QT Similar Shapes (Area & Volume)

1. Cylinder x and cylinder y are mathematically similar.
The ratio of the surface area of cylinder x to the surface area of cylinder y is 1 : 4

(a) Simon says
'The height of cylinder x is one quarter of the height of cylinder y.

Explain why Simon is wrong

……..

……..

…… (1 mark)

(b) The volume of cylinder y is 95cm^3. Calculate the volume of cylinder x.

(3 marks)

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2. Prism A and prism B are mathematically similar.
The ratio of the surface area of prism A to the surface area of prism B is 4 : 9
The volume of prism B is 405cm^3
Show that the volume of prism A is 120cm^3

(3 marks)

3. Three solid shapes x, y and z are mathematically similar.
The surface area of shape x is 4cm
The surface area of shape y is 16cm

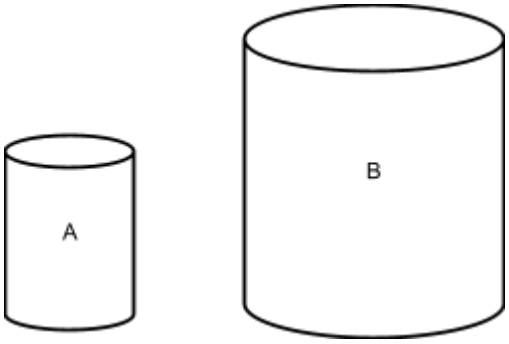
The ratio of the volume of shape y to the volume of shape z is 8 : 64

Work out the ratio of the length of shape x to the length of shape z
Give your answer in its simplest form.

(4 marks)

QT Similar Shapes (Area & Volume)

4. Two solid cylinders. A and B, are mathematically similar.



Cylinder A has a radius 4cm.
Cylinder B has a radius 10cm.
The surface area of cylinder A is $60cm^2$

(a) Work out the surface area of cylinder B

(2 marks)

The volume of cylinder B is $800cm^3$

(b) Work out the volume of cylinder A

(2 marks)

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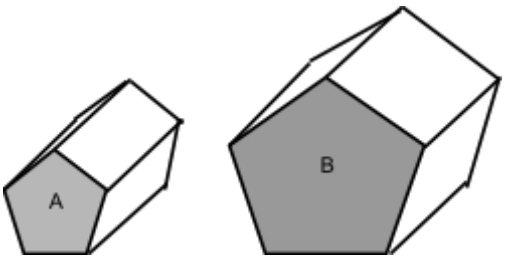
5. A motorhome has a volume of $12m^3$
Ahmed makes a model of this motorhome using a scale of 1 : 72
Work out the volume of the motorhome model, giving your answer in cm^3

(4 marks)

6. Prism A and prism B are mathematically similar.
The cross sections are shaded.
Area of the cross section of A : area of the cross section of B = 4 : 9



Prism A has a volume of $240cm^3$.
Prism B has a length of 15cm.
Work out the area of the cross section of prism B.