

Foundation GCSE: Rectangles and Triangles

Name: _____

Class: _____

Instructions: Answer all questions. Questions are ordered from easiest (1) to hardest (20). Working out should be shown where appropriate.

1. Calculate the perimeter of a rectangle with length 8 cm and width 5 cm.
2. Calculate the area of a rectangle with length 9 cm and width 4 cm.
3. Find the area of a square with a side length of 7 cm.
4. Calculate the perimeter of a square with a side length of 12 m.
5. Calculate the area of a right-angled triangle with a base of 6 cm and a perpendicular height of 8 cm.
6. A rectangle has an area of 54 cm^2 and a length of 9 cm. Calculate its width.
7. A rectangular garden has a perimeter of 36 m and a width of 6 m. Calculate its length.
8. Calculate the area of a triangle with a base of 14 mm and a perpendicular height of 5 mm.
9. A square has an area of 81 cm^2 . Calculate its perimeter.
10. A triangle has an area of 40 cm^2 and a perpendicular height of 8 cm. Calculate the length of its base.
11. A compound shape is made of two identical rectangles measuring 10 cm by 4 cm placed side by side. Calculate the total area.
12. Calculate the total perimeter of an L-shaped room with outer dimensions 8 m by 6 m, where a corner cutout measures 3 m by 2 m.
13. A rectangular floor measures 4.5 m by 3 m. Carpet tiles cost 18 per m^2 . Calculate the total cost to carpet the room.
14. A triangle has sides of length 7 cm, 9 cm, and 11 cm. Calculate its perimeter.
15. A rectangle has a length of $(x + 5)$ cm and a width of 4 cm. If its perimeter is 38 cm, find the value of x .
16. Two identical right-angled triangles with base 6 cm and height 8 cm are joined along their hypotenuse. Calculate the total area of the combined shape.
17. A rectangle has a length of $3x$ cm and a width of 5 cm. If its area is 60 cm^2 , find the value of x .
18. A rectangular path of length 15 m and width 2 m is paved with square slabs of side 50 cm. Calculate how many slabs are needed.
19. A triangle and a rectangle have the same area. The rectangle has dimensions 8 cm by 6 cm. If the triangle has a base of 12 cm, calculate its perpendicular height.
20. An algebraic rectangle has a length of $(2x + 3)$ cm and a width of $(x - 1)$ cm. If its perimeter is 34 cm, calculate its exact area.

Answers & Worked Solutions

1. $26 \text{ cm} : 2 \times (8 + 5) = 26.$
2. $36 \text{ cm}^2 : 9 \times 4 = 36.$
3. $49 \text{ cm}^2 : 7^2 = 49.$
4. $48 \text{ m} : 4 \times 12 = 48.$
5. $24 \text{ cm}^2 : \frac{1}{2} \times 6 \times 8 = 24.$
6. $6 \text{ cm} : 54 \div 9 = 6.$
7. $12 \text{ m} : (36 \div 2) - 6 = 12.$
8. $35 \text{ mm}^2 : \frac{1}{2} \times 14 \times 5 = 35.$
9. $36 \text{ cm} : \text{Side length} = \sqrt{81} = 9, \text{ perimeter} = 9 \times 4 = 36.$
10. $10 \text{ cm} : \text{Base} = (40 \times 2) \div 8 = 10.$
11. $80 \text{ cm}^2 : 2 \times (10 \times 4) = 80.$
12. $28 \text{ m} : \text{Sum of all outer edge lengths} = 8 + 6 + 8 + 6 = 28.$
13. $243 : \text{Area} = 4.5 \times 3 = 13.5 \text{ m}^2; \text{Cost} = 13.5 \times 18 = 243.$
14. $27 \text{ cm} : 7 + 9 + 11 = 27.$
15. $10 : \text{Perimeter} = 2((x + 5) + 4) = 38 \implies 2(x + 9) = 38 \implies x + 9 = 19 \implies x = 10.$
16. $48 \text{ cm}^2 : \text{Area} = 2 \times \left(\frac{1}{2} \times 6 \times 8\right) = 48.$
17. $4 : 3x \times 5 = 60 \implies 15x = 60 \implies x = 4.$
18. $120 \text{ slabs} : \text{Area of path} = 15 \times 2 = 30 \text{ m}^2; \text{Area of slab} = 0.5 \times 0.5 = 0.25 \text{ m}^2; \text{Slabs} = 30 \div 0.25 = 120.$
19. $8 \text{ cm} : \text{Rectangle area} = 8 \times 6 = 48; \text{Triangle height} = (48 \times 2) \div 12 = 8.$
20. $52 \text{ cm}^2 : \text{Perimeter} = 2((2x + 3) + (x - 1)) = 34 \implies 2(3x + 2) = 34 \implies 3x + 2 = 17 \implies 3x = 15 \implies x = 5. \text{ Length} = 2(5) + 3 = 13 \text{ cm}, \text{ width} = 5 - 1 = 4 \text{ cm}; \text{Area} = 13 \times 4 = 52 \text{ cm}^2.$