Autumn 2017 Paper 3 Q14

1 Cone **A** and cone **B** are mathematically similar.
The ratio of the volume of cone **A** to the volume of cone **B** is 27 : 8

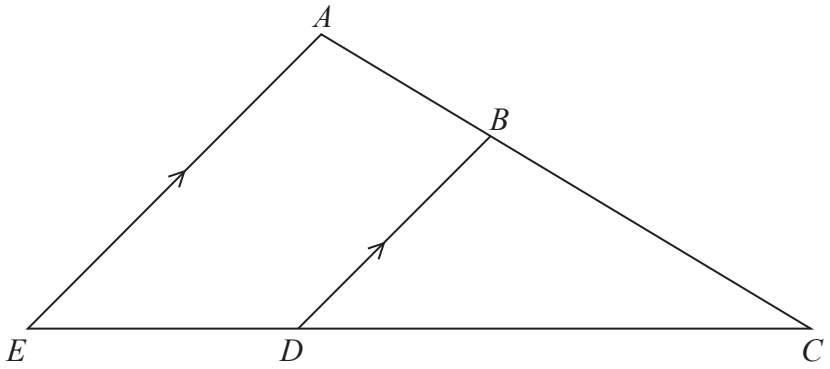
The surface area of cone **A** is 297 cm^2

Show that the surface area of cone **B** is 132 cm^2

(Total for Question 1 is 3 marks)

Summer 2017 Paper 2 Q5

2



ABC and *EDC* are straight lines.
EA is parallel to *DB*.

EC = 8.1 cm.
DC = 5.4 cm.
DB = 2.6 cm.

(a) Work out the length of *AE*.

..... cm

(2)

AC = 6.15 cm.

(b) Work out the length of *AB*.

..... cm

(2)

(Total for Question 2 is 4 marks)

Summer 2018 Paper 3 Q13

3 Here are two similar solid shapes.

A

B

surface area of shape **A** : surface area of shape **B** = 3 : 4

The volume of shape **B** is 10 cm^3

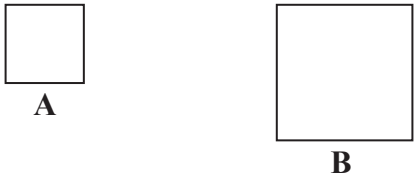
Work out the volume of shape **A**.
Give your answer correct to 3 significant figures.

..... cm^3

(Total for Question 3 is 3 marks)

Summer 2020 Paper 2 Q14

4 Here are two squares, **A** and **B**.



The length of each side of square **B** is 4 cm greater than the length of each side of square **A**.
The area of square **B** is 70 cm^2 greater than the area of square **A**.

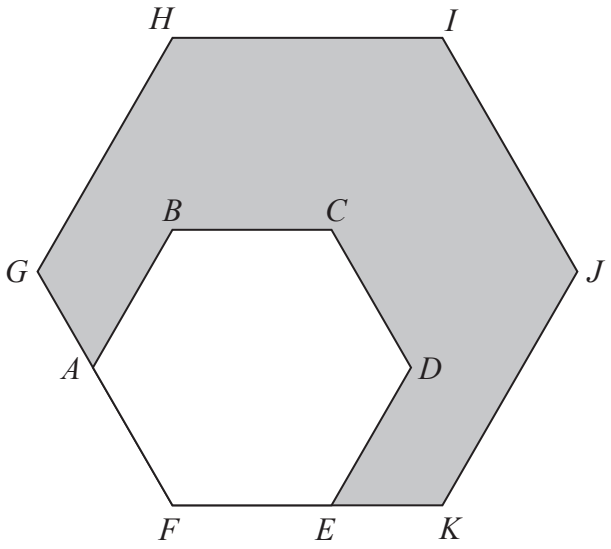
Find the area of square **B**.
Give your answer correct to 3 significant figures.
You must show all your working.

..... cm^2

(Total for Question 4 is 4 marks)

Summer 2020 Paper 3 Q19

5



ABCDEF is a regular hexagon with sides of length x.
This hexagon is enlarged, centre F, by scale factor p to give hexagon *FGHIJK*.

Show that the area of the shaded region in the diagram is given by $\frac{3\sqrt{3}}{2}(p^2 - 1)x^2$

(Total for Question 5 is 4 marks)

Summer 2021 Paper 2 Q19

6 **A**, **B** and **C** are three spheres.

The volume of sphere **A** is $125\,cm^3$
The volume of sphere **B** is $27\,cm^3$

The ratio of the radius of sphere **B** to the radius of sphere **C** is $1:2$

Work out the ratio of the surface area of sphere **A** to the surface area of sphere **C**.

.....

(Total for Question 6 is 3 marks)

Autumn 2018 Paper 1 Q15

7 Three solid shapes **A**, **B** and **C** are similar.

The surface area of shape **A** is $4\,cm^2$
The surface area of shape **B** is $25\,cm^2$

The ratio of the volume of shape **B** to the volume of shape **C** is $27 : 64$

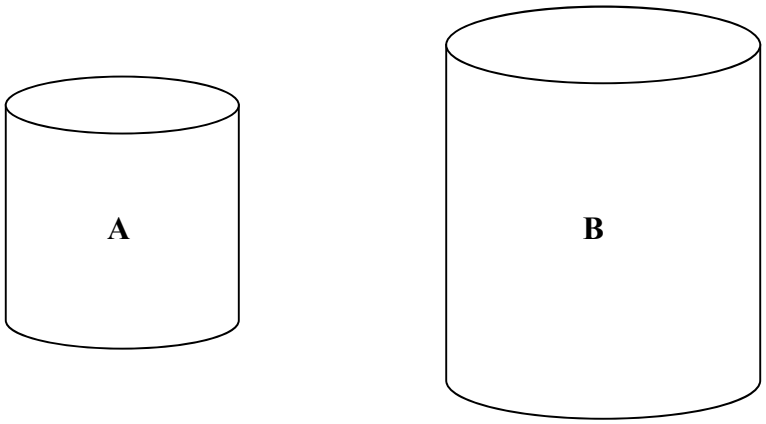
Work out the ratio of the height of shape **A** to the height of shape **C**.
Give your answer in its simplest form.

.....

(Total for Question 7 is 4 marks)

Autumn 2019 Paper 1 Q17

8 **A** and **B** are two similar cylindrical containers.



the surface area of container **A** : the surface area of container **B** = 4 : 9

Tyler fills container **A** with water.
She then pours all the water into container **B**.
Tyler repeats this and stops when container **B** is full of water.

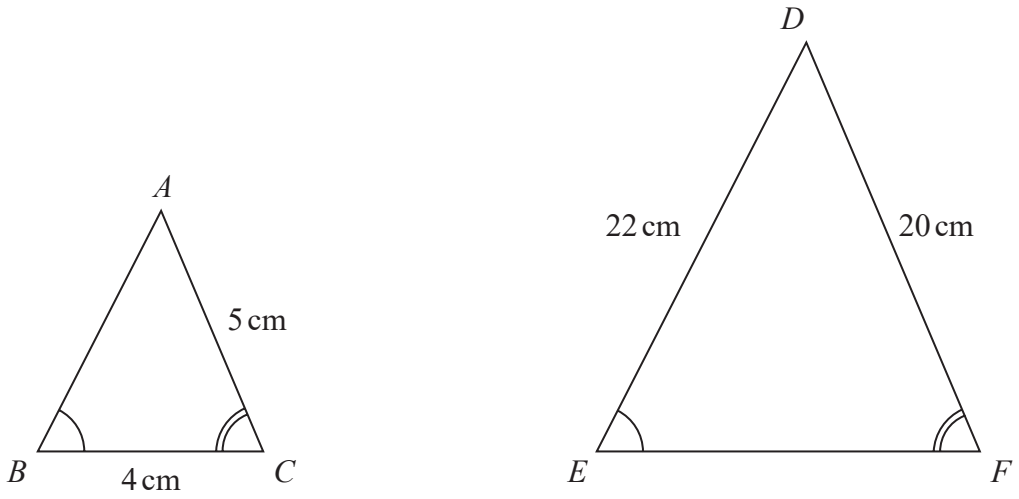
Work out the number of times that Tyler fills container **A** with water.
You must show all your working.

.....

(Total for Question 8 is 4 marks)

Autumn 2022 Paper 3 Q5

9 Triangle *ABC* and triangle *DEF* are similar.



(a) Work out the length of *EF*.

..... cm

(2)

(b) Work out the length of *AB*.

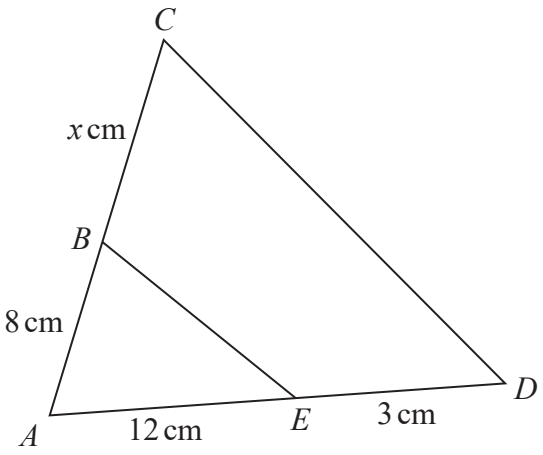
..... cm

(2)

(Total for Question 9 is 4 marks)

Autumn 2017 Paper 1 Q22

10 The two triangles in the diagram are similar.



There are two possible values of x.

Work out each of these values.
State any assumptions you make in your working.

(Total for Question 10 is 5 marks)