

GCSE Maths: Density and pressure (Higher): answers

GCSE Maths - Units and Compound Measures - Higher - Lesson 16.5

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch16-units-compound-measures/higher/density-and-pressure/

Exercise 16G Density and pressure Calculator allowed

1 Work out the density of each object, in g/cm^3 .

- (a) mass 120 g, volume 40 cm^3

Answer: 3 g/cm^3

- (b) mass 780 g, volume 100 cm^3

Answer: 7.8 g/cm^3

- (c) mass 90 g, volume 120 cm^3

Answer: 0.75 g/cm^3

- (d) mass 2700 g, volume 1000 cm^3

Answer: 2.7 g/cm^3

2 Work out the mass of each object.

- (a) density 8 g/cm^3 , volume 25 cm^3

Answer: 200 g

- (b) density 2.5 g/cm^3 , volume 60 cm^3

Answer: 150 g

- (c) density 0.9 g/cm^3 , volume 200 cm^3

Answer: 180 g

- (d) density 19.3 g/cm^3 , volume 10 cm^3

Answer: 193 g

3 Work out the volume of each object.

- (a) mass 360 g, density 9 g/cm^3

Answer: 40 cm^3

- (b) mass 56 g, density 0.8 g/cm^3

Answer: 70 cm^3

- (c) mass 5400 g, density 2.7 g/cm^3

Answer: 2000 cm^3

- (d) mass 193 g, density 19.3 g/cm^3

Answer: 10 cm^3

4 Work out the pressure in each case.

- (a) force 500 N on an area of 2 m²

Answer: 250 N/m²

- (b) force 90 N on an area of 3 cm²

Answer: 30 N/cm²

- (c) force 1200 N on an area of 0.4 m²

Answer: 3000 N/m²

- (d) force 48 N on an area of 16 cm²

Answer: 3 N/cm²

5 Work out the force in each case.

- (a) pressure 15 N/cm², area 6 cm²

Answer: 90 N

- (b) pressure 200 N/m², area 3.5 m²

Answer: 700 N

- (c) pressure 8 N/cm², area 25 cm²

Answer: 200 N

6 Work out the area in each case.

- (a) force 600 N, pressure 150 N/m²

Answer: 4 m²

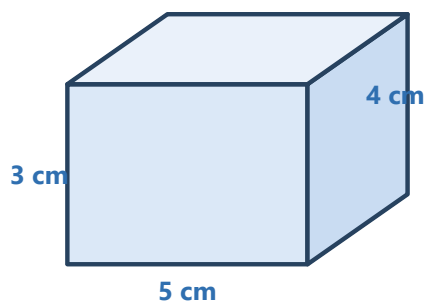
- (b) force 72 N, pressure 6 N/cm²

Answer: 12 cm²

- (c) force 2000 N, pressure 500 N/m²

Answer: 4 m²

7 A solid block is a cuboid 5 cm by 4 cm by 3 cm. Its mass is 468 g. Work out its density.



Answer: 7.8 g/cm³

8 Gold has a density of 19.3 g/cm³. A gold bar has volume 250 cm³. Work out the mass of the bar in kilograms.

Answer: 4.825 kg

- 9 A block of wood has mass 450 g and volume 500 cm³. Water has density 1 g/cm³. Will the block float or sink? Give a reason.
- Answer:** It floats: its density is 0.9 g/cm³, less than 1 g/cm³
- 10 Object A has mass 240 g and volume 80 cm³. Object B has mass 150 g and volume 60 cm³. Which object is made from the denser material?
- Answer:** A (3 g/cm³ compared with 2.5 g/cm³)
- 11 A girl has a weight (force) of 500 N. Each of her feet has an area of 200 cm². Work out the pressure on the ground in N/cm² when she stands (a) on two feet, (b) on one foot.
- (a) Two feet
- Answer:** 1.25 N/cm²
- (b) One foot
- Answer:** 2.5 N/cm²
- 12 A person of weight 600 N wears either flat shoes (contact area 100 cm² in total) or stiletto heels (contact area 1 cm² in total). Compare the pressure on the floor and explain why stilettos can damage a wooden floor.
- Answer:** Flat: 6 N/cm². Stiletto: 600 N/cm², which is 100 times greater
- 13 A swimming pool is 10 m long, 5 m wide and 2 m deep and is full of water. Water has density 1000 kg/m³. Work out the mass of the water in tonnes.
- Answer:** 100 tonnes
- 14 Copper has density 8.9 g/cm³. Write this in kg/m³.
- Answer:** 8900 kg/m³
- 15 200 cm³ of liquid A (density 0.8 g/cm³) is mixed with 300 cm³ of liquid B (density 1.2 g/cm³). Work out the density of the mixture, assuming the volumes just add.
- Answer:** 1.04 g/cm³
- 16 A pressure of 3 N/cm² acts on a surface. Write this pressure in N/m².
- Answer:** 30 000 N/m²