FOUNDATION & HIGHER

SAME AT BOTH TIERS

Name ..... Class .....

R11: Compound units

Solve problems involving speed, density, pressure and unit pricing

20 marks · 25 minutes · Calculator allowed

1) A car travels 120 km at 80 km/h, then 60 km at 40 km/h. Find its average speed for the whole journey.

..... km/h

[Question 1: 3 marks]

2) An alloy is made from 300 cm^3 of metal A (density 8 g/cm^3) and 200 cm^3 of metal B (density 3 g/cm^3). Find the density of the alloy.

..... g/cm^3

[Question 2: 3 marks]

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3) Rice costs £3.60 for 1.5 kg, £5.75 for 2.5 kg or £9.40 for 4 kg. Which is the best value?

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[Question 3: 3 marks]

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4) A box with a weight of 500 N rests on a 0.4 m by 0.25 m face. It is turned onto a 0.25 m by 0.1 m face. How many times greater is the pressure now?

.....

[Question 4: 3 marks]

5) A tap leaks 0.8 litres per minute. Water costs £2.50 per m^3. How much does the leak cost in a year of 365 days?

£ .....

[Question 5: 3 marks]

6) A runner completes 5 km in 22 minutes 30 seconds. Find her average speed in km/h.

..... km/h

[Question 6: 2 marks]

7) Two cars are 210 km apart and drive towards each other at 60 km/h and 80 km/h. After how long do they meet?

..... hours

[Question 7: 3 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	60	Times 1.5 h and 1.5 h (P1); 180 ÷ 3 (P1); A1.
2	6	Masses 2400 and 600 g (P1); 3000 ÷ 500 (P1); A1.
3	2.5 kg	£2.40, £2.30, £2.35 per kg (P1, P1); A1.
4	4	5000 N/m^2 and 20 000 N/m^2 (P1, P1); A1.
5	£1051.20	420 480 litres (P1); 420.48 m^3 (P1); A1.
6	13.3	0.375 hours (P1); A1.
7	1.5	Closing speed 140 km/h (P1, P1); A1.