National 5 Maths Practice Paper B

Paper 2   You may use a calculator

1.   A spider weighs approximately 19.06×10^{-5} kilograms.

A humming bird is 18 times heavier.

Calculate the weight of the humming bird.

Give your answer in scientific notation.   2

2.   A microwave oven is sold for £150.

This price includes VAT at 20%.

Calculate the price of the microwave oven without VAT.   3

3.   (a)   The price, in pence, of a carton of milk in six different supermarkets
                is shown below.

	66	70	89	75	79	59

                Use an appropriate formula to calculate the mean and standard deviation
                of these prices.

                Show clearly all your working.   4
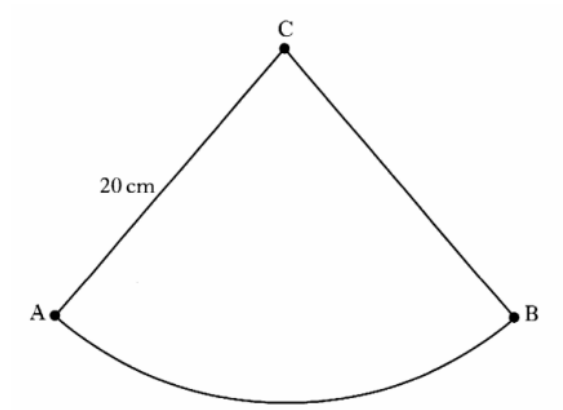
        (b)   In six local shops, the mean price of a carton of milk is 73 pence with a
                standard deviation of 17.7 pence.

                Compare the supermarket prices with those of the local shops.   2

4. A pendulum travels along an arc of a circle, centre C.
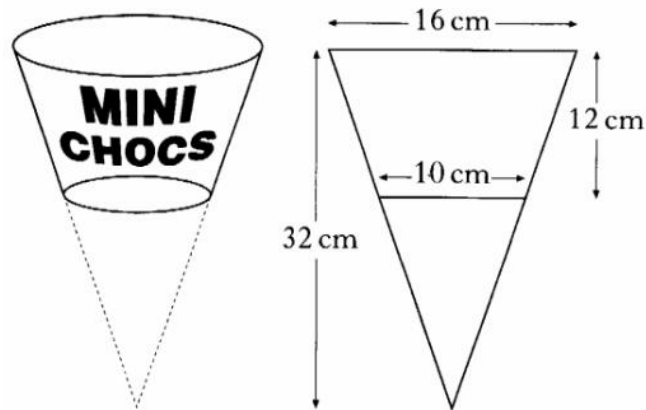

The length of the pendulum is 20 centimetres.
The pendulum swings from A to B.
The length of the arc AB is 28.6 centimetres.

Find the angle through which the pendulum swings from A to B. 4

5. A container to hold chocolates is in the shape of part of a cone with dimensions as shown below.
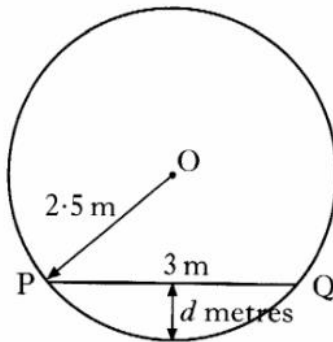

Calculate the volume of the container.

Give your answer correct to one significant figure.   5

7. The diagram below shows a circular cross-section of a cylindrical oil tank.

In the figure below,

- o O represents the centre of the circle.
- o PQ represents the surface of the oil in the tank.
- o PQ is 3 metres.
- o The radius OP is 2.5 metres.
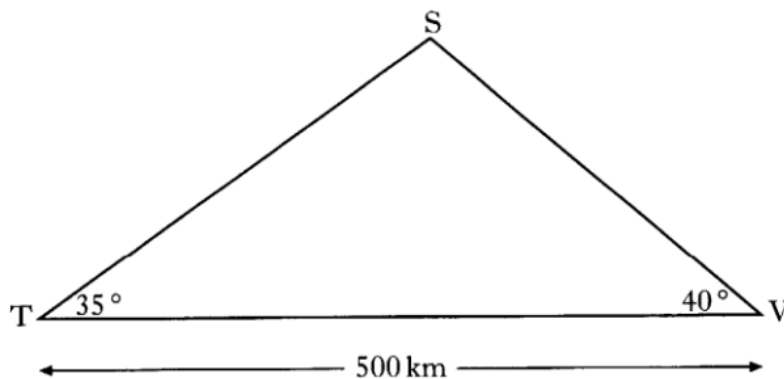
Find the depth, d metres, of oil in the tank.   4

8. The population of Newtown is 50 000.
    The population of Newtown is increasing at a steady rate of 5% per annum.
    The population of Auldtown is 108 000.
    The population of Auldtown is decreasing at a steady rate of 20% per annum.

    How many years will it take until the population of Newtown is greater than the
    population of Auldtown? 5

9. A TV signal is sent from a transmitter (T) via a satellite (S) to a village (V), as shown
    in the diagram. The village is 500 kilometres from the transmitter.

    The signal is sent out at an angle of $35°$ and is received in the village at an
    angle of $40°$.

    Calculate the height of the satellite above the ground. 5

10. Change the subject of the formula to p.

$$r = 3p - 2t$$

2