# 111. Compound Measure

**Practice Questions:**

1. A force of 30 N is applied to an area of 6 m². Calculate the pressure. (Answer in N/m²)

2. The pressure on a surface is 50 N/m² and the force is 200 N. Calculate the area. (Answer in m²)

3. A woman stands on the ground with a total contact area of 0.025 m² under her shoes. Her weight (force) is 600 N. Calculate the pressure she applies to the ground. (Answer in N/m²)

4. A force of 900 N is spread over an area of 3 m². Calculate the pressure. (Answer in N/m²)

5. A pressure of 12 N/m² acts on an area of 8 m². Calculate the force. (Answer in N)

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**Practice Questions:**

6. A material has a mass of 240 g and a volume of 80 cm³. Calculate its density.
(Answer in g/cm³)

7. A material has a mass of 240 g and a volume of 80 cm³. Calculate its density. (Answer in g/cm³)

8. A liquid has a density of 1.2 g/cm³ and a mass of 480 g. Calculate the volume of the liquid. (Answer in cm³)

9. A block has a density of 7.5 g/cm³ and a mass of 600 g. Find the volume. (Answer in cm³)

10. A container holds 2.5 litres of oil with density 0.9 g/cm³. Convert the volume into cm³ and calculate the mass. (Volume in cm³, mass in g)

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**Scenario Questions:**

1. A pressure cooker lid has an inside surface area of 0.05 m². The pressure inside reaches 90,000 N/m². Calculate the force on the lid. (Answer in N)

2. A student pushes down on a block with a force of 45 N. The block's base area is 0.15 m². Calculate the pressure on the bench. (Answer in N/m²)

3. A person weighs 700 N.
- Wearing heels: contact area = 0.0015 m²
- Wearing trainers: contact area = 0.025 m²

Calculate the pressure for each. (Answers in N/m²)

4. A diver experiences a pressure of 40,000 N/m² underwater. The area of their wetsuit under pressure is 1.8 m². Calculate the force acting on them. (Answer in N)

5. A car exerts a total force of 12,000 N on its 4 tyres. The total contact area with the road is 0.04 m². Calculate the pressure on the road. (Answer in N/m²)

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**Scenario Questions:**

6. A stone has a mass of 1.5 kg and a volume of 600 $cm^3$. Convert the mass into grams and calculate the density. (Density in $g/cm^3$)

7. A scuba tank holds 8,000 $cm^3$ of air. Density of air = 0.0013 $g/cm^3$. Calculate the mass of the air in the tank. (Answer in g)

8. A piece of wood has a density of 0.6 $g/cm^3$ and a volume of 3,000 $cm^3$. Calculate the mass. (Answer in g) State whether it will float in water (water density = 1 $g/cm^3$).

9. A gold bar has a mass of 3.6 kg. Density of gold = 19.3 $g/cm^3$. Calculate the volume. (Answer in $cm^3$)

10. A fish tank measures 50 cm × 30 cm × 20 cm and is full of water (density = 1 $g/cm^3$).
Calculate the mass of the water in kilograms. (Answer in kg)

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# ANSWERS

## *111. Compound Measure*

## Practice Questions:

1. 5 $N/m^2$
2. 4 $m^2$
3. 24,000 $N/m^2$
4. 300 $N/m^2$
5. 96 N
6. 3 $g/cm^3$
7. 3 $g/cm^3$
8. 400 $cm^3$
9. 80 $cm^3$
10. 2500 $cm^3$, 2250 g

## Scenario Questions:

1. 4,500 N
2. 300 $N/m^2$
3. Heels: 466,667 $N/m^2$, Trainers: 28,000 $N/m^2$
4. 72,000 N
5. 300,000 $N/m^2$
6. Mass = 1500 g, Density = 2.5 $g/cm^3$
7. 10.4 g
8. 1,800 g, Floats
9. 187 $cm^3$
10. 30 kg

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