FOUNDATION & HIGHER

SAME AT BOTH TIERS

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

R8: Ratio, fractions and linear functions

Relate ratios to fractions and to linear graphs

20 marks · 25 minutes · Non-calculator

1) Show that in the ratio 2 : 3, the first part is $\frac{2}{5}$ of the total.

[Question 1: 1 marks]

2) $y : x = 4 : 1$ always. Explain why the graph of y against x is a straight line through the origin.

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[Question 2: 2 marks]

3) Show that the table fits $y = \frac{5}{3}x$

x	3	6	9
y	5	10	15

[Question 3: 2 marks]

4) Sugar and flour are mixed in the ratio 1 : 4. Show that $s = \frac{f}{4}$

[Question 4: 2 marks]

5) Explain why $y = 2x + 1$ does not show y directly proportional to x.

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[Question 5: 2 marks]

6) Show that (4, 10) and (6, 15) lie on the same straight line through the origin.

[Question 6: 2 marks]

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7) $a : b = 3 : 7$. Kim says a is $\frac{3}{7}$ of the total. Explain her mistake.

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[Question 7: 2 marks]

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8) 5 miles = 8 km. Show that $k = 1.6m$ and that 40 km = 25 miles.

[Question 8: 2 marks]

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9) Explain how the gradient of $y = 0.4x$ is linked to the ratio $y : x = 2 : 5$

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[Question 9: 2 marks]

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10) (3, 12) lies on a direct proportion graph. Show that (5, 20) also lies on it.

[Question 10: 2 marks]

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11) $\frac{3}{8}$ of a drink is juice. Show that the ratio of juice to the rest is 3 : 5

[Question 11: 1 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	Shown	$\frac{2}{2+3}$ (C1).
2	Explanation	$y = 4x$ (M1); when $x = 0$, $y = 0$ (C1).
3	Shown	$\frac{5}{3} \times 3 = 5$ etc. (M1); C1.
4	Shown	Flour is 4 times sugar (M1); C1.
5	Explanation	When $x = 0$, $y = 1$ not 0 (C1); ratio $y : x$ not constant (C1).
6	Shown	Both $\frac{y}{x} = 2.5$ (M1); C1.
7	$\frac{3}{10}$	$\frac{3}{7}$ compares a with b (C1); B1.
8	Shown	$\frac{8}{5} = 1.6$ (M1); $40 \div 1.6 = 25$ (C1).
9	Explanation	$0.4 = \frac{2}{5}$ (M1); gradient = $\frac{y}{x}$ (C1).
10	Shown	$y = 4x$ (M1); C1.
11	Shown	Rest is $\frac{5}{8}$ (C1).