Area and volume

Free Extra Maths Class · Grade 7

Name: _____

Remember: Rectangle: A = l × w. Triangle: A = ½ × b × h. Prism: V = l × w × h. 1 cm³ = 1 mℓ and 1 m³ = 1 000 ℓ.
Why? A triangle is exactly half of a rectangle with the same base and height.

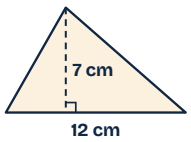
1. A square tile has sides of 9 cm. Calculate the area of the tile.

2. A stoep is a rectangle of 14 m by 6 m. Calculate the area of the stoep.

3. Calculate the volume of a cube with sides of 7 cm.

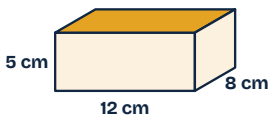
4. Complete: (a) 2 m² = ____ cm² (b) 5 ℓ = ____ cm³

5. Calculate the area of the triangle.



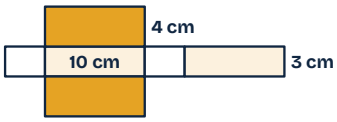
6. Complete: (a) 45 000 cm² = ____ m² (b) 2 m³ = ____ ℓ (c) 1 250 cm³ = ____ ℓ

7. Calculate the volume of the box.



8. A big foam die is a cube with sides of 5 cm. Calculate the surface area of the cube.

9. Calculate the surface area of the box with this net.

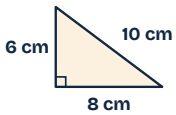


10. A square tile is 50 cm × 50 cm. (a) What is its area in cm²? (b) How many tiles cover 1 m²?

11. A cooler box is 25 cm long, 16 cm wide and 10 cm high on the inside. How many litres does it hold?

12. A triangle has an area of 36 cm² and a base of 9 cm. How high is the triangle?

13. Calculate the area of the right-angled triangle.



14. A pool is 5 m long, 3 m wide and 1,2 m deep. (a) Calculate the volume in m³. (b) How many litres does it hold when full?

15. Thandi paints the outside of a wooden crate without a lid. The crate is 50 cm long, 40 cm wide and 30 cm high. Calculate the area she paints (the bottom and four sides) in cm² and then in m².

I got _____ **out of 15** ☆ ☆ ☆

Memorandum
Area and volume

Other correct methods are also right.

1. **81 cm²**
   A = 9 × 9 = 81 cm²

2. **84 m²**
   A = l × w = 14 × 6 = 84 m²

3. **343 cm³**
   V = 7 × 7 × 7 = 49 × 7 = 343 cm³

4. **(a) 20 000 cm² (b) 5 000 cm³**
   1 m² = 100 cm × 100 cm = 10 000 cm², so 2 × 10 000 = 20 000; 1 ℓ = 1 000 cm³, so 5 × 1 000 = 5 000

5. **42 cm²**
   A = ½ × b × h = ½ × 12 × 7 = 42 cm²

6. **(a) 4,5 m² (b) 2 000 ℓ (c) 1,25 ℓ**
   45 000 ÷ 10 000 = 4,5; 2 × 1 000 = 2 000; 1 250 ÷ 1 000 = 1,25

7. **480 cm³**
   V = l × w × h = 12 × 8 × 5 = 96 × 5 = 480 cm³

8. **150 cm²**
   One face: 5 × 5 = 25 cm²; 6 faces: 6 × 25 = 150 cm²

9. **164 cm²**
   2 × (10 × 4) + 2 × (10 × 3) + 2 × (4 × 3) = 80 + 60 + 24 = 164 cm²

10. **(a) 2 500 cm² (b) 4 tiles**
    50 × 50 = 2 500 cm²; 1 m² = 10 000 cm²; 10 000 ÷ 2 500 = 4

11. **4 ℓ**
    25 × 16 × 10 = 4 000 cm³; 4 000 ÷ 1 000 = 4 ℓ

12. **8 cm**
    ½ × 9 × h = 36, so 9 × h = 72; h = 72 ÷ 9 = 8 cm

13. **24 cm²**
    The two sides at the right angle are the base and the height: ½ × 8 × 6 = 24 cm² (10 cm is the slanted side)

14. **(a) 18 m³ (b) 18 000 ℓ**
    5 × 3 × 1,2 = 15 × 1,2 = 18 m³; 1 m³ = 1 000 ℓ, so 18 × 1 000 = 18 000 ℓ

15. **7 400 cm² = 0,74 m²**
    bottom: 50 × 40 = 2 000; front and back: 2 × 50 × 30 = 3 000; two ends: 2 × 40 × 30 = 2 400; 2 000 + 3 000 + 2 400 = 7 400 cm²; 7 400 ÷ 10 000 = 0,74 m²