Year 9 area of a triangle worksheet

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Name: _____ Date: _____

Question 1

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 2

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

Answer: _____

Question 3

Find the area of:

(a) a trapezium with parallel sides of 9 cm and 15 cm and a perpendicular height of 6 cm

(b) a rhombus with diagonals of 10 cm and 7 cm

Answer: _____

Question 4

A sector has a radius of 12 cm and an angle of 150° at the centre.

(a) Find the exact area of the sector in terms of π.

(b) Write the area correct to 2 decimal places.

(c) A quarter circle also has a radius of 12 cm. How many times larger is the sector's area than the quarter circle's area?

Answer: _____

Question 5

Find the area of a triangle with base 18 cm and perpendicular height 11 cm.

Answer: _____

Question 6

A circular garden bed has a diameter of 3.4 m. Find its area, correct to 2 decimal places.

Answer: _____

Question 7

A trapezium has an area of 84 cm^2 and parallel sides of 9 cm and 15 cm.

(a) Find its perpendicular height.

(b) A rhombus has the same area and one diagonal of 12 cm. Find the length of its other diagonal.

Answer: _____

Question 8

A circular rug has an area of 6 m^2. The area of a circle is $A = \pi r^2$.

(a) Find the radius of the rug, in metres, correct to 2 decimal places.

(b) Find the circumference of the rug, in metres, correct to 2 decimal places.

Answer: _____

Year 9 area of a triangle: answers and worked solutions

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Question 1

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 cm² (b) 90 m²

Question 2

Key idea: The area of a circle is A = π r².

1. A = π × 8² = 64π 2. 64π = 201.061… ≈ 201.06

Answer: 64π cm² ≈ 201.06 cm²

Question 3

Key idea: Trapezium: A = ½(a + b)h. Rhombus or kite: A = ½xy, where x and y are the diagonals.

1. (a) ½(9 + 15) × 6 = 12 × 6 = 72 2. (b) ½ × 10 × 7 = 35

Answer: (a) 72 cm² (b) 35 cm²

Question 4

Key idea: Area of a sector = (θ)/(360) × π r². A quarter circle is a sector with angle 90°.

1. (a) 150/360 × π × 12² = 5/12 × 144π = 60π 2. (b) 60π = 188.495… ≈ 188.50 3. (c) Quarter circle: ¼ × 144π = 36π 4. (c) (60π)/(36π) = 5/3 ≈ 1.67 (the same as 150/90)

Answer: (a) 60π cm² (b) 188.50 cm² (c) 5/3 times (about 1.67 times)

Question 5

Key idea: A = ½bh.

1. A = ½ × 18 × 11 = 99

Answer: 99 cm²

Question 6

Key idea: Halve the diameter to get the radius, then use A = π r².

1. r = 3.4 ÷ 2 = 1.7 m 2. A = π × 1.7² = 9.0792… 3. Correct to 2 decimal places: 9.08 m²

Answer: 9.08 m²

Question 7

Key idea: Use A = ½(a + b)h for a trapezium and A = ½xy for a rhombus.

1. 84 = ½(9 + 15)h = 12h, so h = 7 cm 2. 84 = ½ × 12 × y = 6y, so y = 14 cm

Answer: (a) 7 cm (b) 14 cm

Question 8

Answer: (a) 1.38 m (r = √((6)/(π))) (b) 8.68 m (accept 8.67 m if the rounded radius 1.38 was used)