3.1 Ratio, Proportion and Rates of Change: 30-minute Pack

Calculator allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A metal has a density of 8.3 g/cm^3. Work out the mass of 100 cm³ of the metal.

(2)

2 Ben is paid £7.50 per hour. He works 37 hours in a week. How much is he paid?

(2)

3 Ria earns £192 for 20 hours of work. Work out her hourly rate of pay.

(2)

4 A pump moves water at 6 litres per minute. How many litres does it move in one hour?

(2)

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5 A shop sells apples at a constant price each. 17 apples cost £82.28. How many apples can be bought for £329.12?

(3)

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6 A cyclist travels 30 km at an average speed of 40 km/h. How long does the journey take? Give your answer in hours and minutes.

(3)

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7 A train travels 210 km in 2 hours 30 minutes at a constant speed.

(a) Calculate the average speed of the train in km/h. **(2)**

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(b) Assuming the same average speed, find the time taken to travel 350 km. Give your answer in hours and minutes. **(2)**

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8 A shade of paint is made by mixing blue and white paint. Batch 1 mixes blue and white in the ratio 3 : 7. Batch 2 mixes blue and white in the ratio 1 : 4. Grace mixes 400 g of Batch 1 with 500 g of Batch 2 to make a new batch of paint. Find the ratio of blue to white paint in the new mixture, in its simplest form.

(5)

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Mark scheme · 3.1 Ratio, Proportion and Rates of Change: 30-minute Pack

Question 1

8.3 x 100	M1
830 g cao	A1

Answer: **830 g**

Question 2

£7.50 x 37	M1
£277.50 cao	A1

Answer: **£277.50**

Question 3

£192 ÷ 20	M1
£9.60 cao	A1

Answer: **£9.60**

Question 4

6 x 60	M1
360 litres cao	A1

Answer: **360 litres**

Question 5

£82.28 ÷ 17 = £4.84	M1
£329.12 ÷ £4.84	M1
68 cao	A1

Answer: **68**

Question 6

30 ÷ 40	M1
converts the decimal hours to minutes	M1
45 minutes cao	A1

Answer: **45 minutes**

Question 7

(a) 2 h 30 min = 2.5 h (correct time conversion)	M1
(a) 84 km/h cao	A1

(a) Answer: **84 km/h**

(b) 350/84 (correct method, ft from part a)	M1
(b) 4 hours 10 minutes cao	A1

(b) Answer: **4 hours 10 minutes**

Question 8

Batch 1: blue = 120 g, white = 280 g	M1
Batch 2: blue = 100 g, white = 400 g	M1
Total blue = 220 g, total white = 680 g	M1
Ratio 220 : 680 seen (or correct unsimplified equivalent)	A1
11 : 34 cao oe	A1

Answer: **11 : 34**

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