Test - Compound units and direct/inverse proportion

Year: Year 10 · Duration: 45 minutes · /20

Name:	Date:	**Mark: /20**

Question	1	2	3	4	5	Total
marks	4	4	4	4	4	**20**
Mark						

Show your working.

Question 1 (4 marks)

Question 1 – Speed

Calculator allowed.

a. A lorry travels 168 miles in 3 hours 30 minutes. Work out its average speed. (2 marks)
b. A bus travels at an average speed of 42 km/h for 1 hour 40 minutes. How far does it travel? (2 marks)

Question 2 (4 marks)

Question 2 – Density

The density of a type of wood is 0.65 g/cm³. A wooden beam is a cuboid 200 cm by 15 cm by 10 cm.

a. Work out the volume of the beam. (1 mark)
b. Work out the mass of the beam in kilograms. (3 marks)

Question 3 (4 marks)

Question 3 – Pressure

A box weighing 480 N sits on the floor. The base of the box is a rectangle 60 cm by 40 cm.

a. Work out the area of the base in m². (1 mark)
b. Work out the pressure on the floor in N/m². (2 marks)
c. The box is turned onto a side measuring 60 cm by 30 cm. State whether the pressure is bigger or smaller and why. (1 mark)

Question 4 (4 marks)

Question 4 – Proportion problems

Calculator allowed.

a. 7 tickets to a show cost £94.50. Work out the cost of 11 tickets. (2 marks)
b. 5 machines make a batch of parts in 12 hours. How long would 8 machines take, at the same rate? (2 marks)

Question 5 (4 marks)

Question 5 – Higher: direct and inverse variation

Higher tier. y is directly proportional to x^2. When $x = 3$, $y = 45$.

a. Find a formula for y in terms of x. (2 marks)
b. Find y when $x = 6$. (1 mark)
c. Find the positive value of x when $y = 125$. (1 mark)