CIRCLES
CIRCUMFERENCE

Ref: G425.**2P1**

A1 The button on Keith's coat has a diameter of 14 millimetres. Find the button's circumference.	**A2** An igloo has a circular floor with a radius of 2.8 metres. Calculate the floor's circumference.	**A3** The circumference of an underground gas pipe is measured to be 145 cm. Calculate the diameter of the gas pipe.	**A4** A cylindrical tin has a diameter of 8.7 cm. The tin has a label which goes all the way round and has a 1 cm overlap. Calculate the length of the label.
B1 Tess makes a circular flower bed of diameter 4 metres. She puts a single line of paving blocks around the outside of the flower bed. Each block is 20 cm in length. How many blocks does she need to go around the whole flower bed?	**B2** The minute-hand of a clock is 18 cm long. Find the distance travelled by the tip of the minute-hand in 24 hours. Give your answer correct to the nearest metre.	**B3** The diameter of a car wheel is 62 cm. Work out the number of times the wheel rotates in a journey of 20 km.	**B4** An old oak tree has a diameter of 65 cm. Dawn wants to wrap yellow ribbon around the tree. How many metres of ribbon will she need if she wants the ribbon to go around the tree 100 times?
C1 A penny-farthing is a bicycle that has a large front wheel of diameter 132 cm and a much smaller rear wheel. During a journey, the front wheel makes 200 revolutions. How many metres does the penny-farthing travel?	**C2** Maggie has a marble with a diameter of 14 mm. She rolls her marble towards another marble that is 160 cm away. How many revolutions will Maggie's marble make before hitting the second one?	**C3** Two wire circles of diameters 15 cm and 10 cm are cut and then joined to make one large circle. Calculate the diameter of this larger circle.	**C4** It takes Pat 6 minutes to jog once around a circular track that has a diameter of 500 meters. Find Pat's average speed in metres per second.

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A1

The button on Keith's coat has a diameter of 14 millimetres.

Find the button's circumference.

$$C = \pi \times 14$$
$$= 44.0 \text{ mm}$$

A2

An igloo has a circular floor with a radius of 2.8 metres.

Calculate the floor's circumference.

$$C = \pi \times 5.6$$
$$= 17.6 \text{ m}$$

A3

The circumference of an underground gas pipe is measured to be 145 cm.

Calculate the diameter of the gas pipe.

$$D = \frac{145}{\pi}$$
$$= 46.2 \text{ cm}$$

A4

A cylindrical tin has a diameter of 8.7 cm.

The tin has a label which goes all the way round and has a 1 cm overlap.

$$L = \pi \times 8.7 + 1$$
$$= 28.3 \text{ cm}$$

B1

$$C = \pi \times 4$$
$$= 12.566...$$
$$\text{blocks} = \frac{12.566...}{0.2}$$
$$= 62.8 \quad (63)$$

B2

$$C = \pi \times 36$$
$$= 113.09...$$
$$\text{distance} = 113.09... \times 60 \times 24$$
$$= 162\,860 \text{ cm}$$
$$= 1629 \text{ metres}$$

B3

$$C = \pi \times 62$$
$$= 194.77...$$
$$\text{rotations} = \frac{2\,000\,000}{194.77..}$$
$$= 10\,268$$

B4

$$C = \pi \times 65$$
$$= 204.20...$$
$$\text{ribbon length} = 204.20... \times 100$$
$$= 20\,420 \text{ cm}$$
$$= 204.2 \text{ metres}$$

C1

$$C = \pi \times 132$$
$$= 414.69...$$
$$\text{distance} = 414.69... \times 200$$
$$= 82\,938 \text{ cm}$$
$$= 829 \text{ metres}$$

C2

$$C = \pi \times 14$$
$$= 43.98...$$
$$\text{revolutions} = \frac{1600}{43.98...}$$
$$= 36.4$$

C3

$$\text{total } C = \pi \times 15 + \pi \times 10$$
$$= 78.539...$$
$$\text{new } D = \frac{78.539...}{\pi}$$
$$= 25 \text{ cm}$$

C4

$$C = \pi \times 500$$
$$= 1570.79...$$
$$\text{speed} = \frac{1570.79...}{360}$$
$$= 4.36 \text{ m/s}$$