Maths.scot

National 5 Maths
Pythagoras in a Circle

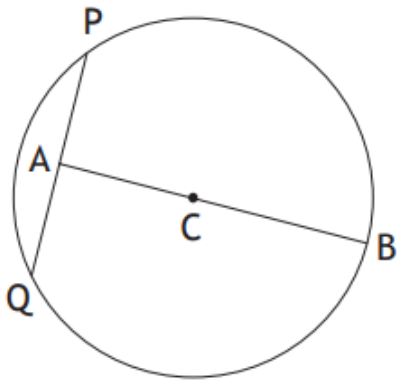
SQA past paper and specimen paper questions and answers by topic

Visit Maths.scot for full worked solutions to each of these questions.

National 5 Maths
SQA 2014 Paper 1
Question 12

National 5 Maths
Maths.scot

The diagram below shows a circle, centre C.



The radius of the circle is 15 centimetres.

A is the mid-point of chord PQ.

The length of AB is 27 centimetres.

Calculate the length of PQ. **4**

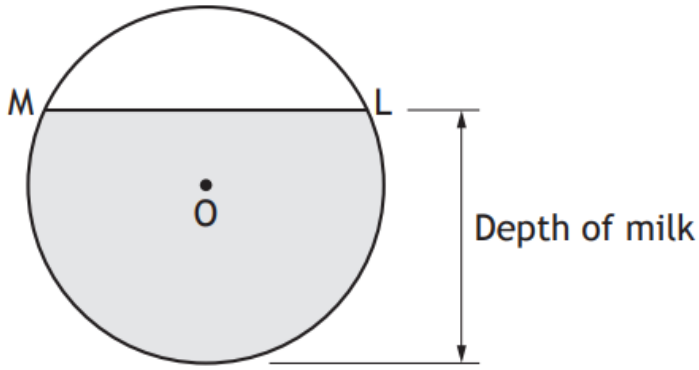
Answer:

18 cm

National 5 Maths
SQA 2015 Paper 2
Question 12

National 5 Maths
Maths.scot

The diagram below shows the circular cross-section of a milk tank.



The radius of the circle, centre O, is 1·2 metres.

The width of the surface of the milk in the tank, represented by ML in the diagram, is 1·8 metres.

Calculate the depth of the milk in the tank. **4**

Answer:

1.99 m

National 5 Maths
SQA 2016 Paper 2
Question 15

National 5 Maths
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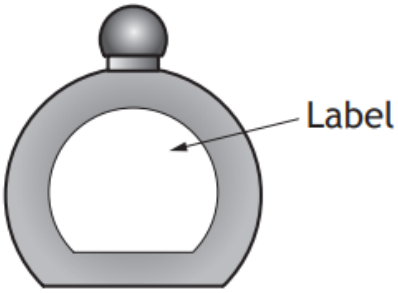
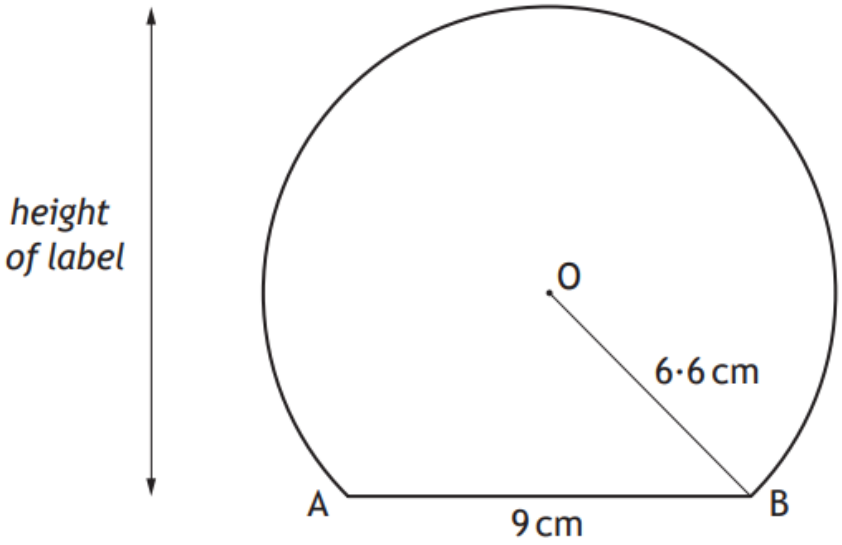
This perfume bottle has a label in the shape of part of a circle.



A diagram of the label is shown below.



- The centre of the circle is O.
- The chord AB is 9 centimetres.
- The radius OB is 6·6 centimetres.

Find the height of the label. **4**

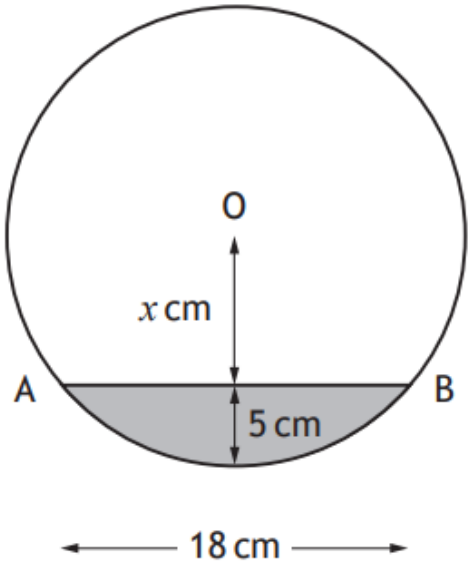
Answer:

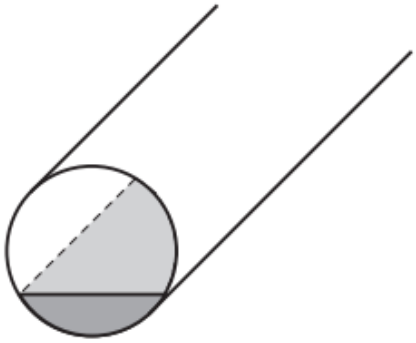
11.4 cm

National 5 Maths
SQA 2017 Specimen
Paper 1 Question 16

National 5 Maths
Maths.scot

A cylindrical pipe has water in it as shown.





The depth of the water at the deepest point is 5 centimetres.

The width of the water surface, AB, is 18 centimetres.

The radius of the pipe is r centimetres.

The distance from the centre, O, of the pipe to the water surface is x centimetres.

(a) Write down an expression for x in terms of r. **1**

(b) Calculate r, the radius of the pipe. **3**

Answers:

(a) $x = r - 5$

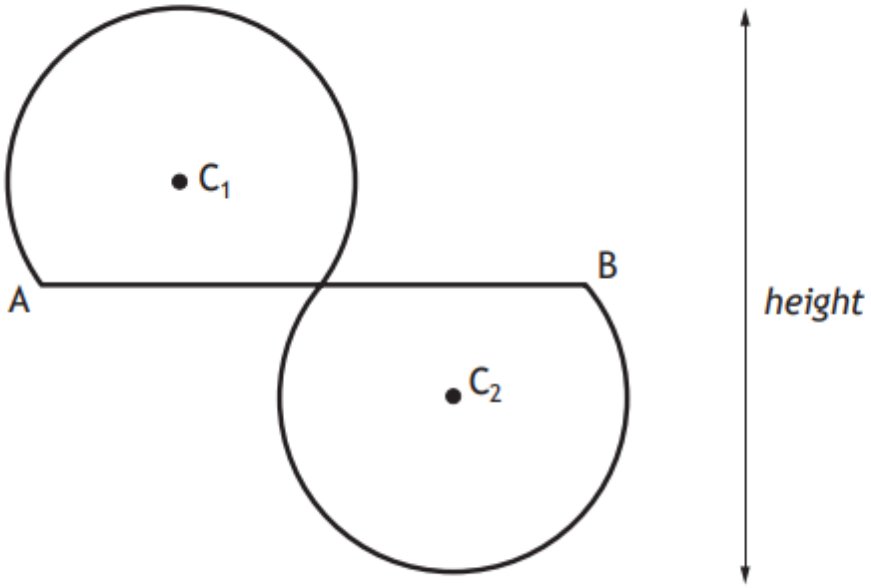
(b) 10.6 cm

National 5 Maths
SQA 2017 Paper 2
Question 13

National 5 Maths
Maths.scot

Two identical shapes are used to form a logo.

Each shape is part of a circle.



- The circles have centres C_1 and C_2.
- The radius of each circle is 14 centimetres.
- The logo has half-turn symmetry about the mid-point of AB.
- AB is 48 centimetres long.

Calculate the height of the logo. **4**

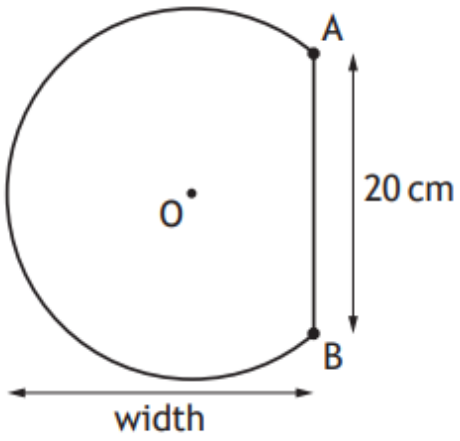
Answer:

42.4 cm

National 5 Maths
SQA 2018 Paper 2
Question 12

National 5 Maths
Maths.scot

The shape below is part of a circle, centre O.



The circle has radius 13 centimetres.
AB is a chord of length 20 centimetres.
Calculate the width of the shape. **4**

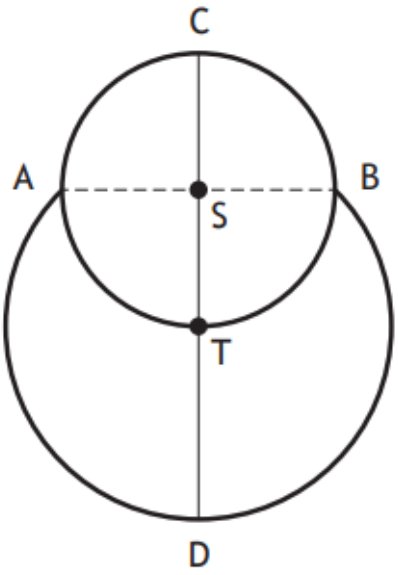
Answer:
21.3 cm

National 5 Maths
SQA 2019 Paper 2
Question 18

National 5 Maths
Maths.scot

The picture shows a cartoon snowman.

The diagram below represents the snowman.



- The head is a small circle, centre S, with diameter 15 centimetres
- The body is part of a larger circle, centre T
- The point T lies on the circumference of the small circle
- The points A and B lie on the circumferences of both circles

Calculate CD, the height of the snowman. **4**

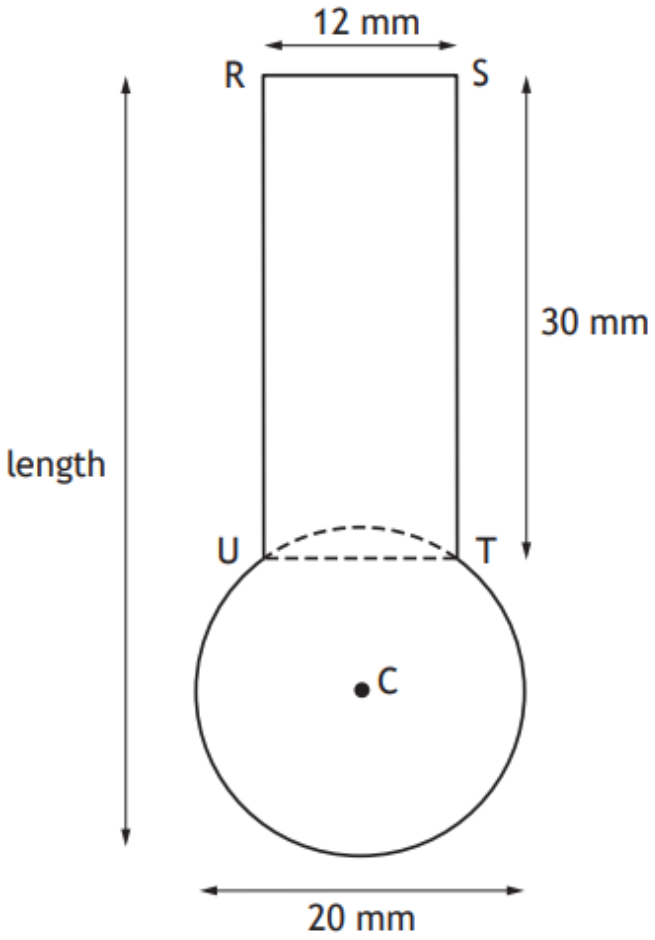
Answer: 25.6 cm

National 5 Maths
SQA 2021 Paper 1
Question 18

National 5 Maths
Maths.scot

The diagram below shows a design for a memory stick.

The design consists of a rectangle, RSTU and part of a circle, centre C.



memory stick

- RS = UT = 12 millimetres
- RU = ST = 30 millimetres
- The diameter of the circle is 20 millimetres
- UT is a chord of the circle

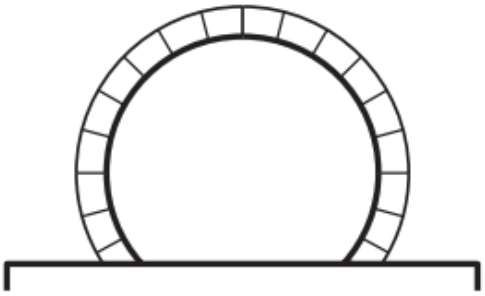
Calculate the length of the memory stick. **4**

Answer: 48 mm

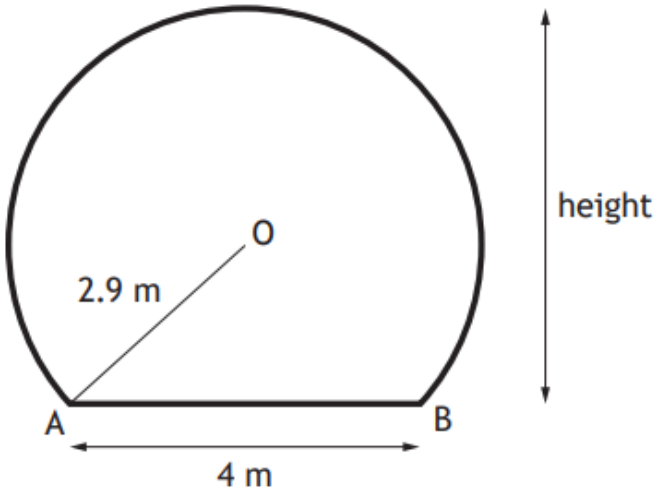
National 5 Maths
SQA 2022 Paper 2
Question 8

National 5 Maths
Maths.scot

A train tunnel has a circular cross-section with a horizontal floor.



A diagram of the cross-section is shown below.



- The centre of the circle is O.
- Chord AB is 4 metres.
- The radius OA is 2.9 metres.

Calculate the height of the tunnel. **4**

Answer:

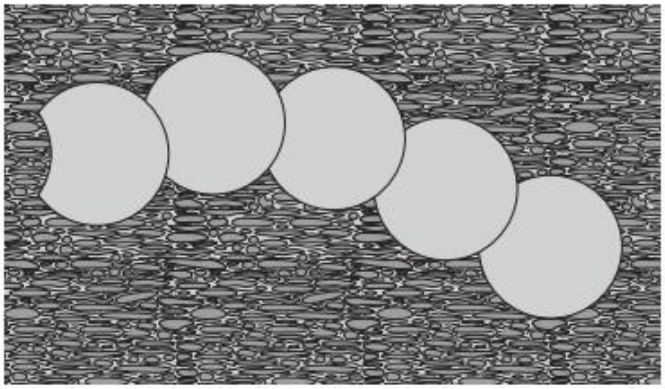
5 m

National 5 Maths
SQA 2023 Paper 1
Question 10

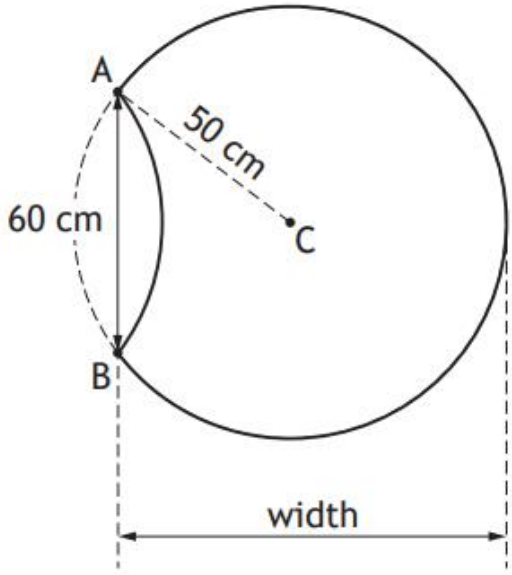
National 5 Maths
Maths.scot

Alan buys some identical paving slabs to make a path.

Each slab is part of a circle.



The diagram below shows a single slab.



The circle, centre C, has a radius of 50 centimetres.

Length AB is 60 centimetres.

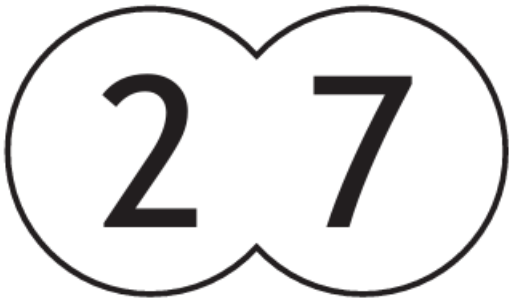
Calculate the width of the paving slab. **4**

Answer: 90 cm

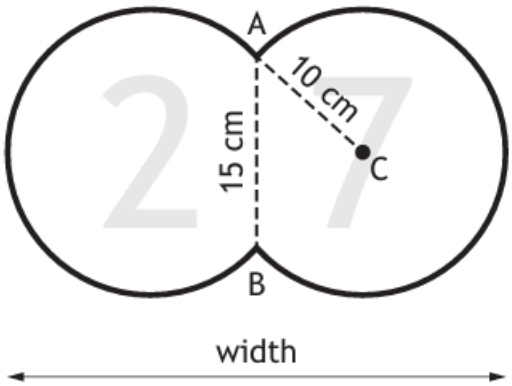
National 5 Maths
SQA 2024 Paper 2
Question 10

Karen buys a door-number sign for her house.

The sign consists of parts of two identical circles.



AB is a chord to both circles.



- AB has length 15 centimetres.
- The radius AC has length 10 centimetres.

Calculate the width of the sign. **4**

Answer:

33.2 cm