FOUNDATION & HIGHER

SAME AT BOTH TIERS

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

R6: Multiplicative relationships

Reason about multiplicative relationships as ratios and fractions

20 marks · 25 minutes · Non-calculator

1) A is 4 times as big as B. Explain why $A : B = 4 : 1$

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[Question 1: 1 marks]

2) $x : y = 3 : 4$. Show that $y = \frac{4x}{3}$

[Question 2: 2 marks]

3) Explain why "A is $\frac{3}{5}$ of B" means $A : B = 3 : 5$

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[Question 3: 2 marks]

4) Kim says that if $y = 5x$ then $x : y = 5 : 1$. Explain her mistake.

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[Question 4: 2 marks]

5) $a : b = 2 : 7$. Show that b is 3.5 times a.

[Question 5: 2 marks]

6) There are twice as many cats as dogs and three times as many dogs as fish. Show that cats : dogs : fish = 6 : 3 : 1

[Question 6: 2 marks]

7) $p = 0.4q$. Show that $p : q = 2 : 5$

[Question 7: 2 marks]

8) Explain why, in the ratio 3 : 5, the first part is $\frac{3}{8}$ of the total and not $\frac{3}{5}$.

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[Question 8: 2 marks]

9) $m : n = 5 : 2$ and $m = 30$. Show that $n = 12$

[Question 9: 2 marks]

10) $3a = 5b$. Show that $a : b = 5 : 3$

[Question 10: 2 marks]

11) Explain why a ratio of 1 : 1 means the two quantities are equal.

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[Question 11: 1 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	Explanation	For every 1 of *B* there are 4 of *A* (C1).
2	Shown	$\frac{y}{x} = \frac{4}{3}$ (M1); C1.
3	Explanation	For every 5 of *B* there are 3 of *A* (C2).
4	1 : 5	*y* is 5 times *x*, so *y* has 5 parts (C1); B1.
5	Shown	$\frac{7}{2}$ (M1); C1.
6	Shown	Fish 1, dogs 3, cats 6 (M1); C1.
7	Shown	$\frac{p}{q} = \frac{2}{5}$ (M1); C1.
8	Explanation	Total parts 3 + 5 = 8 (C1); $\frac{3}{5}$ compares the parts with each other (C1).
9	Shown	1 part = 6 (M1); C1.
10	Shown	$\frac{a}{b} = \frac{5}{3}$ (M1); C1.
11	Explanation	Same number of parts each (C1).