FOUNDATION & HIGHER

SAME AT BOTH TIERS

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

R8: Ratio, fractions and linear functions

Relate ratios to fractions and to linear functions

20 marks · 25 minutes · Non-calculator

1) The ratio of cats to dogs is 3 : 7. What fraction of the animals are cats?

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[Question 1: 1 marks]

2) For two quantities, $y : x = 3 : 1$ always. Write an equation connecting y and x.

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[Question 2: 1 marks]

3) In a recipe, the ratio of sugar to flour is 2 : 5.

(a) Write a formula for the mass of sugar, s g, in terms of the mass of flour, f g.

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(2)

(b) Find s when $f = 450$

.....

(1)

[Question 3: 3 marks]

4) The graph of $y = 0.4x$ is a straight line through the origin. Write the ratio $y : x$ in its simplest form using whole numbers.

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[Question 4: 2 marks]

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5) Here is a table of values.

x	2	4	6
y	5	10	15

(a) Write the ratio $x : y$ in its simplest form.

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(1)

(b) Write an equation for y in terms of x.

.....

(1)

(c) Find y when $x = 9$

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(1)

[Question 5: 3 marks]

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6) $\frac{3}{8}$ of a drink is juice and the rest is water. Write the ratio juice : water.

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[Question 6: 1 marks]

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7) y is directly proportional to x. The point $(2, 7)$ lies on the graph of y against x. Find y when $x = 6$

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[Question 7: 2 marks]

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8) $a : b = 4 : 9$

(a) Write a as a fraction of b.

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(1)

(b) Write a as a fraction of $a + b$.

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(1)

[Question 8: 2 marks]

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9) An exchange rate is given by $d = 1.3p$, where p is pounds and d is dollars. Write the ratio $p : d$ using whole numbers.

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[Question 9: 2 marks]

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10) Which of these equations shows that y is directly proportional to x: $y = 2x + 1$ or $y = 2x$? Give a reason.

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[Question 10: 1 marks]

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11) 5 miles is the same as 8 km.

(a) Write a formula for k kilometres in terms of m miles.

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(1)

(b) Change 25 miles into km.

..... km

(1)

[Question 11: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	$\frac{3}{10}$	B1.
2	$y = 3x$	B1.
3	(a) $s = \frac{2}{5}f$ (b) 180	(a) $\frac{s}{f} = \frac{2}{5}$ (M1); A1. (b) B1.
4	2 : 5	$0.4 = \frac{2}{5}$ (M1); A1.
5	(a) 2 : 5 (b) $y = 2.5x$ (c) 22.5	B1 each.
6	3 : 5	B1.
7	21	$y = 3.5x$ or $\times 3$ (M1); A1.
8	(a) $\frac{4}{9}$ (b) $\frac{4}{13}$	B1 each.
9	10 : 13	1 : 1.3 (M1); A1.
10	$y = 2x$	It passes through the origin (B1).
11	(a) $k = 1.6m$ (b) 40	B1 each.