

Similarity

YEAR	PAPER	QUESTION
2014	2	<p>A supermarket sells cylindrical cookie jars which are mathematically similar.</p> <div><p>The diagram shows two cylindrical cookie jars. The smaller jar on the left is labeled 'COOKIES' and has a height of 15 cm. The larger jar on the right is also labeled 'COOKIES' and has a height of 24 cm.</p></div> <p>The smaller jar has a height of 15 centimetres and a volume of 750 cubic centimetres.</p> <p>The larger jar has a height of 24 centimetres.</p> <p>Calculate the volume of the larger jar.</p> <p style="text-align: right;">3</p>
2015	2	<p>The flag at each hole on a golf course is coloured red and blue.</p> <p>The diagram below represents a flag.</p> <p>Triangle QRT represents the red section.</p> <p>PQTS represents the blue section.</p> <div><p>The diagram shows a right-angled triangle SPR representing a flag. The vertical side SP is labeled 30 cm. A vertical line segment QT is drawn from the top vertex S to the bottom edge PR, where Q is on PR. The height QT is labeled 24 cm. To the right of the diagram is a small illustration of a flag on a pole, with a light blue section on the left and a dark blue section on the right, representing the red and blue sections of the flag.</p></div> <p>Triangles PRS and QRT are mathematically similar.</p> <p>The area of triangle QRT is 400 square centimetres.</p> <p>Calculate the area of $PQTS$, the blue section of the flag.</p> <p style="text-align: right;">4</p>

2016

2

Two pictures are mathematically similar in shape.



100 cm



60 cm

The cost of each picture is proportional to its area.

The large picture costs £13.75.

Find the cost of the small picture.

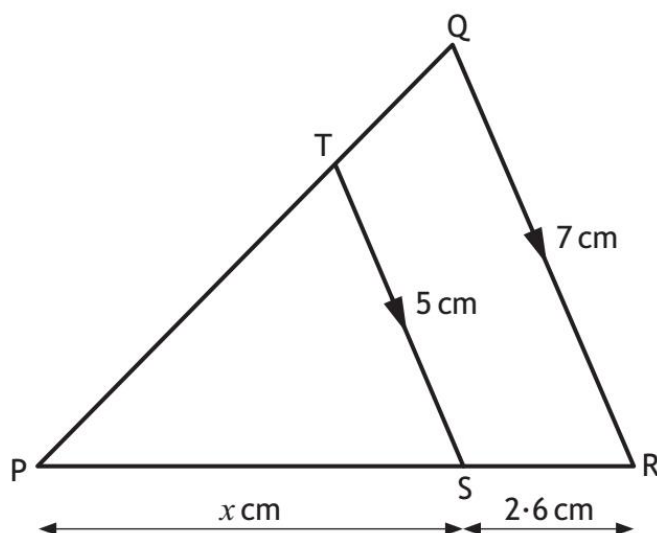
3

2017

1

In the diagram below:

- TS is parallel to QR
- $TS = 5$ centimetres
- $QR = 7$ centimetres
- $SR = 2.6$ centimetres



The length of PS is x centimetres.

Calculate the value of x .

3

2018

2

A cinema sells popcorn in two different sized cartons.



The small carton is 16 centimetres deep and has a volume of 576 cubic centimetres.

The large carton is 24 centimetres deep and has a volume of 1125 cubic centimetres.

(a) Show that the two cartons are **not** mathematically similar.

3

The large carton is redesigned so that the two cartons are **now** mathematically similar.

The volume of the redesigned large carton is 1500 cubic centimetres.

(b) Calculate the depth of the redesigned large carton.

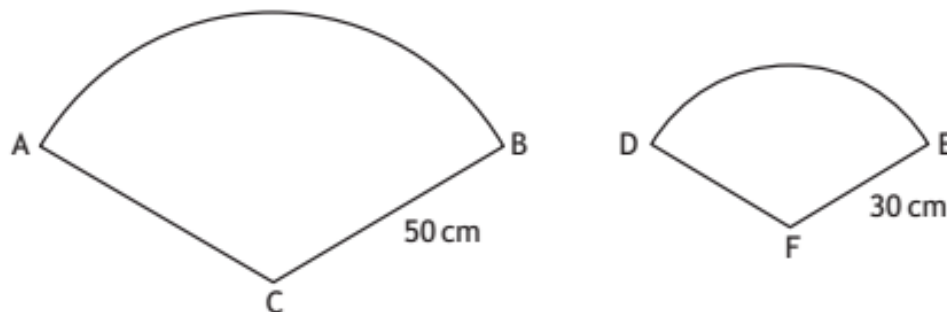
2

2019

2

In the diagram

- ABC is a sector of a circle, centre C
- DEF is a sector of a circle, centre F.



The sectors are mathematically similar.

The area of the larger sector, ABC, is 2750 square centimetres.

(a) Calculate the area of the smaller sector, DEF.

3