

Name: \_\_\_\_\_

## Exam Style Questions



Similar Shapes: Area/Volume

Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

You may use tracing paper if needed

### Guidance

1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Revision for this topic

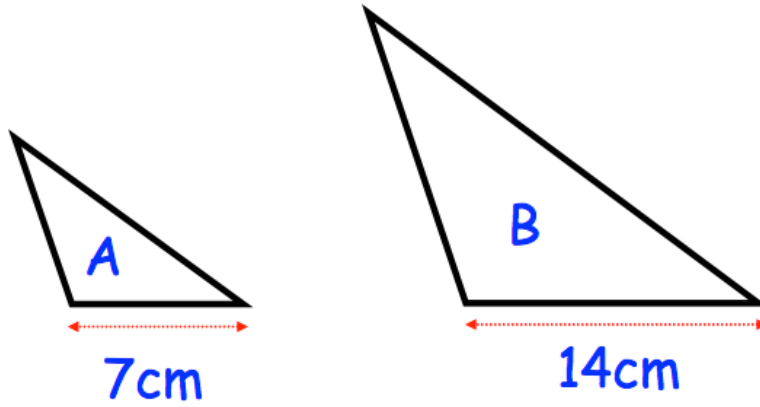
[www.corbettmaths.com/contents](http://www.corbettmaths.com/contents)

Video 293a

Video 293b



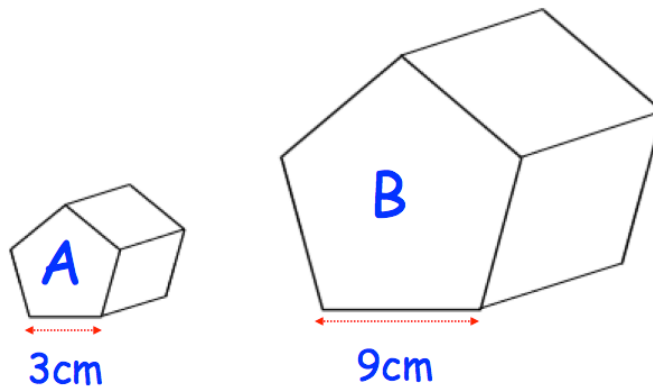
1. Below are two similar triangles.



The area of triangle A is  $20\text{cm}^2$   
Work out the area of triangle B.

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

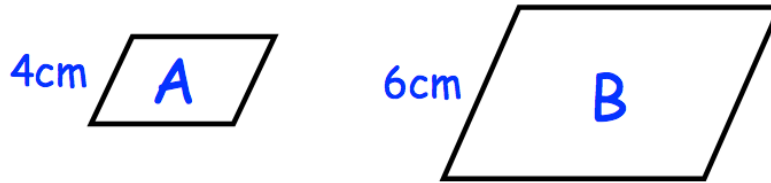
2. Below are two similar pentagonal prisms.



The volume of prism A is  $15\text{cm}^3$   
Work out the volume of prism B.

..... $\text{cm}^3$   
(2)

3. Below are two similar parallelograms.

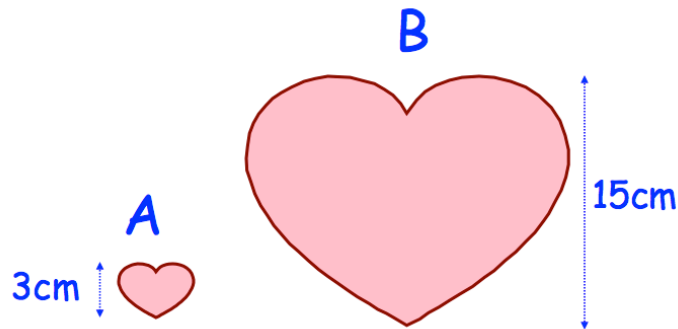


The area of parallelogram A is  $28\text{cm}^2$

Work out the area of parallelogram B.

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

4. Shown below are two mathematically similar shapes.



The area of shape B is  $150\text{cm}^2$

Work out the area of shape A.

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

5. Explain why the area of a rectangle increases by a factor of 4 when the side length is doubled.

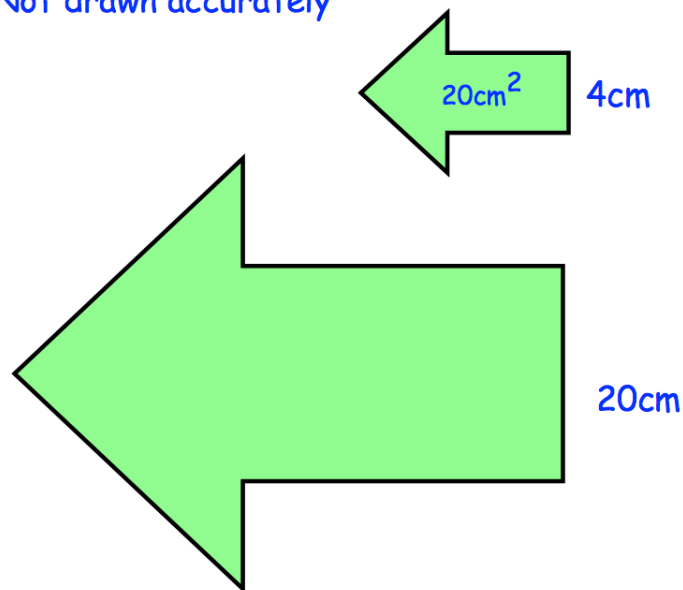


(2)

6. Shown are two logos that are mathematically similar.



Not drawn accurately

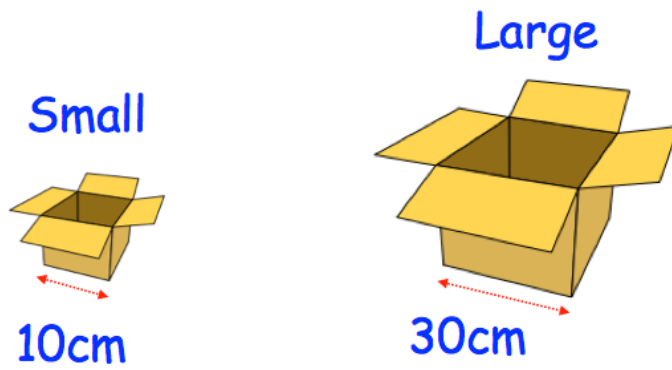


The area of the smaller logo is  $20\text{cm}^2$

Find the area of the larger logo.

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

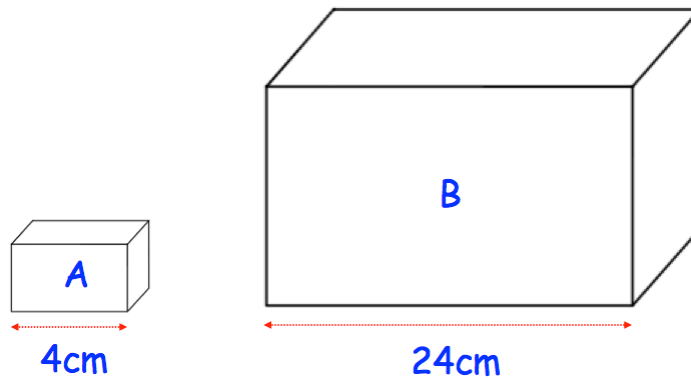
7. Shown below are two boxes that are mathematically similar.



The volume of the small box is  $500\text{cm}^3$   
Work out the volume of the larger box.

..... $\text{cm}^3$   
(2)

8. Shown below are two mathematically similar cuboids.

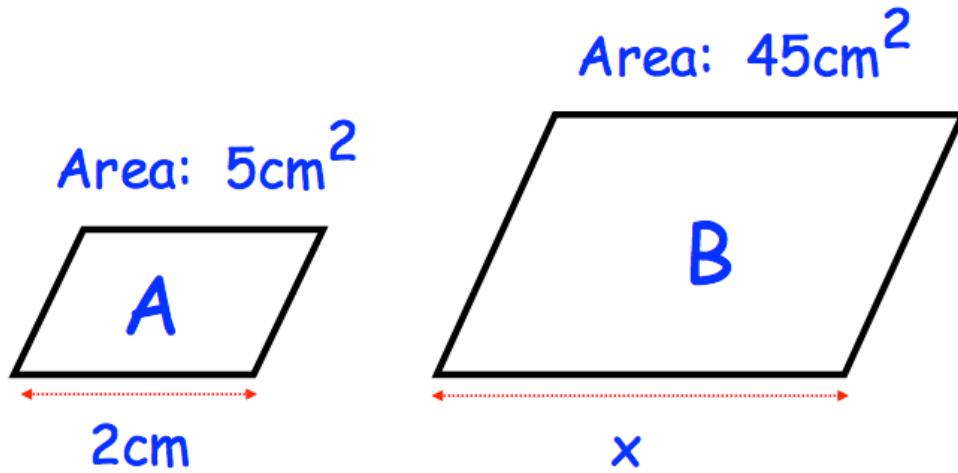


The volume of cuboid B is  $1728\text{cm}^3$

Find the volume of cuboid A.

..... $\text{cm}^3$   
(2)

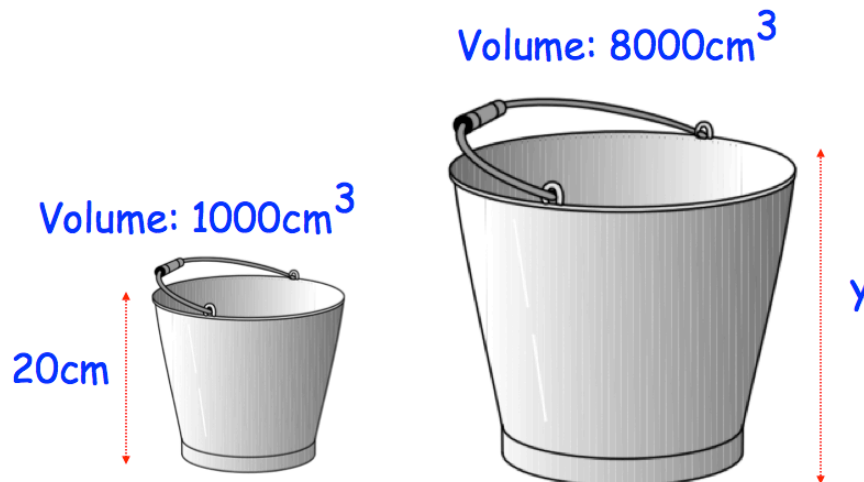
9. Shown below are two mathematically similar parallelograms.



Find x

.....cm  
(2)

10. The two buckets below are similar.



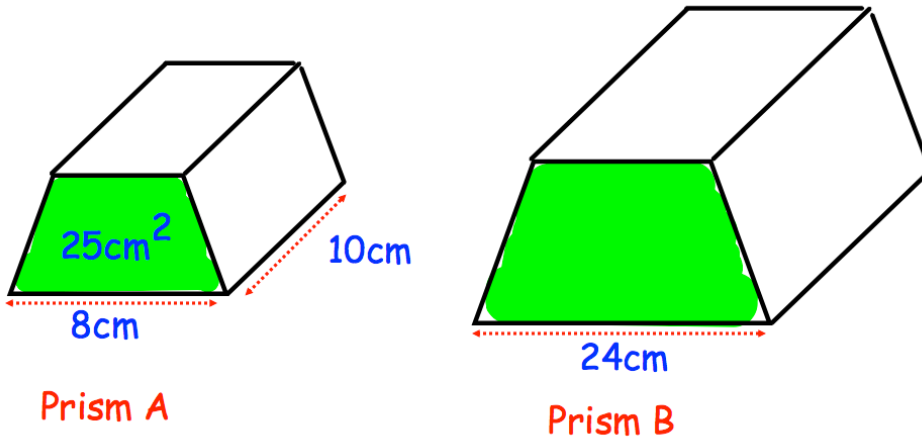
Find y

.....cm  
(2)

11. Prism A and prism B are mathematically similar



Not drawn to scale



Prism A has a cross-sectional area of  $25\text{cm}^2$

Work out the volume of prism B.

..... $\text{cm}^3$   
(2)

12. A swimming pool has surface area  $300\text{m}^2$   
The swimming pool is a prism of depth  $110\text{cm}$ .



(a) Work out the volume of the swimming pool.  
Give your answer in  $\text{m}^3$ .

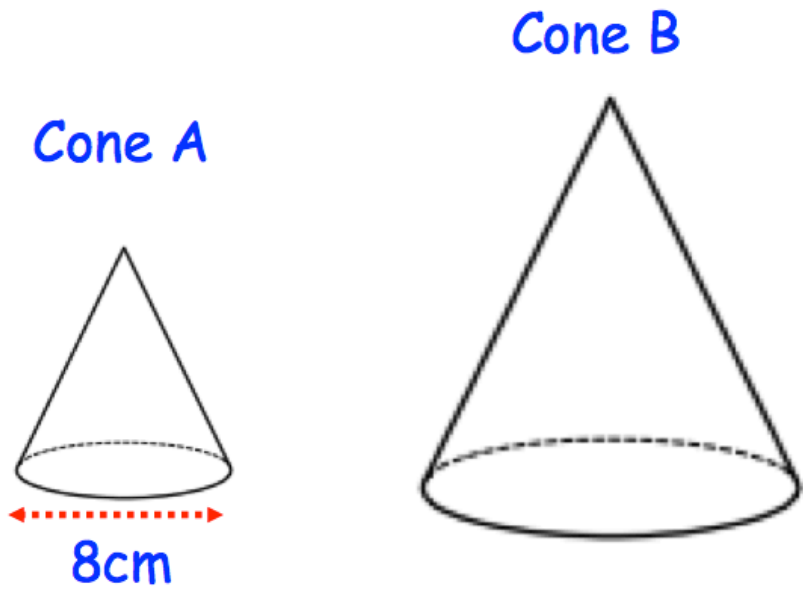
..... $\text{m}^3$   
(2)

A scale model of the swimming pool is made.  
The depth of the model swimming pool is  $5.5\text{cm}$

(b) Find the surface area of the model swimming pool.

..... $\text{m}^2$   
(2)

13.



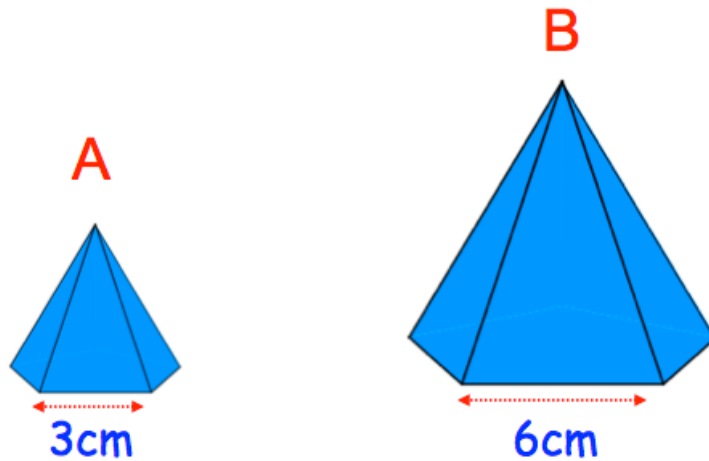
Cone A and cone B are mathematically similar.  
The total surface area of cone A is  $120\text{cm}^2$   
The total surface area of cone B is  $1080\text{cm}^2$   
The diameter of cone A is 8cm.

Work out the diameter of cone B.

.....cm  
(3)



14. Below are two similar pyramids.



Pyramid A has a volume of  $26\text{cm}^3$

(a) Work out the volume of Pyramid B.

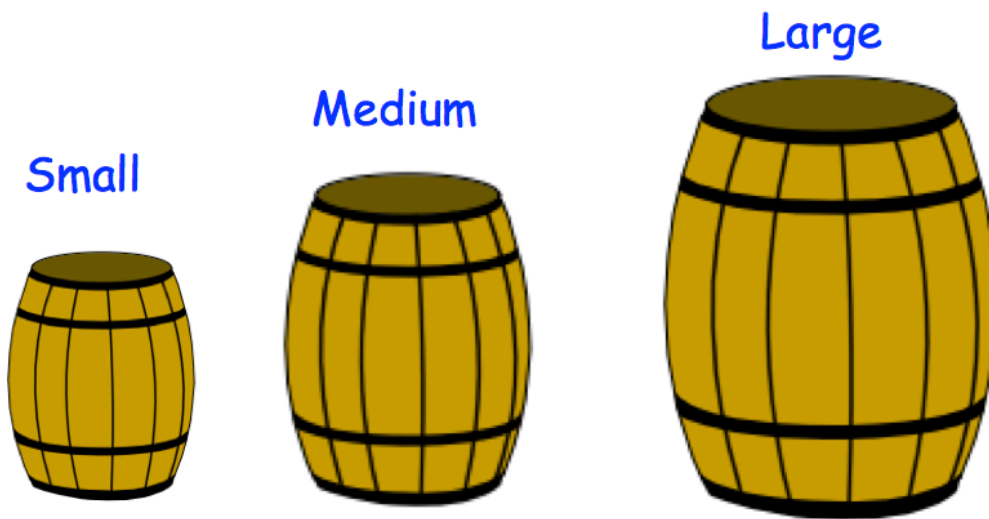
..... $\text{cm}^3$   
(2)

Pyramid B has a total surface area of  $224\text{cm}^2$

(b) Work out the total surface area of Pyramid A.

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

15. Wine is kept in three different sized barrels that are mathematically similar.



The table below shows information about the barrels.

	Height	Capacity
Small	24 inches	100 litres
Medium	30 inches	
Large		240 litres

Complete the table.

16. A shop sells two different sizes of rugby ball.



A small rugby ball has a length of 8cm and surface area of  $90 \text{ cm}^2$

A large rugby ball has a length of 16cm.

Calculate the surface area of a large rugby ball.

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

17. Duncan bought a toy that grows when placed in water.



Grows 10 times  
larger

Before placing the toy in water it was 4cm tall.

After placing the toy in water it grew to a similarly shaped toy that was 10cm tall.

Is the claim reasonable?

(3)

18. Two clay models of the Statue of Liberty are mathematically similar.



The smaller model has a height of 15cm.  
The larger model has a height of 20cm.

The smaller model weighs 108g.

Work out the weight of the larger model.

.....g  
**(3)**

19. Mrs Hampton is potting plants.  
She is using two mathematically similar pots, the smaller is 10cm tall and the larger 14cm tall.



She has two bags of soil, each containing 30 litres of soil.

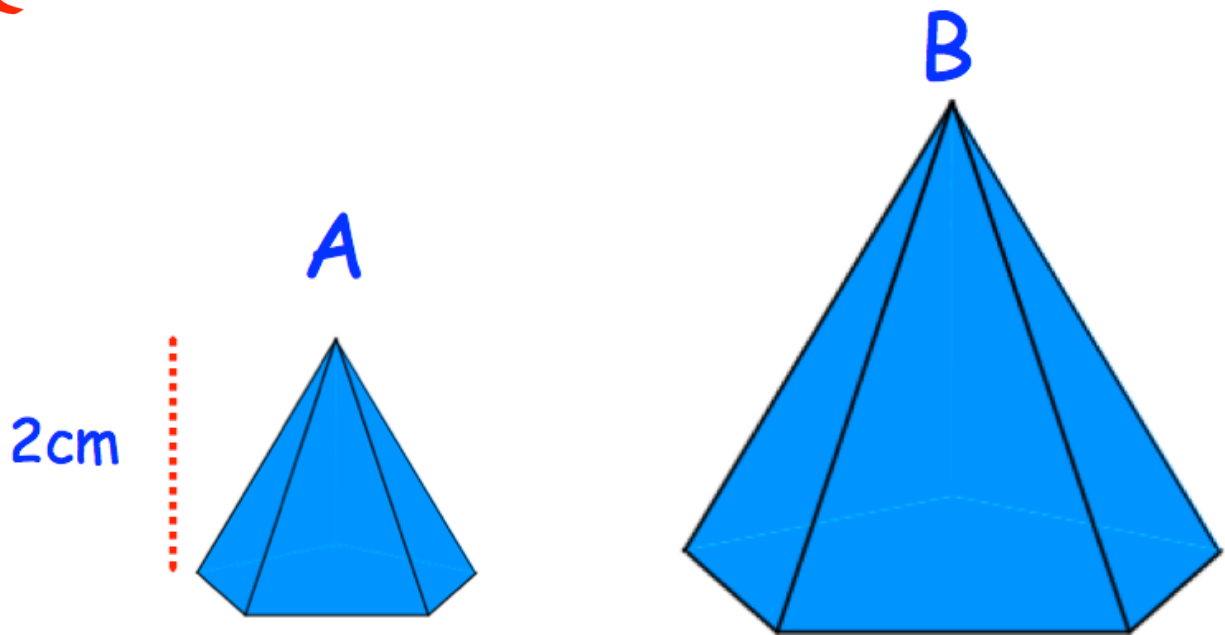
With the first bag, Mrs Hampton fills 20 small pots using all of the soil in the bag.



How many large pots can be filled completely using the second bag of soil?

.....  
(5)

20. Two pyramids are mathematically similar.



Pyramid A has a surface area of  $20\text{cm}^2$   
Pyramid B has a surface area of  $320\text{cm}^2$   
The height of pyramid A is  $2\text{cm}$

(a) Work out the height of pyramid B.

.....cm  
(3)

Pyramid A has a weight of  $800\text{g}$   
Both pyramids are made of the same material.

(b) Work out the weight of pyramid B.  
Include suitable units.

.....  
(4)

21. Two solids are mathematically similar.  
The surface area of the smaller solid is  $42\pi \text{ cm}^2$   
The surface area of the larger solid is  $1512\pi \text{ cm}^2$



The height of the larger solid is 96cm.

Work out the height of the smaller solid.

.....cm  
(3)

---

22. The areas of two mathematically similar shapes are in the ratio 49 : 81



The length of the smaller shape is 24.5cm

Work out the length of the larger shape.

.....cm  
(3)

---

23. The volumes of two mathematically similar solids are in the ratio 8 : 125



The surface area of the smaller solid is  $24 \text{ cm}^2$

Work out the surface area of the larger solid.

..... $\text{cm}^2$   
(3)