Year 9 area and perimeter worksheet

Year 9 · 10 questions · www.tuterly.com.au

Name: _____ Date: _____

Question 1

Convert:

(a) 3.5 km to metres (b) 248 mm to centimetres (c) 65 cm to metres

Answer: _____

Question 2

Find the circumference of a circle with a diameter of 14 cm. Give an exact answer and an answer correct to 2 decimal places.

Answer: _____

Question 3

Find the area of:

(a) a triangle with base 14 cm and perpendicular height 9 cm

(b) a parallelogram with base 12 m and perpendicular height 7.5 m

Answer: _____

Question 4

The front wall of a garden shed is a rectangle 8 m wide and 3 m high, with a triangle on top that has a base of 8 m and a perpendicular height of 2.5 m. Find the total area of the front wall.

Answer: _____

Question 5

A rectangular table is 2.4 m long and 85 cm wide. Find its perimeter in centimetres.

Answer: _____

Question 6

Find the circumference of a circular pond with a radius of 6.5 m, correct to 2 decimal places.

Answer: _____

Question 7

Find the area of a circle with radius 8 cm. Give an exact answer and an answer correct to 2 decimal places.

Answer: _____

Question 8

A shape is made from a rectangle 10 cm long and 6 cm wide, with a semicircle attached to one of its 6 cm sides (the semicircle has diameter 6 cm). Find, correct to 2 decimal places:

(a) the perimeter of the shape

(b) the area of the shape

Answer: _____

Question 9

A square has a perimeter of 3.6 m. Find its side length in centimetres.

Answer: _____

Question 10

A sector of a circle has a radius of 10 cm and an angle of 72° at the centre.

(a) Find the arc length, correct to 2 decimal places.

(b) Find the perimeter of the sector, correct to 2 decimal places.

Answer: _____

Year 9 area and perimeter: answers and worked solutions

Year 9 · 10 questions · www.tuterly.com.au

Question 1

Key idea: 1 km = 1000 m, 1 cm = 10 mm and 1 m = 100 cm. Multiply when changing to a smaller unit and divide when changing to a larger unit.

1. (a) 3.5 × 1000 = 3500 2. (b) 248 ÷ 10 = 24.8 3. (c) 65 ÷ 100 = 0.65

Answer: (a) 3500 m (b) 24.8 cm (c) 0.65 m

Question 2

Key idea: Circumference C = π d, or C = 2π r.

1. C = π × 14 = 14π 2. 14π = 43.982… ≈ 43.98

Answer: 14π cm ≈ 43.98 cm

Question 3

Key idea: Triangle: A = ½bh. Parallelogram: A = bh, using the perpendicular height.

1. (a) ½ × 14 × 9 = 63 2. (b) 12 × 7.5 = 90

Answer: (a) 63 cm^2 (b) 90 m^2

Question 4

Key idea: Split the composite shape into simple shapes, find each area, then add.

1. Rectangle: 8 × 3 = 24 2. Triangle: ½ × 8 × 2.5 = 10 3. Total: 24 + 10 = 34

Answer: 34 m^2

Question 5

Key idea: Change both lengths to the same unit before adding.

1. 2.4 m = 240 cm 2. Perimeter = 2 × (240 + 85) = 2 × 325 = 650

Answer: 650 cm

Question 6

Key idea: Use C = 2π r when the radius is given.

1. C = 2 × π × 6.5 = 13π 2. 13π = 40.840… ≈ 40.84

Answer: 40.84 m

Question 7

Key idea: The area of a circle is $A = \pi r^2$.

1. $A = \pi \times 8^2 = 64\pi$ 2. $64\pi = 201.061\ldots \approx 201.06$

Answer: 64π cm^2 ≈ 201.06 cm^2

Question 8

Key idea: The side where the semicircle is attached is inside the shape, so it is not part of the perimeter. The curved part is half a circumference.

1. (a) Straight sides: $10 + 10 + 6 = 26$ 2. (a) Semicircle arc: $\frac{1}{2} \times \pi \times 6 = 3\pi$ 3. (a) Perimeter $= 26 + 3\pi = 35.424\ldots \approx 35.42$ 4. (b) Rectangle: 60; semicircle: $\frac{1}{2} \times \pi \times 3^2 = 4.5\pi$ 5. (b) Area $= 60 + 4.5\pi = 74.137\ldots \approx 74.14$

Answer: (a) 35.42 cm (b) 74.14 cm^2

Question 9

Key idea: A square has four equal sides, so each side is the perimeter divided by 4.

1. 3.6 m = 360 cm 2. $360 \div 4 = 90$

Answer: 90 cm

Question 10

Key idea: Arc length $= (\theta)/(360) \times 2\pi r$. The perimeter of a sector is the arc plus two radii.

1. (a) $72/360 \times 2\pi \times 10 = \frac{1}{5} \times 20\pi = 4\pi = 12.566\ldots \approx 12.57$ 2. (b) $4\pi + 10 + 10 = 4\pi + 20 = 32.566\ldots \approx 32.57$

Answer: (a) 12.57 cm (b) 32.57 cm