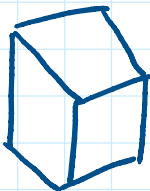


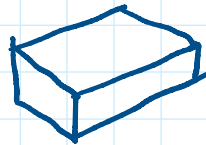
A prism is a solid object which has the same cross section all along its length

Egs

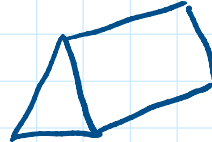
Cube



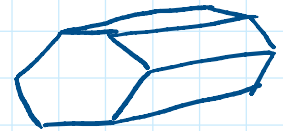
cuboid



Triangular



Hexagonal



Log tables

Pg 11

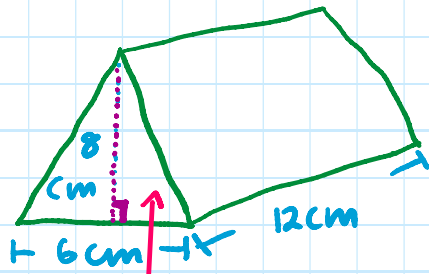
Solid of uniform cross-section  
(Prism)

$$V = Bh$$

B is the area of the base.

The volume of any solid of height (h) and uniform cross section is given by  $V = Bh$

Eg 1) The triangular prism is shown in the diagram



Cross section  
"face of the prism"

Find

1) The area of the triangular cross section

2) The volume of the prism?

Solution

1) <sup>Triangle</sup>  $\Delta$  cross section

Area =  $\frac{1}{2}$  base  $\times$  height

$$\frac{1}{2} (6) \times 8 = 24 \text{ cm}^2$$

2) Use the formula  $V = Ah$   
 $A$  = area of the cross section  
 $h$  = length

$$V = 24 \text{ cm}^2 \times 12 = 288 \text{ cm}^3$$

H/W

New Pg 131 Q1+2

OLD Pg 107 Q1+2



T&T2 6.5  
Prisms

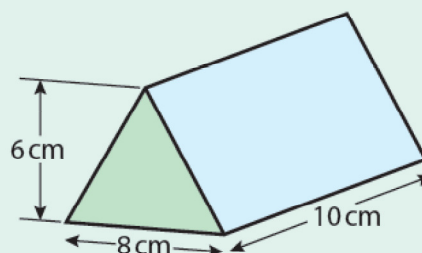


T&T2 6.5  
Prisms.pptx

## Section 6.5 Prisms

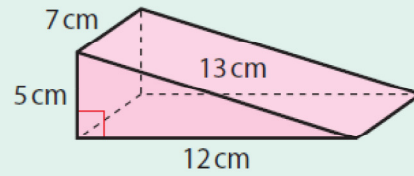
### Example 1

Find the area of the triangular cross-section of this prism.  
Hence find the volume of the prism.



## Example 2

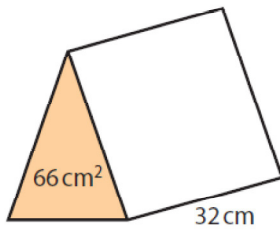
Find the total surface area of this triangular prism by using its net.



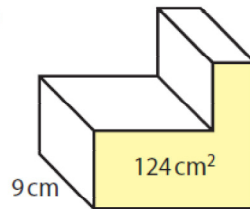
## Exercise 6.5

1. The areas of the cross-sections of these prisms are given. Find the volume of each prism.

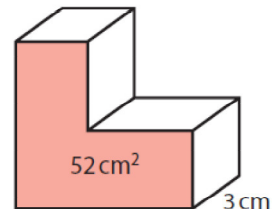
(i)



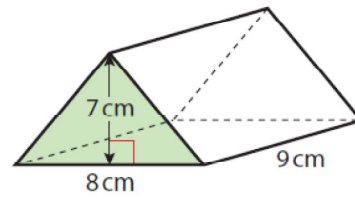
(ii)



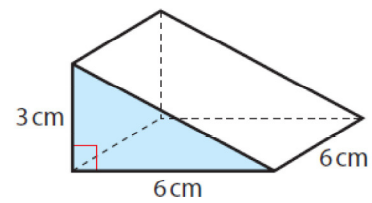
(iii)



2. (i) What is the area of the cross-section of this triangular prism?  
(ii) What is the volume of the prism?

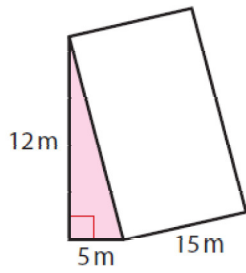


3. The cross-section of this prism is a right-angled triangle.  
Work out the volume of this prism.

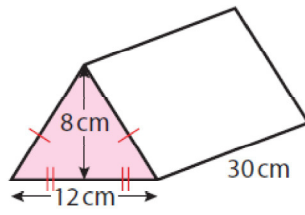


4. Work out the volume of each of these prisms:

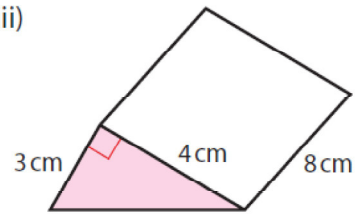
(i)



(ii)

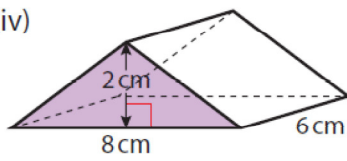


(iii)

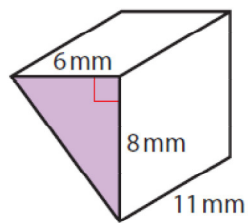


4. Work out the volume of each of these prisms:

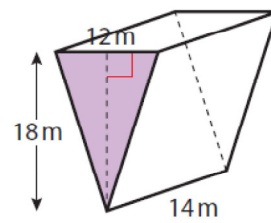
(iv)



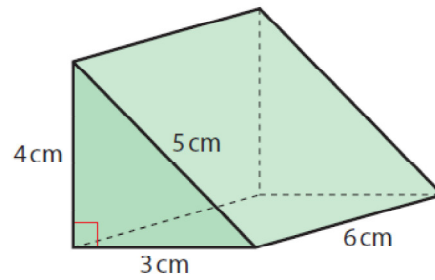
(v)



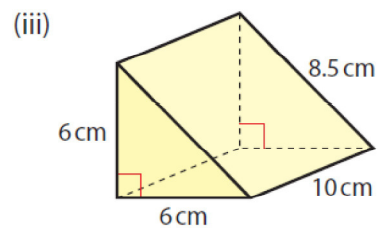
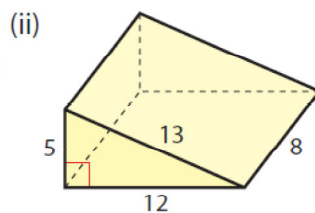
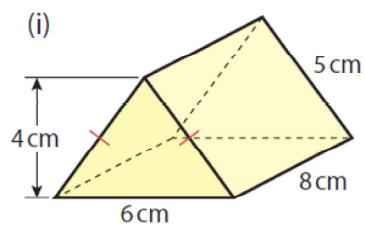
(vi)



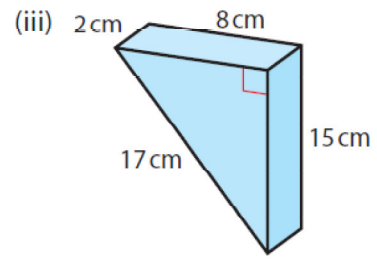
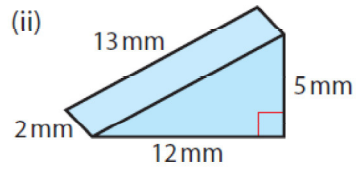
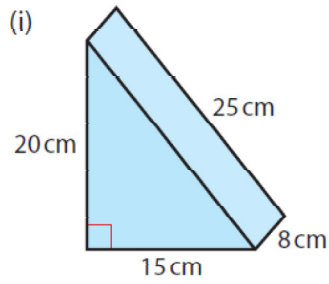
5. (i) How many faces has this prism?  
 (ii) How many faces are triangular in shape?  
 (iii) Work out the total surface area of the prism.



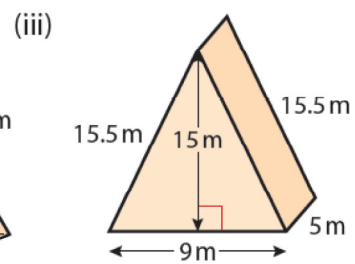
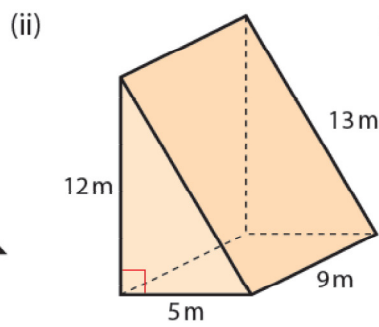
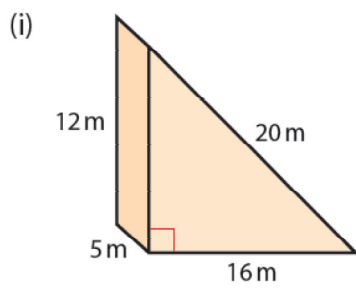
6. Find the total surface area of each of these prisms.



7. Find the total surface areas of these prisms:



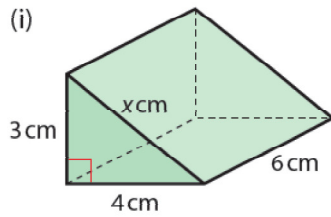
8. Find (a) the volume (b) the surface area of each of these prisms:



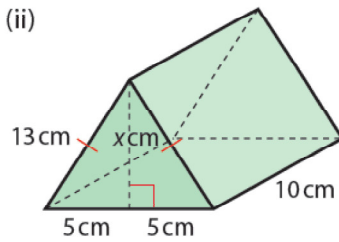


9. In each of the following questions, use Pythagoras' Theorem to calculate the unknown length,  $x$ , and then calculate the surface area.

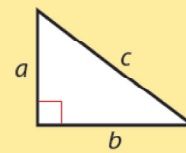
(i)



(ii)



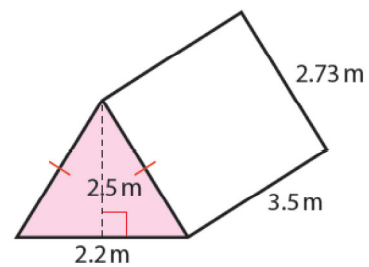
Pythagoras' Theorem



$$c^2 = a^2 + b^2$$

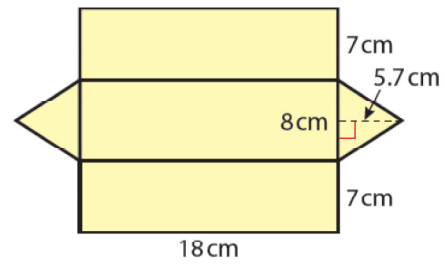
10. Caroline manufactures tents, as shown on the right.

- (i) Find the surface area of the tent, including the floor.
- (ii) Caroline buys material at €20 per square metre. How much does it cost Caroline for the material to make a tent?  
Give your answer correct to the nearest €10.



**11.** This is the net of a triangular prism.

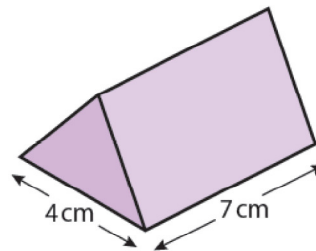
- Find (i) the volume of the prism  
(ii) the surface area of the prism.



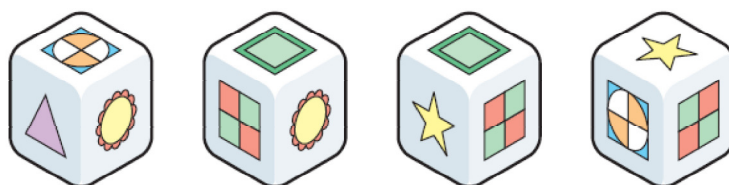
**12.** This is a triangular prism.

The ends of the prism are equilateral triangles.

- (i) Draw a rectangle 7 cm by 4 cm in the middle of a sheet of paper.  
(ii) Use this rectangle to complete an accurate net for this prism.

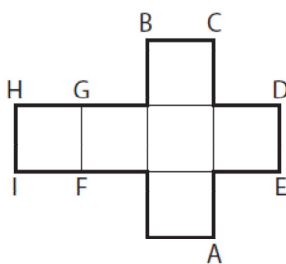


13. Here are four pictures of the same cube.



Which shapes are opposite each other?

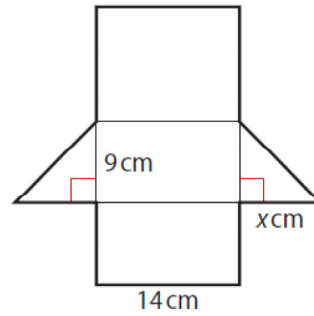
14. This is the net of a cube.



When the net is folded to make a cube, which two other vertices meet at A?

15. This is the net of a 3-D object.

- (i) When this net is folded, describe the figure it will make.
- (ii) If the volume of the figure is  $378 \text{ cm}^3$ , find the value of  $x$ .



## Answers

### Exercise 6.5

- 1. (i)  $2112 \text{ cm}^3$  (ii)  $116 \text{ cm}^3$  (iii)  $156 \text{ cm}^3$
- 2. (i)  $28 \text{ cm}^2$  (ii)  $252 \text{ cm}^3$
- 3.  $54 \text{ cm}^3$
- 4. (i)  $450 \text{ m}^3$  (ii)  $1440 \text{ cm}^3$  (iii)  $48 \text{ cm}^3$   
(iv)  $48 \text{ cm}^3$  (v)  $264 \text{ mm}^3$  (vi)  $1512 \text{ m}^3$
- 5. (i) 5 (ii) 2 (iii)  $84 \text{ cm}^2$
- 6. (i)  $152 \text{ cm}^2$  (ii) 300 sq. units  
(iii)  $241 \text{ cm}^2$
- 7. (i)  $780 \text{ cm}^2$  (ii)  $120 \text{ mm}^2$  (iii)  $200 \text{ cm}^2$
- 8. (i) (a)  $480 \text{ m}^3$  (b)  $432 \text{ m}^2$   
(ii) (a)  $270 \text{ m}^3$  (b)  $330 \text{ m}^2$   
(iii) (a)  $337.5 \text{ m}^3$  (b)  $335 \text{ m}^2$
- 9. (i)  $x = 5$ ;  $84 \text{ cm}^2$  (ii)  $x = 12$ ;  $480 \text{ cm}^2$
- 10. (i)  $32.31 \text{ m}^2$  (ii) €650

## Answers

11. (i)  $410.4 \text{ cm}^3$       (ii)  $441.6 \text{ cm}^2$
13. • Star opposite yellow circle with red border  
• Square with green border opposite square with circle in it  
• Triangle opposite red and green square
14. E, I
15. (i) triangular prism      (ii) 6