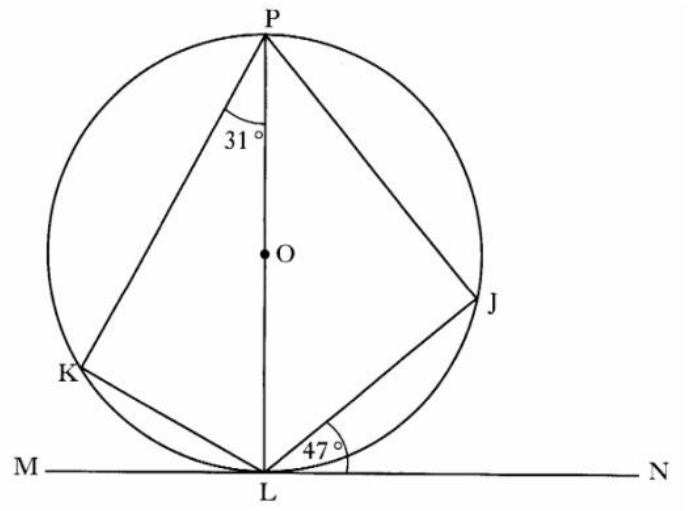
National 5 Maths Practice Paper C

Paper 2 You may use a calculator

1. Bacteria in a test-tube increase at the rate of 4.6% per hour.
At 12 noon, there are 50 000 bacteria.
At 5 pm, how many bacteria will be present?
Give your answer correct to 3 significant figures. 4

2.



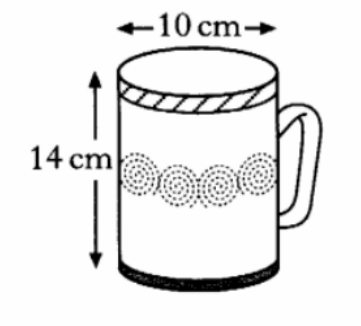
The tangent, MN, touches the circle, centre O, at L.
Angle JLN = 47°
Angle KPL = 31°

Find the size of angle JLK. 3

3. Change the subject of the formula

$y = ax^3 + c$ to x. 3

4. A mug is in the shape of a cylinder with diameter 10 centimetres and height 14 centimetres.

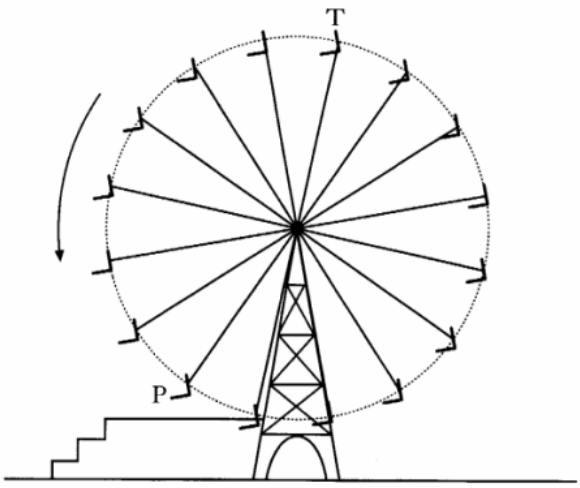


(a) Calculate the capacity of the mug. 2

(b) 600 millilitres of coffee are poured in.

Calculate the depth of the coffee in the mug. 3

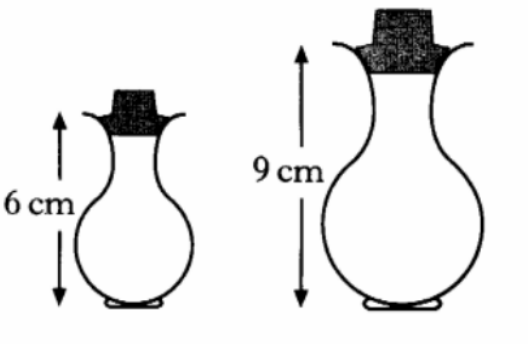
5. The diagram below shows a big wheel at the fairground.



The wheel has 16 chairs equally spaced on its circumference.
The radius of the wheel is 9 metres.

As the wheel rotates in an anticlockwise direction, find the distance a chair travels in moving from position T to position P in the diagram. 4

7. Two perfume bottles are mathematically similar in shape.



The smaller one is 6 centimetres high and holds 30 millilitres of perfume.
The larger one is 9 centimetres high.

What volume of perfume will the larger one hold? 3

9. A pony shelter is part of a cylinder as shown in figure 1.

It is 6 metres wide and 2 metres high.

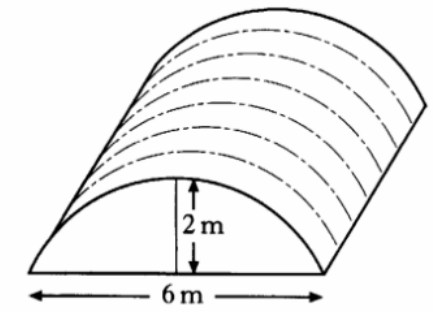


Figure 1

The cross-section of the shelter is a segment of a circle with centre O, as shown in figure 2.

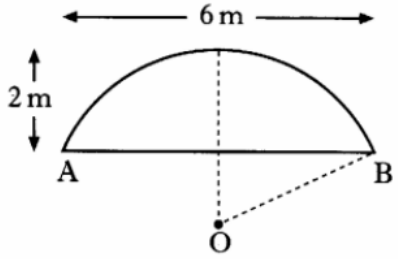
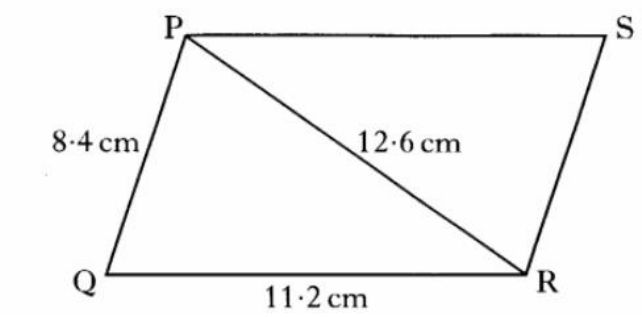


Figure 2

OB is the radius of the circle.

Calculate the length of OB. 4

10. The diagram shows a parallelogram, PQRS.



(a) Calculate the size of angle PQR. Do not use a scale drawing. 3

(b) Calculate the area of the parallelogram. 3