

y6math3 Hard Answers

Answer Key

Question 1:

A rectangular garden has a length of 12 m and a width of 8 m. What is its area? If a path of width 1 m is added around the outside, what is the new total area including the path?

Answer: Area = $12 \times 8 = 96 \text{ m}^2$. With path: $(12+2) \times (8+2) = 14 \times 10 = 140 \text{ m}^2$.

Question 2:

A triangle has a base of 15 cm and a height of 10 cm. Calculate its area. If the base is doubled and the height is halved, what is the new area?

Answer: Area = $0.5 \times 15 \times 10 = 75 \text{ cm}^2$. New: $0.5 \times 30 \times 5 = 75 \text{ cm}^2$ (same area).

Question 3:

A square has an area of 64 cm^2 . What is its side length? If each side is increased by 3 cm, what is the new area?

Answer: Side = $\sqrt{64} = 8 \text{ cm}$. New side = 11 cm. New area = 121 cm^2 .

Question 4:

A rectangular field is 45 m long and 30 m wide. A 5 m wide path runs around the inside edge of the field. What area of the field is NOT part of the path?

Answer: Field area = $45 \times 30 = 1350 \text{ m}^2$. Inner area = $(45-10) \times (30-10) = 35 \times 20 = 700 \text{ m}^2$. Non-path = 700 m^2 .

Question 5:

A rectangle has an area of 96 cm^2 and a width of 8 cm. What is its length? If both dimensions are multiplied by 1.5, what is the new area?

Answer: Length = $96 / 8 = 12 \text{ cm}$. New dimensions: $12 \times 1.5 = 18$, $8 \times 1.5 = 12$. New area = $18 \times 12 = 216 \text{ cm}^2$.

Question 6:

A composite shape is made by joining a $6 \text{ cm} \times 6 \text{ cm}$ square to a rectangle of width 6 cm and length 10 cm. What is the total area?

Answer: Square: $6 \times 6 = 36 \text{ cm}^2$. Rectangle: $6 \times 10 = 60 \text{ cm}^2$. Total = $36 + 60 = 96 \text{ cm}^2$.

Question 7:

A parallelogram has a base of 12 cm and a height of 7 cm. What is its area? If a triangle cut from one end reduces the area by 21 cm^2 , what remains?

Answer: Area = $12 \times 7 = 84 \text{ cm}^2$. Remaining = $84 - 21 = 63 \text{ cm}^2$.

Question 8:

A rectangular prism has a base area of 24 cm^2 and a height of 10 cm. What is its volume? If the height is increased by 25%, what is the new volume?

Answer: Volume = $24 \times 10 = 240 \text{ cm}^3$. New height = 12.5 cm. New volume = $24 \times 12.5 = 300 \text{ cm}^3$.

Question 9:

A circle has a radius of 7 m. Use 3.14 as pi. Calculate its area. If the radius is doubled, how many times larger is the new area?

Answer: Area = $\pi \times 7^2 = 3.14 \times 49 = 153.86 \text{ m}^2$. Radius doubled = 14 m. New area = $3.14 \times 196 = 615.44 \text{ m}^2$. Area is 4 times larger.

Question 10:

A trapezium has parallel sides of 10 cm and 6 cm, and a height of 5 cm. What is its area? If both parallel sides are increased by 2 cm, what is the new area?

Answer: Area = $0.5 \times (10+6) \times 5 = 0.5 \times 16 \times 5 = 40 \text{ cm}^2$. New: $0.5 \times (12+8) \times 5 = 0.5 \times 20 \times 5 = 50 \text{ cm}^2$.

Question 11:

A rectangular wall is 3.6 m high and 5.4 m wide. One litre of paint covers 4.5 m^2 . How many litres are needed to paint the wall? If paint costs \$12 per litre, what is the total cost?

Answer: Area = $3.6 \times 5.4 = 19.44 \text{ m}^2$. Litres needed = $19.44 / 4.5 = 4.32$, so 5 litres. Cost = $5 \times \$12 = \$60$.

Question 12:

A cube has a surface area of 150 cm^2 . What is the length of one side? If the cube is cut into 8 smaller cubes of equal size, what is the surface area of one small cube?

Answer: Side = $\sqrt{150/6} = \sqrt{25} = 5 \text{ cm}$. Small cube side = 2.5 cm. Small cube surface area = $6 \times 2.5^2 = 6 \times 6.25 = 37.5 \text{ cm}^2$.

Question 13:

A rectangular garden bed is 4 m by 3 m. A 0.5 m wide border of flowers is planted around the outside. What is the area of the flower border?

Answer: Garden area = $4 \times 3 = 12 \text{ m}^2$. With border: $(4+1) \times (3+1) = 5 \times 4 = 20 \text{ m}^2$. Border area = $20 - 12 = 8 \text{ m}^2$.

Question 14:

A shape consists of a rectangle 8 cm $\times$ 5 cm with a 3 cm $\times$ 3 cm square cut out from one corner. What is the remaining area? If the square cut-out is doubled in size, what is the new remaining area?

Answer: Original = $8 \times 5 = 40 \text{ cm}^2$. Cut-out = $3 \times 3 = 9 \text{ cm}^2$. Remaining = $40 - 9 = 31 \text{ cm}^2$. Double cut-out: $6 \times 6 = 36$. Remaining = $40 - 36 = 4 \text{ cm}^2$.

Question 15:

A piece of paper is 30 cm long and 20 cm wide. A 4 cm wide strip is cut from all four edges. What is the area of the remaining rectangle? What percentage of the original paper is wasted?

Answer: Original = $30 \times 20 = 600 \text{ cm}^2$. Remaining = $(30-8) \times (20-8) = 22 \times 12 = 264 \text{ cm}^2$. Wasted = $600 - 264 = 336$. Percentage = $336/600 \times 100 = 56\%$.