

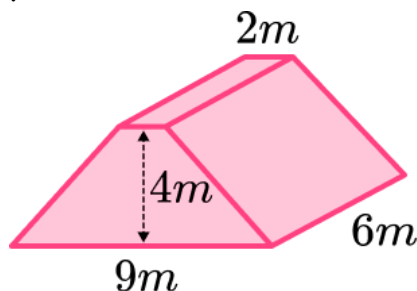
Volume and Surface Area of Prisms - Worksheet

Skill

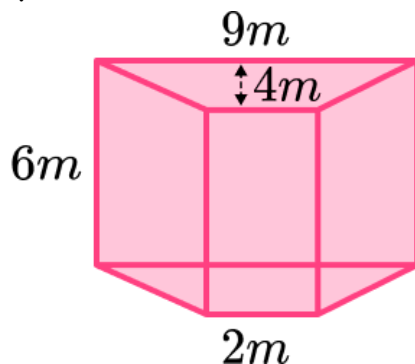
Group A - Volume

Work out the volume of each prism

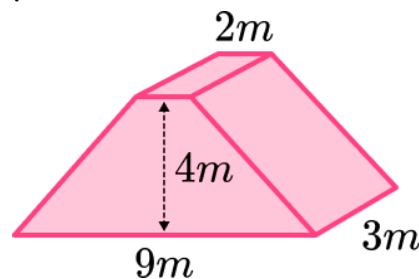
1)



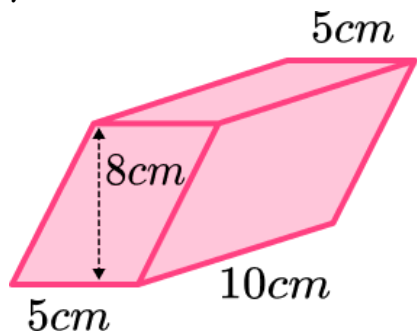
2)



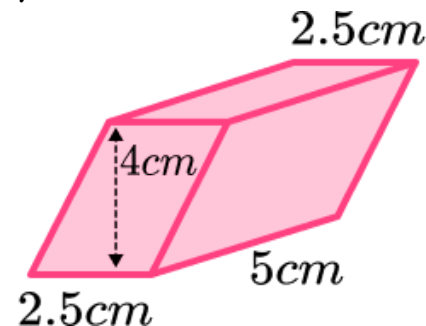
3)



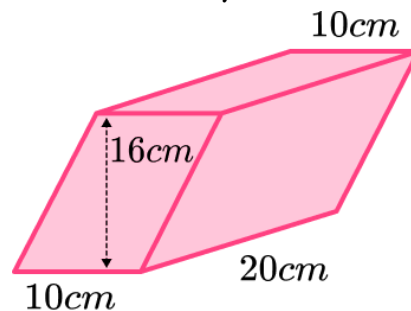
4)



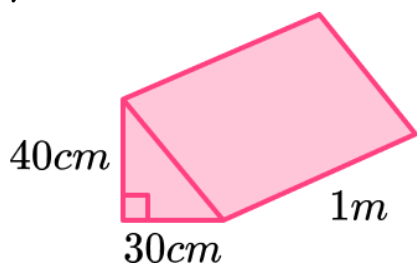
5)



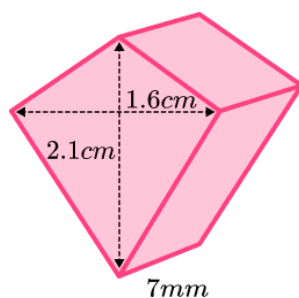
6)



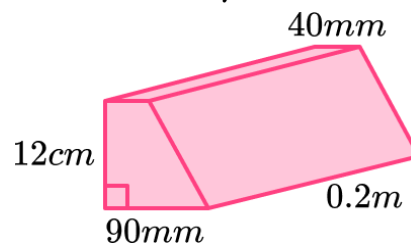
7)



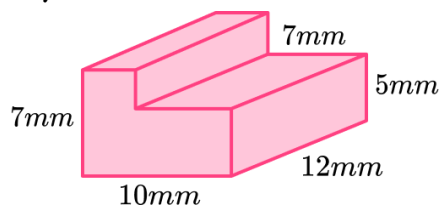
8)



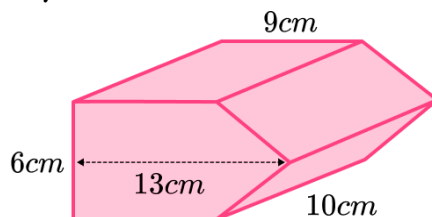
9)



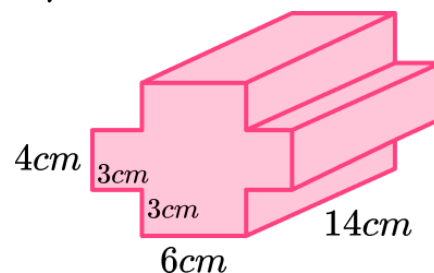
10)



11)



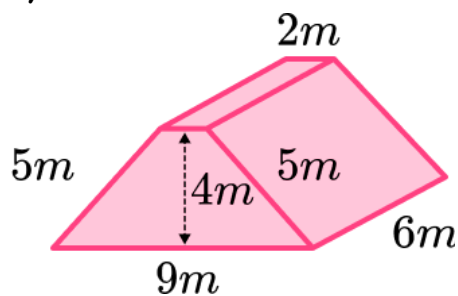
12)



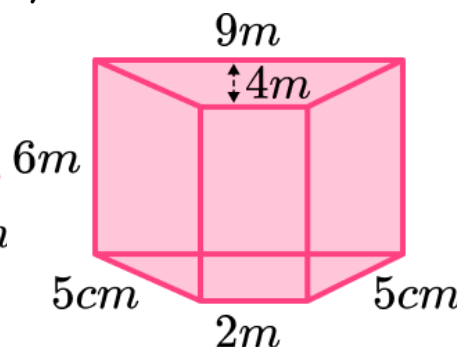
Group B - Surface Area

Work out the surface area of each prism

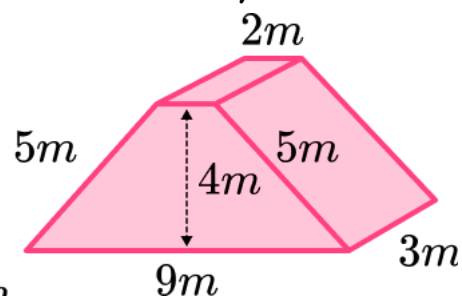
1)



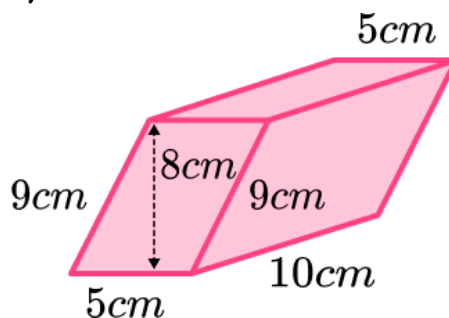
2)



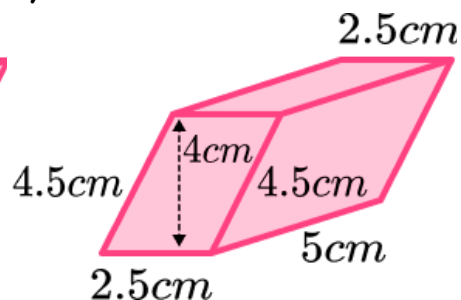
3)



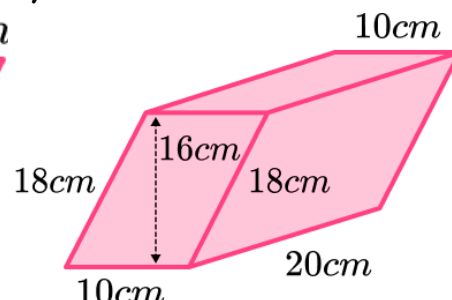
4)



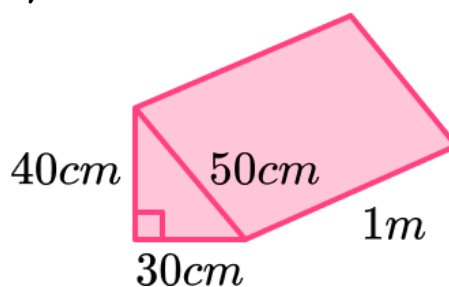
5)



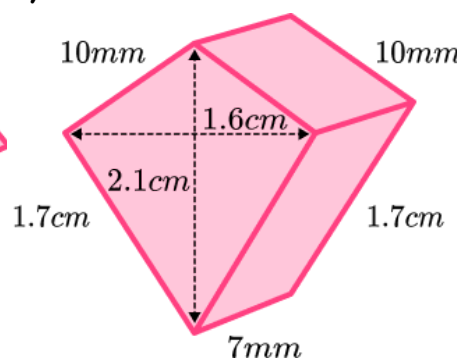
6)



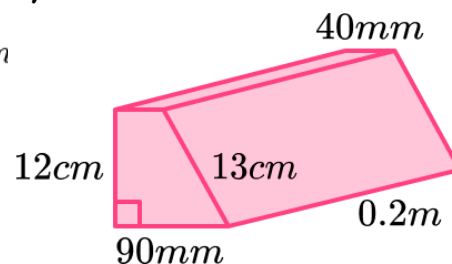
7)



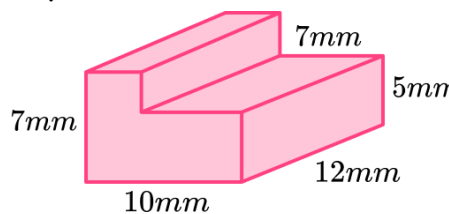
8)



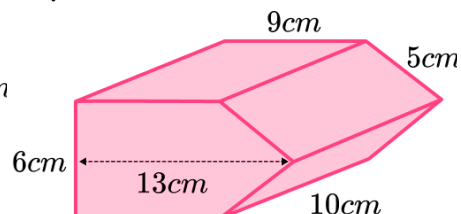
9)



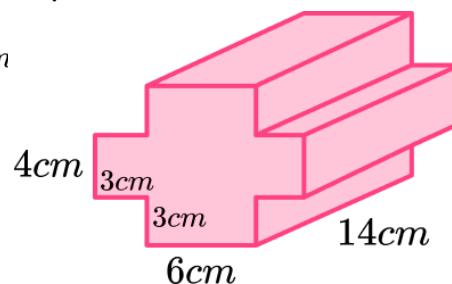
10)



11)



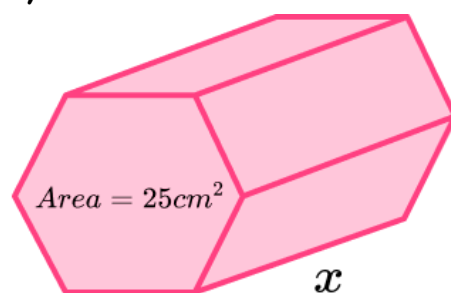
12)



Group C - Volume problems

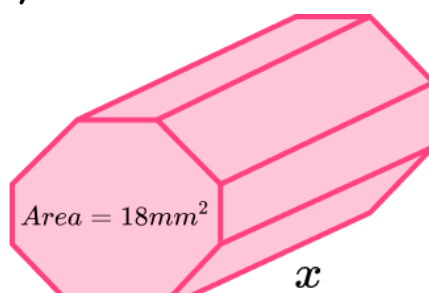
Work out the value of x

1)



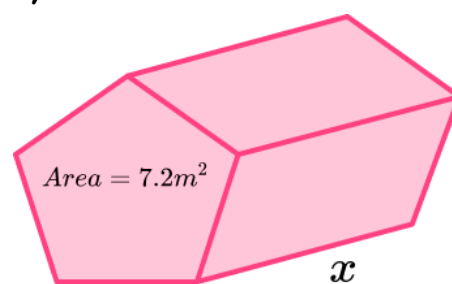
$$\text{Volume} = 175\text{cm}^3$$

2)



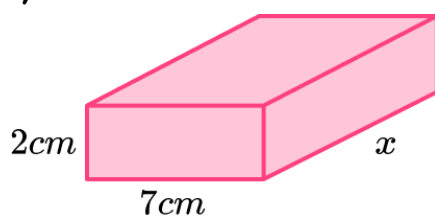
$$\text{Volume} = 108\text{mm}^3$$

3)



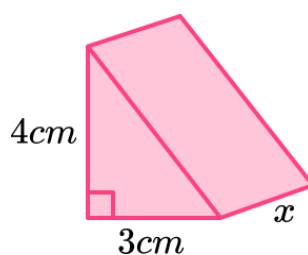
$$\text{Volume} = 28.8\text{m}^3$$

4)



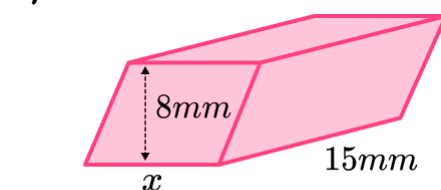
$$\text{Volume} = 154\text{cm}^3$$

5)



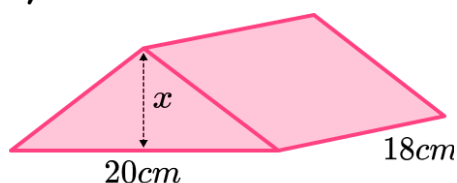
$$\text{Volume} = 18\text{cm}^3$$

6)



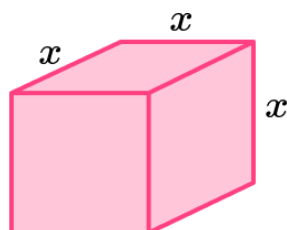
$$\text{Volume} = 1200\text{mm}^3$$

7)



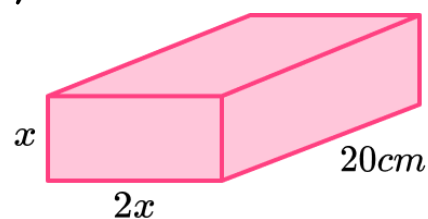
$$\text{Volume} = 1440\text{cm}^3$$

8)



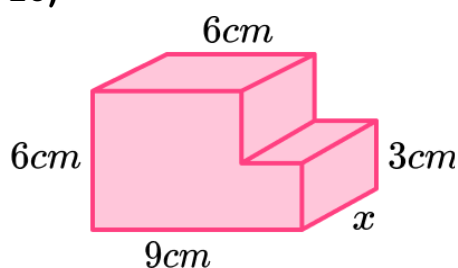
$$\text{Volume} = 125\text{cm}^3$$

9)



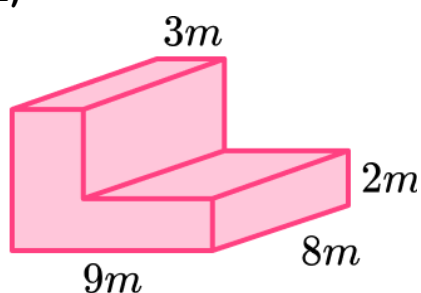
$$\text{Volume} = 640\text{cm}^3$$

10)



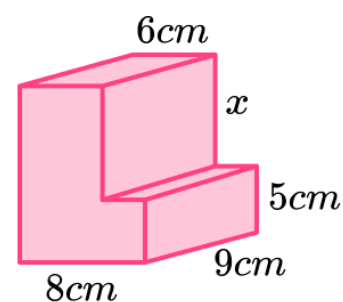
$$\text{Volume} = 225\text{cm}^3$$

11)



$$\text{Volume} = 240\text{m}^3$$

12)

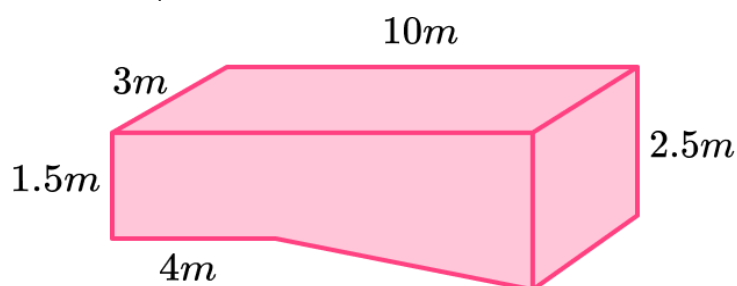


$$\text{Volume} = 738\text{cm}^3$$

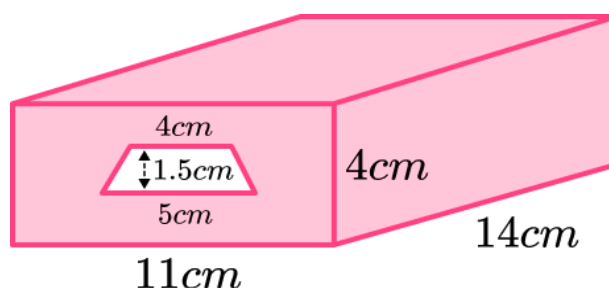
Volume and Surface Area of Prisms - Worksheet

Applied

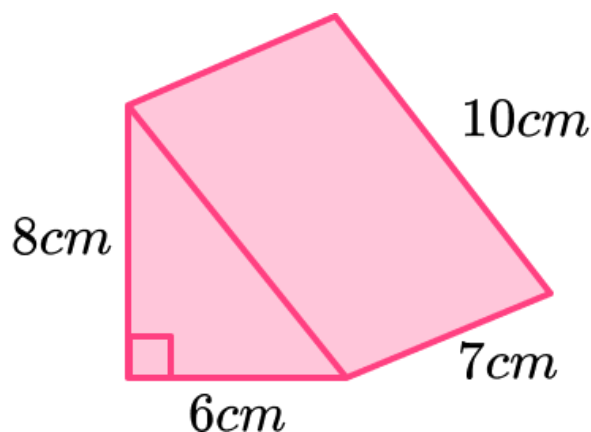
- 1) Water flows into this pool at a rate of 30 litres per minute. How long will it take to fill the pool? ($1\text{m}^3 = 1000\text{ l}$)



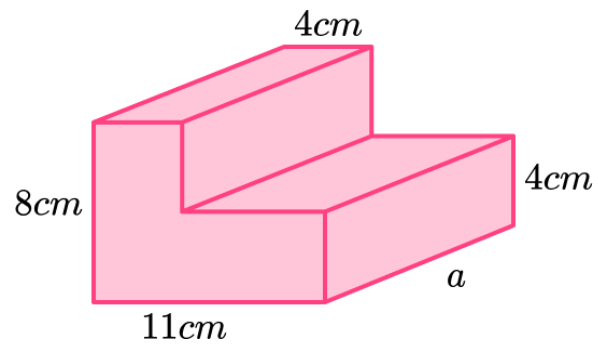
- 2) (a) This solid shape has a hole all the way through the middle. Work out the volume of the solid shape.



- (b) Does the hole through the middle increase or decrease the surface area of the shape?
- 3) Draw a cube with the same surface area as this prism:

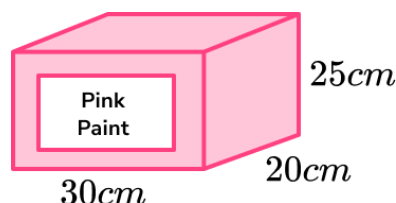


- 4) The surface area of this prism is 576cm^2 . Work out the value of a .



Volume and Surface Area of Prisms - Exam Questions

- 1) (a) Work out the volume of this paint tin.



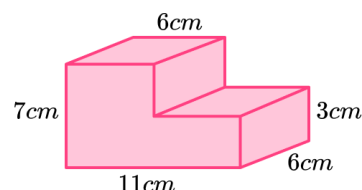
.....
(2)

- (b) Pink paint is made from a mixture of red paint and white paint in the ratio 2: 3.
2: 3.

.....
(2)
(4 marks)

Given that $1l = 1000cm^3$, work out how much red paint would be required for the tin of pink paint.
Give your answer in *ml*.

- 2) (a) Work out the surface area of this prism.

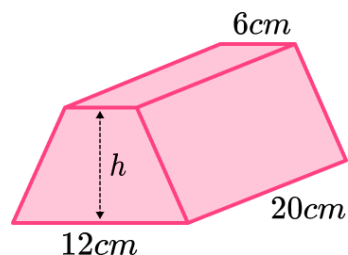


.....
(3)

- (b) The shape is enlarged by scale factor 2.
Find the surface area of the enlarged shape.

.....
(3)
(6 marks)

- 3) (a) The volume of this prism is $1800 cm^3$.



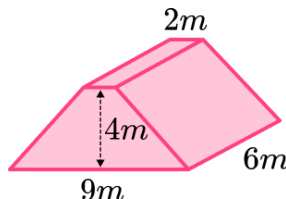
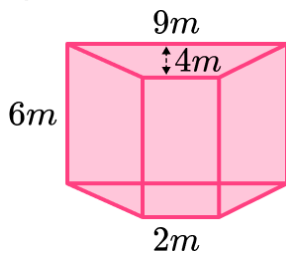
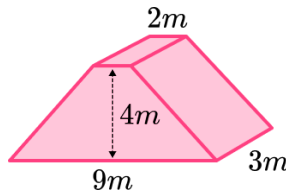
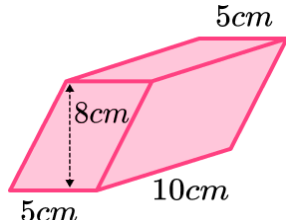
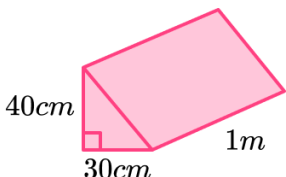
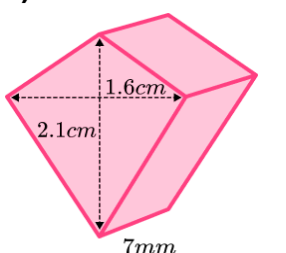
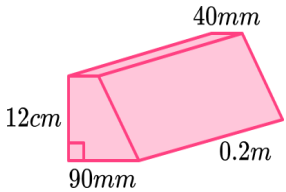
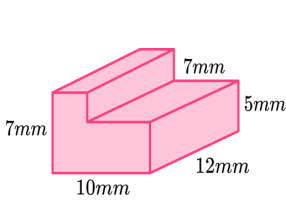
.....
(3)

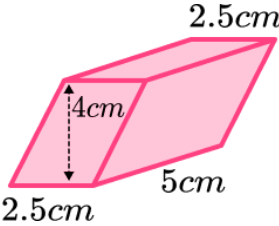
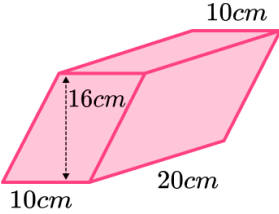
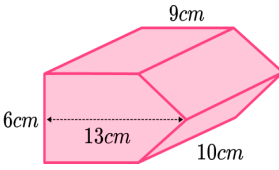
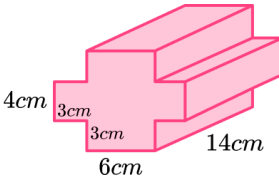
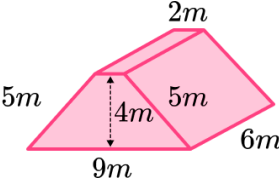
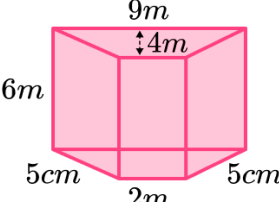
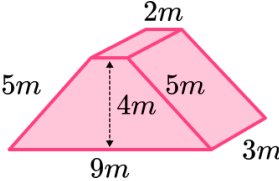
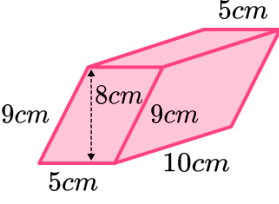
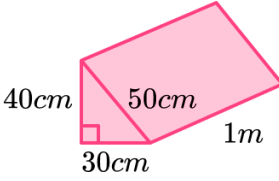
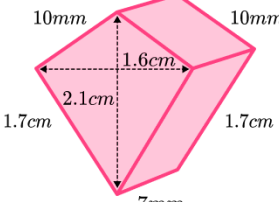
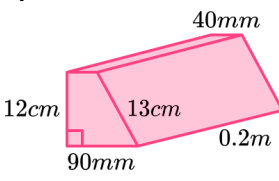
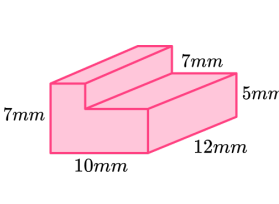
Work out the height, *h*, of the prism.

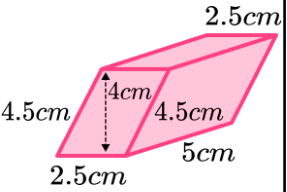
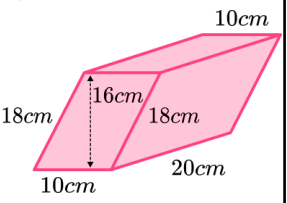
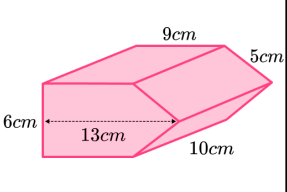
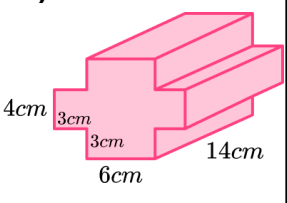
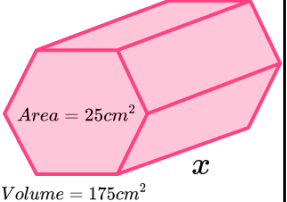
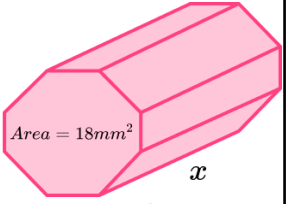
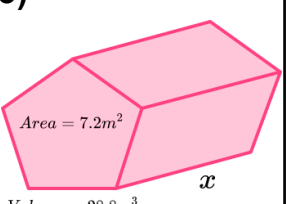
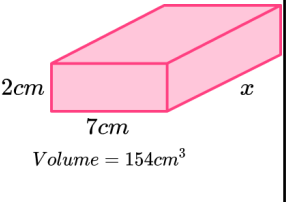
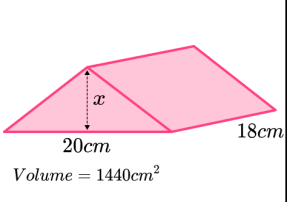
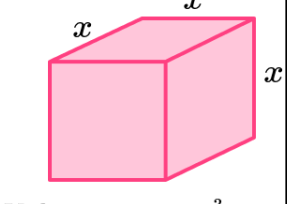
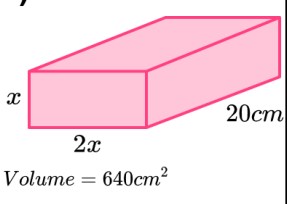
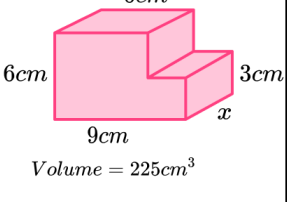
- (b) The length of the prism is doubled to 40cm. Write down the new volume of the prism.

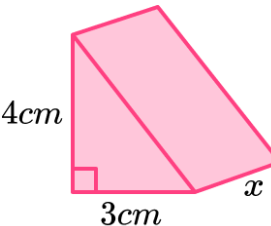
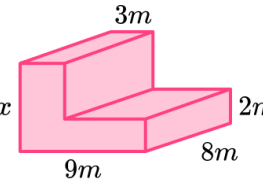
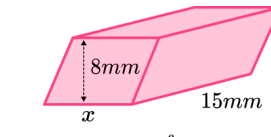
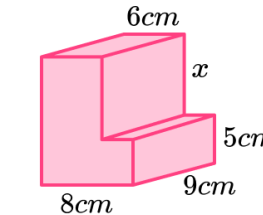
.....
(1)
(4 marks)

Volume and Surface Area of Prisms - Answers

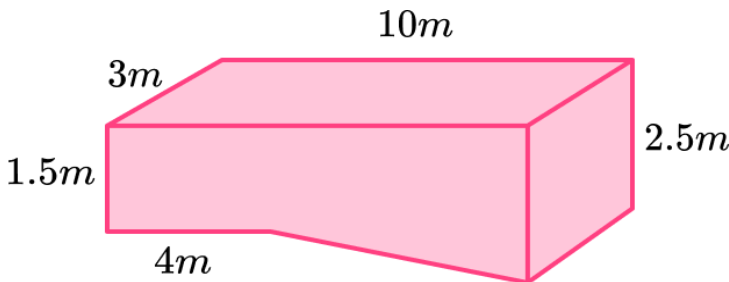
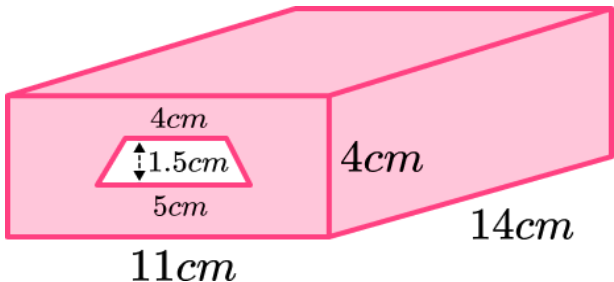
	Question	Answer	
Group A	Skill Questions		
	Work out the volume of each prism		
	<div><div><p>1)</p></div><div><p>2)</p></div><div><p>3)</p></div><div><p>4)</p></div></div> <div><div><p>7)</p></div><div><p>8)</p></div><div><p>9)</p></div><div><p>10)</p></div></div>	<div><p>1) $132m^3$</p></div> <div><p>2) $132m^3$</p></div> <div><p>3) $66m^3$</p></div> <div><p>4) $400cm^3$</p></div> <div><p>7) $60000cm^3$ or $0.06m^3$</p></div> <div><p>8) $1.176cm^3$ or $1176mm^3$</p></div> <div><p>9) $1560cm^3$</p></div> <div><p>10) $672mm^3$</p></div>	

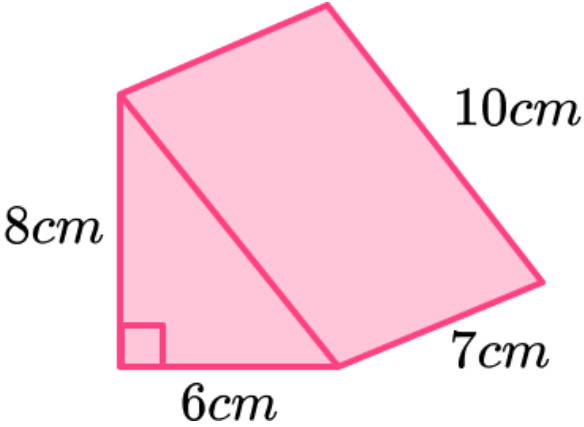
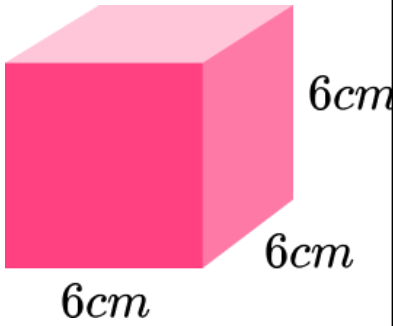
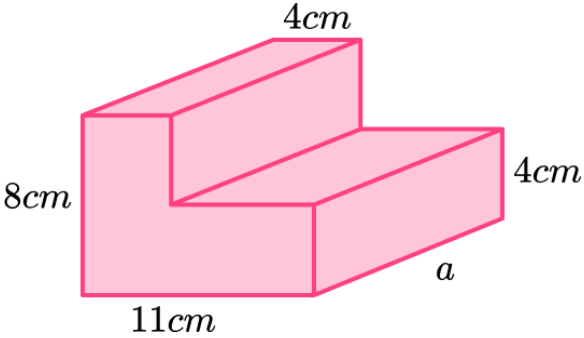
	<p>5)</p>  <p>6)</p> 	<p>11)</p>  <p>12)</p> 	<p>5) $50cm^3$</p> <p>6) $3200cm^3$</p>	<p>11) $660cm^3$</p> <p>12) $1176cm^3$</p>
	Rubric: Work out the surface area of each cuboid			
Group B	<p>1)</p>  <p>2)</p>  <p>3)</p>  <p>4)</p> 	<p>7)</p>  <p>8)</p>  <p>9)</p>  <p>10)</p> 	<p>1) $170m^2$</p> <p>2) $170m^2$</p> <p>3) $107m^2$</p> <p>4) $360cm^2$</p>	<p>7) $13200cm^2$ or $1.32m^2$</p> <p>8) $7.14cm^2$ or $714mm^2$</p> <p>9) $916cm^2$</p> <p>10) $520mm^2$</p>

	<p>5)</p>  <p>6)</p> 	<p>11)</p>  <p>12)</p> 	<p>5) $90cm^2$</p> <p>6) $1440cm^2$</p>	<p>11) $472cm^2$</p> <p>12) $784cm^2$</p>
	Work out the value of x			
Group C	<p>1)</p>  <p>2)</p>  <p>3)</p>  <p>4)</p> 	<p>7)</p>  <p>8)</p>  <p>9)</p>  <p>10)</p> 	<p>1) $7cm$</p> <p>2) $6mm$</p> <p>3) $4m$</p> <p>4) $11cm$</p>	<p>7) $8cm$</p> <p>8) $5cm$</p> <p>9) $4cm$</p> <p>10) $5cm$</p>

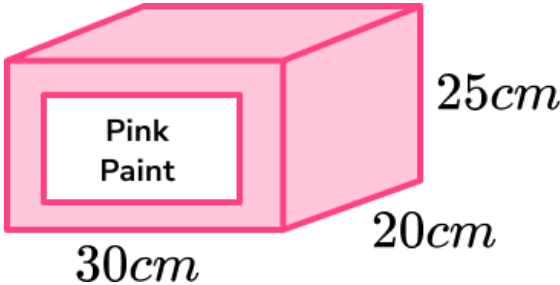
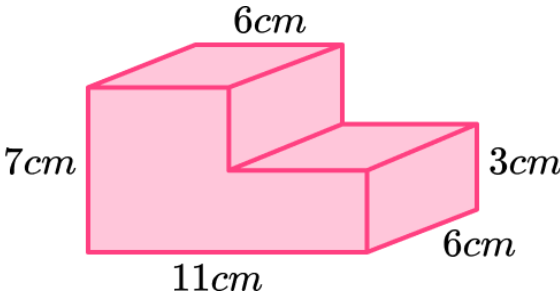
	<p>5)</p>  <p>$Volume = 18cm^3$</p>	<p>11)</p>  <p>$Volume = 240m^2$</p>	<p>5) $3cm$</p>	<p>11) $6m$</p>
	<p>6)</p>  <p>$Volume = 1200mm^3$</p>	<p>12)</p>  <p>$Volume = 738cm^3$</p>	<p>6) $10mm$</p>	<p>12) $7cm$</p>

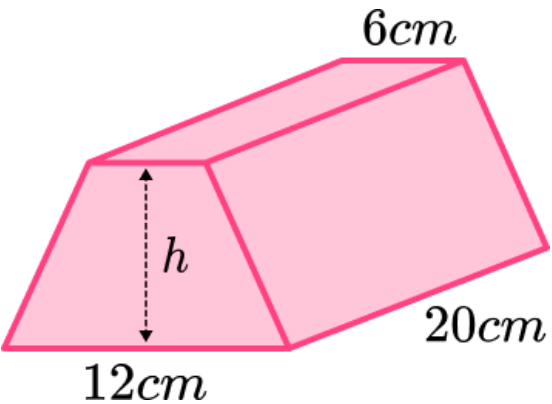
Volume and Surface Area of Prisms - Answers

	Question	Answer
	Applied Questions	
1)	<p>Water flows into this pool at a rate of 30 litres per minute. How long will it take to fill the pool? $(1m^3 = 1000l)$</p> 	1800 minutes or 30 hours
2)	<p>a) This solid shape has a hole all the way through the middle. Work out the volume of the solid shape.</p>  <p>b) Does the hole through the middle increase or decrease the surface area of the shape?</p>	<p>a) $521.5cm^3$</p> <p>b) increase</p>

3)	<p>Draw a cube with the same surface area as this prism:</p> 	
4)	<p>The surface area of this prism is 576cm^2. Work out the value of a.</p> 	<p>12cm</p>

Volume and Surface Area of Prisms - Mark Scheme

	Question	Answer	
	Exam Questions		
1) (a)	<p>Work out the volume of this paint tin.</p> 	<p>(a) $30 \times 25 = 750$ (1)</p> <p>$750 \times 20 = 15000\text{cm}^3$ (1)</p>	(2)
(b)	<p>Pink paint is made from a mixture of red paint and white paint in the ratio 2: 3.</p> <p>Given that $1\text{l} = 1000\text{cm}^3$, work out how much red paint would be required for the tin of pink paint. Give your answer in <i>ml</i>.</p>	<p>(b) $15000\text{cm}^3 = 15\text{l}$ (1)</p> <p>$15 \div 5 = 3$ (1)</p> <p>$3 \times 2 = 6\text{l}$</p>	(2)
2) (a)	<p>Work out the surface area of this prism.</p> 	<p>(a) 330cm^2 (3)</p>	(3)
(b)	<p>The shape is enlarged by scale factor 2. Find the surface area of the enlarged shape.</p>	<p>(b) 1320cm^2 (3)</p>	(3)
3) (a)	<p>The volume of this prism is 1800cm^3.</p> <p>Work out the height, <i>h</i>, of the prism.</p>	<p>(a) 10cm (3)</p>	(3)

			
(b)	The length of the prism is doubled to 40cm. Write down the new volume of the prism.	(b) 3600cm^3 (1)	(1)

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