



SCAN ME

# Similar Areas/Volumes

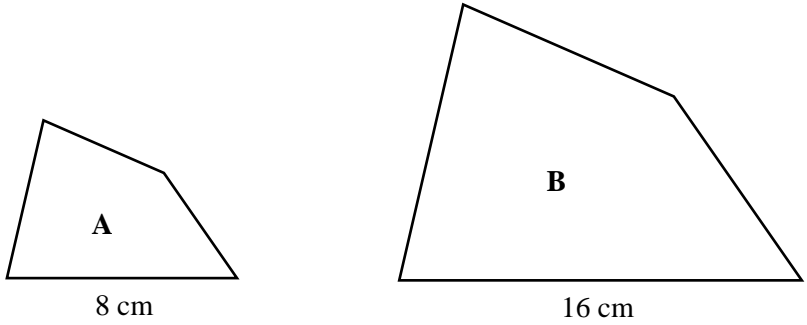


SCAN ME

REVISE THIS TOPIC

CHECK YOUR ANSWERS

1 Quadrilaterals **A** and **B** are similar.

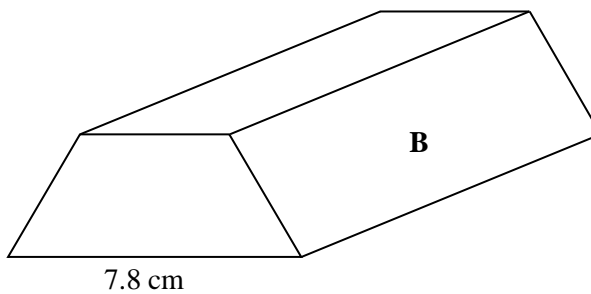
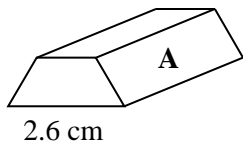


The area of quadrilateral **A** is  $32 \text{ cm}^2$   
Work out the area of quadrilateral **B**.

.....  $\text{cm}^2$   
(Total for Question 1 is 3 marks)



2 Prisms **A** and **B** are similar.



The volume of prism **A** is  $7 \text{ cm}^3$

Work out the volume of prism **B**.

.....  $\text{cm}^3$   
 (Total for Question 2 is 3 marks)

3 Solids **P** and **Q** are similar.

**P** has a height of 10 cm and **Q** has a height of 8 cm.

The volume of **P** is  $800 \text{ cm}^3$

Work out the volume of **Q**.

.....  $\text{cm}^3$   
 (Total for Question 3 is 3 marks)



4 Solids **M** and **N** are similar.

Height of **M** : Height of **N** = 2 : 3

The surface area of **N** is  $360 \text{ cm}^2$

Work out the surface area of **M**.

.....  $\text{cm}^2$

**(Total for Question 4 is 3 marks)**

5 Solids **X** and **Y** are similar.

**X** has a volume of  $24 \text{ cm}^3$  and **Y** has a volume of  $81000 \text{ cm}^3$ .

The height of **X** is 4 cm

Work out the height of **Y**.

..... cm

**(Total for Question 5 is 3 marks)**



6 Here is some information about similar solids **X**, **Y** and **Z**.

	<b>X</b>	<b>Y</b>	<b>Z</b>
Height	6 cm	15 cm	
Volume	240 cm <sup>3</sup>		6480 cm <sup>3</sup>

(a) Complete the table

(5)

(b) Work out

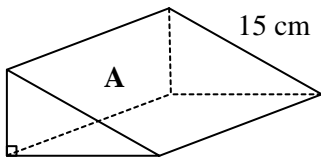
surface area of **X** : surface area of **Y** : surface area of **Z**

Give your answer in its simplest form.

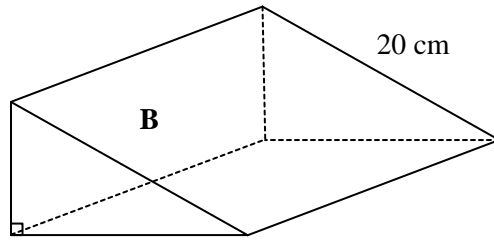
.....  
(2)  
(Total for Question 6 is 7 marks)



7 Here are triangle prisms **A** and **B**.



Surface area =  $960 \text{ cm}^2$



Surface area =  $1500 \text{ cm}^2$

Show that prisms **A** and **B** are **not** similar.

(Total for Question 7 is 3 marks)

8 Solids **G** and **H** are similar.

**G** has a surface area of  $3430 \text{ cm}^2$  and **H** has a surface area of  $280 \text{ cm}^2$ .  
The height of **G** is 84 cm

Work out the height of **H**.

..... cm  
(Total for Question 8 is 3 marks)



9 Solids **C** and **D** are similar.

**C** has a volume of  $40 \text{ cm}^3$  and **D** has a volume of  $1080 \text{ cm}^3$ .  
The surface area of **C** is  $100 \text{ cm}^2$

Work out the surface area of **D**.

.....  $\text{cm}^2$

**(Total for Question 9 is 3 marks)**

10 Solids **U** and **V** are similar.

**U** has a surface area of  $375 \text{ cm}^2$  and **V** has a surface area of  $540 \text{ cm}^2$ .  
The volume of **V** is  $432 \text{ cm}^3$

Work out the volume of **U**.

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

**(Total for Question 10 is 3 marks)**





11 Solids **M** and **N** are similar.

volume of **M** : volume of **N** = 1000 : 1

The surface area of **M** is 80 cm<sup>2</sup>

Work out the surface area of **N**.

..... cm<sup>2</sup>  
(Total for Question 11 is 3 marks)

12 Solids **A**, **B** and **C** are similar.

surface area of Solid **A** : surface area of Solid **B** = 4 : 25

volume of Solid **A** : volume of solid **C** = 64 : 729

height of Solid **A** : height of Solid **B** : height of Solid **C** =  $p : q : r$

where  $p$ ,  $q$  and  $r$  are integers in their simplest form.

Work out the values of  $p$ ,  $q$  and  $r$ .

$p =$  .....

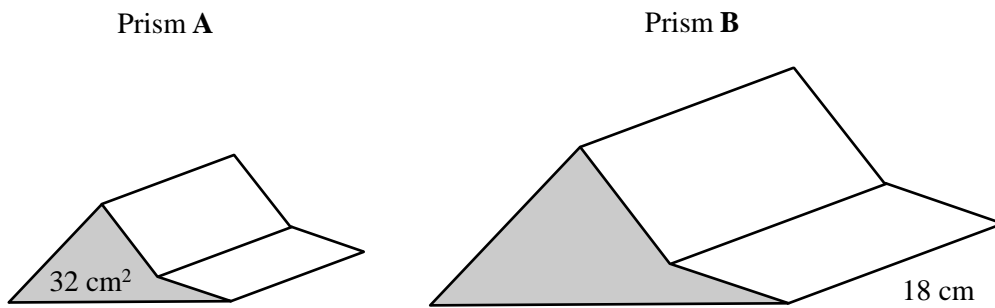
$q =$  .....

$r =$  .....

(Total for Question 12 is 3 marks)



13 Prisms **A** and **B** are similar.  
The cross sections are shaded.



The area of the cross section of prism **A** is  $32 \text{ cm}^2$   
The length of prism **B** is  $18 \text{ cm}$ .

$$\text{volume of prism A} : \text{volume of prism B} = 8 : 27$$

Work out the volume of prism **B**.

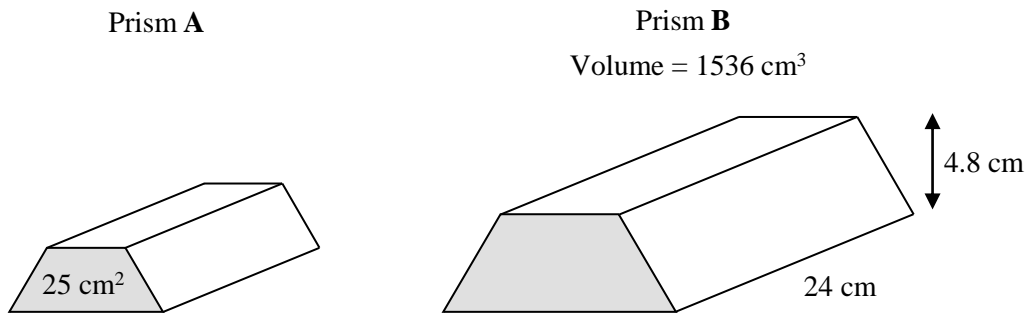
.....  $\text{cm}^3$

(Total for Question 13 is 4 marks)





14 Prisms **A** and **B** are similar.  
The cross sections are shaded.



Here is some information about the prisms.

	Length	Height	Cross Section Area	Volume
Prism A			25 cm <sup>2</sup>	
Prism B	24 cm	4.8 cm		1536 cm <sup>3</sup>

Work out the height of prism A.

..... cm  
(Total for Question 14 is 4 marks)



15 Solids **X** and **Y** are similar.

**X** has a height of 14 cm and **Y** has a height of 21 cm.  
The volume of **Y** is  $950 \text{ cm}^3$  greater than the volume of **X**.

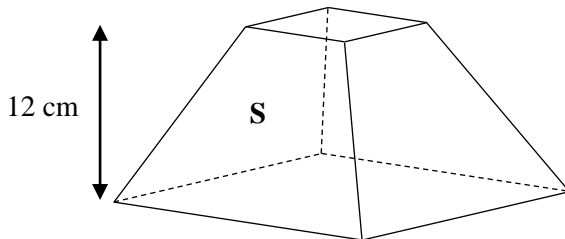
Work out the volume of Solid **X**.

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

(Total for Question 15 is 4 marks)



16 Solid **S** is shown below.



Two of the faces of Solid **S** are squares with areas of  $36 \text{ cm}^2$  and  $225 \text{ cm}^2$   
 Four of the faces of Solid **S** are trapeziums.

The vertical height of Solid **S** is 12 cm.

Solid **T** is similar to Solid **S**.

The area of one of the square faces of Solid **T** is  $100 \text{ cm}^2$

Work out two possible values for the vertical height of Solid **T**.

..... cm

..... cm

(Total for Question 16 is 4 marks)





17 Solids **X**, **Y** and **Z** are similar.

$$\text{volume of X : volume of Y} = 1 : 8$$

$$\text{surface area of Y : surface area of Z} = 9 : 20$$

$$\text{height of X : height of Y : height of Z} = a : b : c\sqrt{5}$$

where  $a$ ,  $b$  and  $c$  are integers.

Work out the values of  $a$ ,  $b$  and  $c$ .

$$a = \dots\dots\dots$$

$$b = \dots\dots\dots$$

$$c = \dots\dots\dots$$

(Total for Question 17 is 4 marks)

