligned}\text{Volume of a cylinder} &= \text{base area} \times \text{height} \\ &= 312 \times 9 \\ &= 2808\end{aligned}$$

The volume of the cylinder is 2808 m^3 .

- Calculate the volume of a cylinder with diameter 18 cm and height 15 cm .

Use the formula for the volume of a cylinder:

$$V = \pi r^2 h$$

The diameter is 18 cm , so the radius is 9 cm .

Substitute $r = 9$ and $h = 15$.

$$\begin{aligned}V &= \pi \times 9^2 \times 15 \\ &\approx 3817\end{aligned}$$

The volume of the cylinder is 3817 cm^3 .

1. The base area and height of each cylinder are given. Calculate the volume, to the nearest cubic unit.

a)

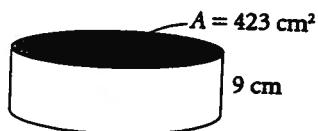


Volume of a cylinder = base area $\times$ height

$$\begin{aligned}&= \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}}\end{aligned}$$

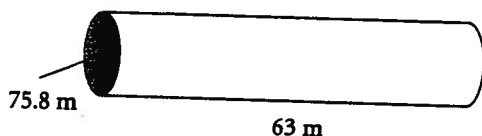
The volume of the cylinder is _____, to the nearest cubic _____.

b)



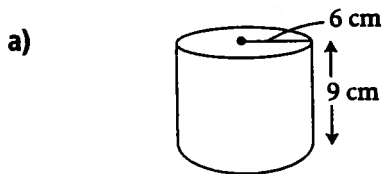
The volume of the cylinder is _____, to the nearest cubic _____.

c)



The volume of the cylinder is _____, to the nearest cubic _____.

2. Calculate the volume of each cylinder, to the nearest cubic unit.

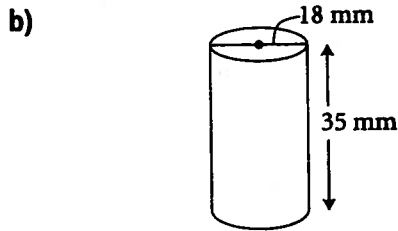


$$V = \pi r^2 h$$

$$= \pi \times \underline{\hspace{1cm}} \times \underline{\hspace{1cm}}$$

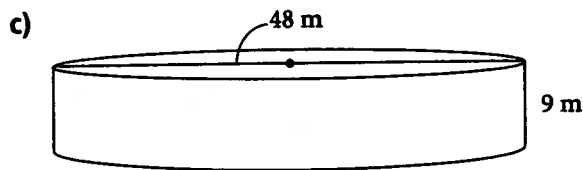
$$\doteq \underline{\hspace{1cm}}$$

The volume of the cylinder is _____, to the nearest cubic _____.



The diameter is _____, so the radius is _____

The volume of the cylinder is _____, to the nearest cubic _____.



The diameter is _____, so the radius is _____.

The volume of the cylinder is _____, to the nearest cubic _____.

3. Calculate the volume of each cylinder, to one decimal place.

a) radius 12 cm, height 12 cm

The volume of the cylinder is _____, to one decimal place.

b) diameter 16.8 m, height 5.4 m

The diameter is _____, so the radius is _____.

The volume of the cylinder is _____, to one decimal place.

4. Which of the following cylinders has the greater volume? By how much?

A a cylinder with radius 6.4 cm, height 3.2 cm

B a cylinder with radius 4.3 cm, height 7.2 cm

Cylinder A has volume _____ cm^3 and cylinder B has volume _____ cm^3 , so cylinder _____ has the greater volume by _____ cm^3 .

5. a) Calculate the volume of a cylinder with radius 5 cm and height 10 cm, to one decimal place.

The volume is _____.

b) What happens to the volume of the cylinder in part a) if the radius is doubled?

Double the radius is _____.

The new volume is _____, which is _____ times the original volume.

c) What happens to the volume of the cylinder in part a) if the height is doubled?

Double the height is _____.

The new volume is _____, which is _____ times the original volume.

In Your Words

Unit 4

Here are some of the important mathematical words of this unit.
Build your own glossary by recording definitions and examples here. The first one is done for you.

net *a pattern that can
be folded to make a solid*

polyhedron

regular prism

regular pyramid

surface area

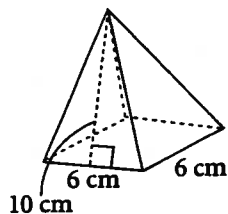
volume

List other mathematical words you need to know.

Unit Review

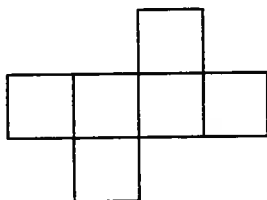
LESSON

- 4.1 1. Sketch a net of the square pyramid.

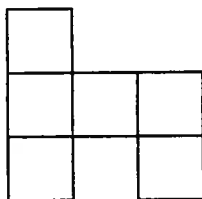


2. Which of the following is not the net of a cube?

A



B



C

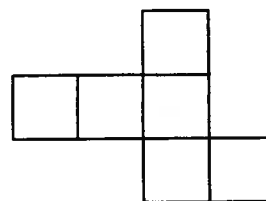
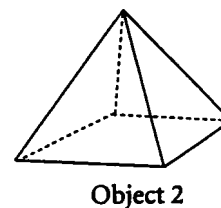
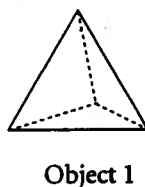
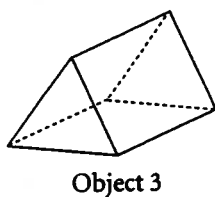
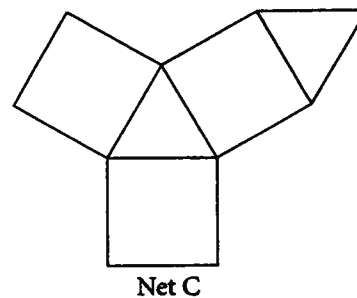
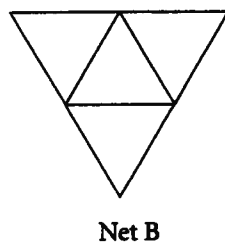
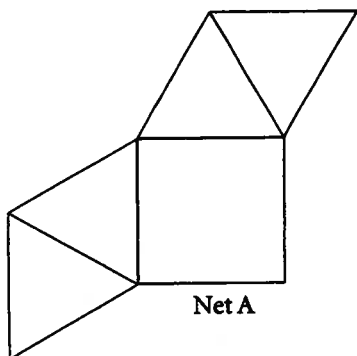
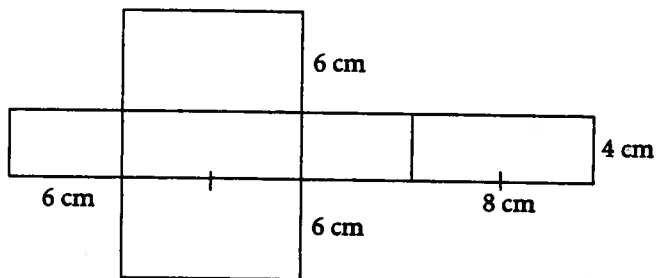


Figure _____ is not the net of a cube.

- 4.2 3. Match each net with the corresponding object.



- 4.3 4. Calculate the area of the net of the right rectangular prism.



The area of the net is _____.

- 4.3 5. A cube has a surface area of 384 cm^2 .

4.5

- a) What is the length of one edge of the cube?

The area of one face of the cube is $384 \text{ cm}^2 \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$.

Thus, the length of one edge of the cube is _____.

- b) What is the volume of the cube?

The volume of the cube is _____.

6. a) Sketch all possible right rectangular prisms with volume 8 cm^3 , where each edge length must be a whole number of centimetres. State the dimensions of each.

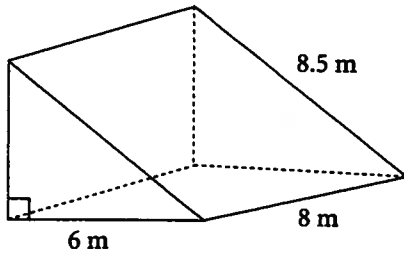
Record your results in this table.

Length	Width	Height	Sketch

- b) Calculate the surface area of each prism in the table.

_____, _____, _____

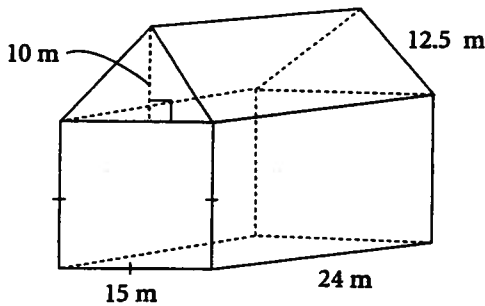
- 4.4 7. Calculate the surface area of the prism.



The surface area is _____.

- 4.5 8. Calculate the volume of the object.

4.6



The volume of the triangular prism is _____.

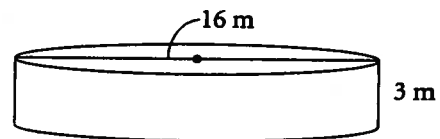
The volume of the rectangular prism is _____.

The total volume is _____.

4.7

- 4.8 9. A cylindrical water tank is open at the top.

- a) Calculate the volume of the tank, to the nearest cubic metre.



The diameter is _____, so the radius is _____.

The volume of the tank is _____, to the nearest cubic metre.

- b) If the inside of the tank is to be painted, including the floor, what is the area to be painted, to the nearest square metre?

The area to be painted is _____, to the nearest square metre.