

AREA AND VOLUME SCALE FACTORS – PRACTICE QUESTIONS
CALCULATOR ALLOWED



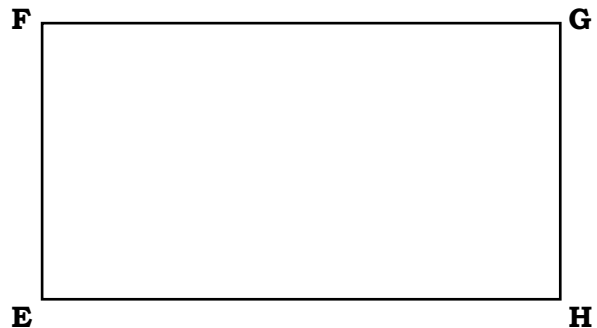
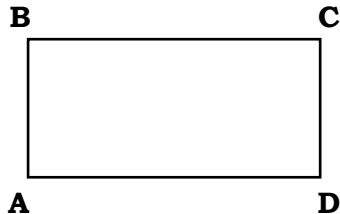
metatutor

1.

ABCD and EFGH are mathematically similar rectangles.

$AD = 4$ cm and $EH = 8$ cm.

The area of ABCD is 12 cm².



(a) Find the area of EFGH.

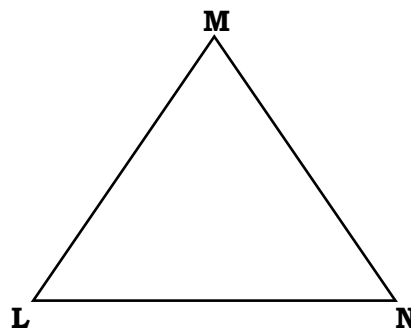
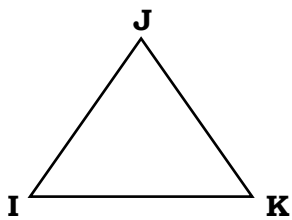
(b) Find CD.

2.

IJK and LMN are mathematically similar triangles.

$LN = 1.5 \times IK$.

The area of LMN is 45 cm².

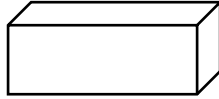


(a) Find the area of IJK.

(b) The height of triangle IJK is 5 cm.
Find the height of triangle LMN.

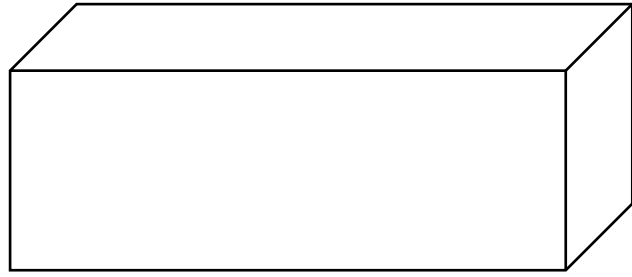
3.
Pictured below are two mathematically similar cuboids – Cuboid A and Cuboid B.
The volume of Cuboid A is 10 cm^3 .

Cuboid A



5 cm

Cuboid B

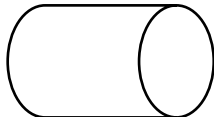


15 cm

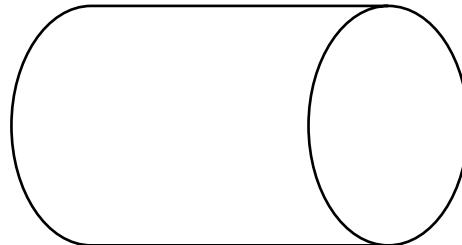
- (a) Find the volume of Cuboid B.
- (b) The height of Cuboid B is 7.5 cm.
Find the height of Cuboid A.
- (c) The depth of Cuboid A is 2 cm.
Find the depth of Cuboid B.

4.
Pictured below are two mathematically similar cylinders – Cylinder A and Cylinder B.
The width of Cylinder B is 2.5 times the width of Cylinder A.
The volume of Cylinder B is 625 cm^3 .

Cylinder A



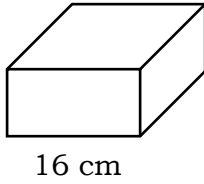
Cylinder B



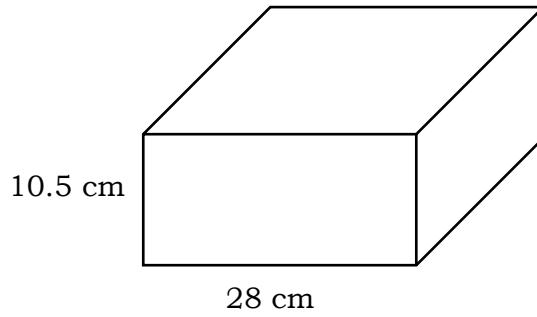
Find the volume of Cylinder A.

5.
Pictured below are two mathematically similar cuboids – Cuboid C and Cuboid D.

Cuboid C



Cuboid D



The surface area of Cuboid C is 896 cm^2 .

(a) Find the surface area of Cuboid D.

(b) Find the height of Cuboid C.

6.
Alex and Belinda have two mathematically similar sofas.

Alex's sofa



Belinda's sofa

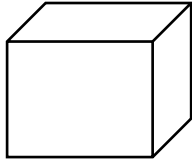


The height of Alex's sofa is 70 cm.
The height of Belinda's sofa is 98 cm.
The surface area of Belinda's sofa is $78,400 \text{ cm}^2$.

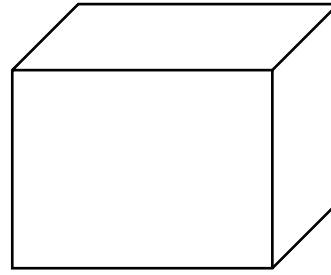
Find the surface area of Alex's sofa.

7.
Pictured below are two mathematically similar cuboids – Cuboid E and Cuboid F.

Cuboid E



Cuboid F



The surface area of Cuboid E is 200 cm^2 .
The surface area of Cuboid F is 512 cm^2 .
The volume of Cuboid E is 220 cm^3 .

Find the volume of Cuboid F, to the nearest cubic centimetre.

8.
Pictured below are two mathematically similar footballs – Football 1 and Football 2.

Football 1



Football 2



The surface area of Football 1 is 260 mm^2 .
The surface area of Football 2 is 640 mm^2 .
The volume of Football 2 is $1,500 \text{ mm}^3$.

Find the volume of Football 1, to 3 significant figures.

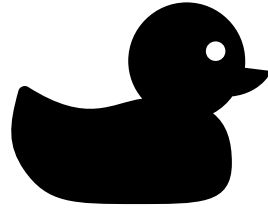
9.

Chloe and Dana have mathematically similar toy ducks.

Chloe's duck



Dana's duck



The volume of Chloe's duck is 180 cm^3 .

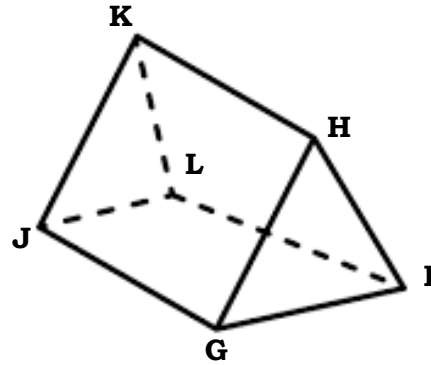
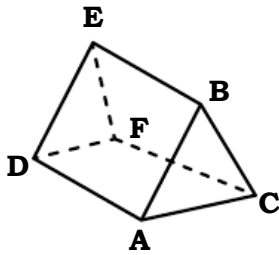
The volume of Dana's duck is $3,125 \text{ cm}^3$.

The surface area of Dana's duck is $1,800 \text{ cm}^2$.

Find the surface area of Chloe's duck, to 3 significant figures.

10.

ABCDEF and GHIJKL are mathematically similar prisms.



The surface area of ABCDEF is 312 cm^2 .

The surface area of GHIJKL is 955.5 cm^2 .

The volume of ABCDEF is 288 cm^3 .

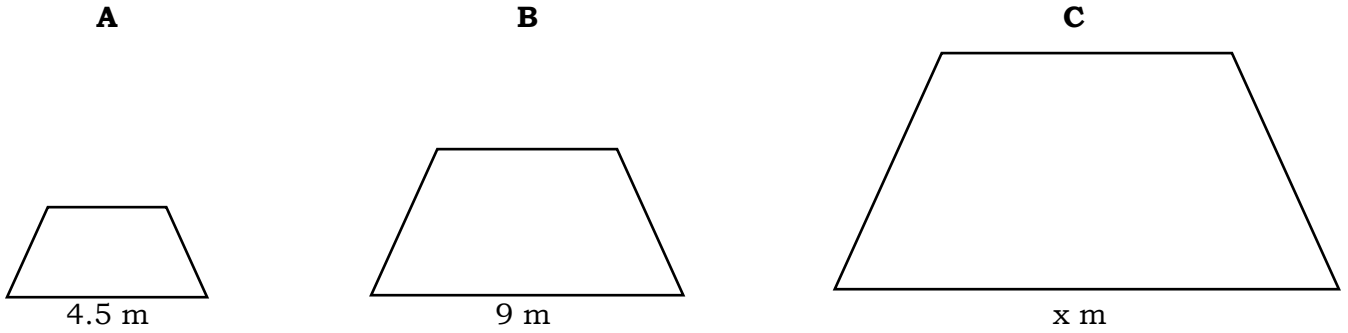
$JG = 21 \text{ cm}$.

(a) Find the volume of GHIJKL.

(b) Find DA.

11.

Pictured below are three mathematically similar trapeziums – A, B and C.



The area of B is 63 m^2 .

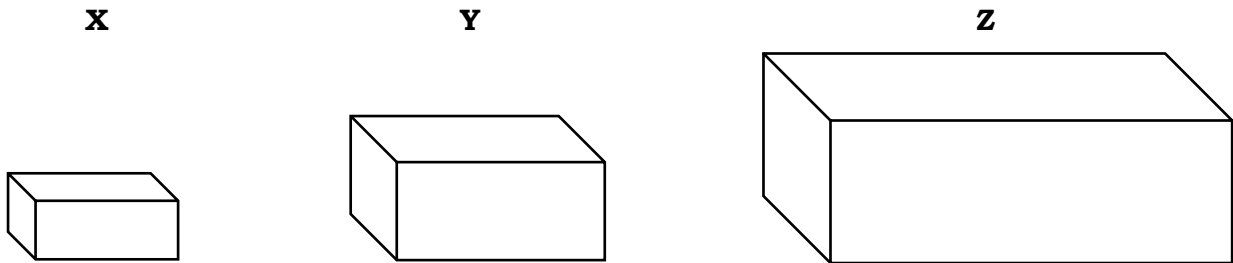
The area of C is 343 m^2 .

(a) Find the area of Shape A.

(b) Find x .

12.

Pictured below are three mathematically similar wooden blocks – X, Y and Z.



X has a surface area of 126 m^2 and a volume of 81 m^3 .

Y has a surface area of 350 m^2 .

Z has a volume of $5,184 \text{ m}^3$.

(a) Find the surface area of Z.

(b) Find the volume of Y.

13.

Caroline has two mathematically similar watering cans.



The smaller watering can has a height of 20 cm and a capacity of 8 litres.
The larger watering can has a height of 24 cm.

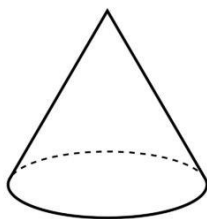
Caroline is going to use the larger watering can to water her plants.
She needs 50 litres of water to water all of her plants.

How many times does she need to refill the larger watering can in order to water all of her plants?

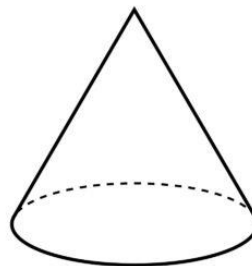
14.

Pictured below are two mathematically similar cones – Cone A and Cone B.

Cone A



Cone B



The ratio of the height of Cone A to the height of Cone B is 4:5.

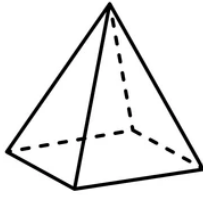
(a) Find the ratio of the volume of Cone A to the volume of Cone B.

(b) Find the ratio of the surface area of Cone A to the surface area of Cone B.

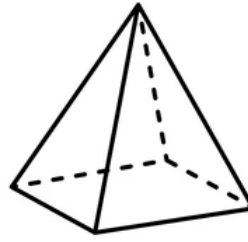
15.

Pictured below are two pyramids – Pyramid A and Pyramid B.

Pyramid A



Pyramid B



The ratio of the surface area of Pyramid A to the surface area of Pyramid B is 49:81.

The height of Pyramid B is 180 cm.

The volume of Pyramid A is 6,860 cm³.

(a) Find the height of Pyramid A.

(b) Find the volume of Pyramid B.

16.

Chris brews beer.

He sells his beer in two mathematically similar bottles – small and large.



Chris has brewed a barrel of beer. The barrel contains 75 litres of beer.

Chris can fill 200 small bottles with the contents of the barrel.

How many large bottles can be filled with the contents of the barrel?