

Ratio (Level 6-9) Mark Scheme		
1(a)	£135	[1]
1(b)	2	[1]
1(c)	24 : 40	[1]
2	$\frac{a}{o} = \frac{11}{17}$	[1] Converting the ratio to a fraction
	$a = \frac{11}{17}o$	[1] Rearranging to make $a$ the subject
3	$\frac{x+1}{3y} = \frac{1}{7}; \frac{2x}{y+3} = \frac{2}{5}$	[1] Converting ratios to fractions
	$\frac{3y}{7} - 1 = \frac{y+3}{5}; \frac{3y-7}{7} = \frac{y+3}{5}$	[1] Rearrange & substitute $x$ or $y$ into the other
	$15y - 35 = 7y + 21; 8y = 56; y = 7$	[1] Find either $x$ or $y$
	$\frac{2x}{7+3} = \frac{2}{5}; 2x = \frac{20}{5}; x = 2$	[1] Find either $y$ or $x$
4(a)	A ratio of 7: 3 has 10 parts, each part has 16 coins	[1] Find one part
	$7:3 = 112:48$ $7:5 = 112:80$	[1] Express ratios in terms of number of coins
	Hence 32 10p coins have been added	[1] Correct number of coins added
4(b)	$112 \times 5p = £5.60; 48 \times 10p = £4.80;$ total is £10.40	[1] Original value of coins
	$112 \times 5p = £5.60; 80 \times 10p = £8.00;$ total is £13.60	[1] Value after coins added
5(a)	4: 3: 7 makes 14 parts	[1] Summing ratio parts
	Each part is 15 ml	[1] Finding a single part
	60 ml blue; 45 ml yellow; 105 ml red	[1] Correct amount of each paint used

Turn over ►

5(b)	Blue paint $6p \times 60 = £3.60$ ; Yellow paint $4p \times 45 = £1.80$ ; Red paint $2p \times 105 = £2.10$ Total cost = $£7.50$	[1] Correct cost of paint
	$5 \times £5 = £25$	[1] Total earnt from 5 paintings
	$£25 - £7.50 = £17.50$	[1] Correct profit calculated
6(a)	Let cats be $c$ ; Let dogs be $\frac{2}{3}c$ ; Let birds be $\frac{1}{4}c$	[1] Find a common denominator
	The ratio of cats to dogs to birds is 12: 8: 3, which has 23 parts	[1] Express as one ratio
	There are 27 birds	[1] Correct number of birds $\left(\frac{207}{23} \times 3\right)$
6(b)	$\left(\frac{207}{23} \times 8\right) = 72$ dogs	[1] Correct calculation
7	R : B : G 4 : 3 : 2	[1] Combining ratios
	So R : G = 4 : 2 = 2 : 1	[1] Correct simplified ratio
8(a)	$4x : 3x : 6x$ , $4x : 3x + 6 : 6x$	[1] Forming new ratio
	$\frac{3x + 6}{13x + 6} = \frac{1}{3}$ ; $9x + 18 = 13x + 6$ ; $4x = 12$ , $x = 3$	[1] Correct calculation
	Total number of sweets is now 45	[1] Finding new number of sweets
8(b)	$\frac{18}{45} = 0.4$	[1] Probability of selecting an orange sweet
9	Ratio of total employees is 3 : 5 $3x : 5x$ Ratio of part time employees is $0.3 \times 3 : 0.2 \times 5$ $0.9x : x$	[1] Forming ratios (alternatively $0.3t \times \frac{3}{8} = 0.1125t$ )
	total number of part time employees is $1.9x = 38$ so , $x = \frac{38}{1.9}$ , $x = 20$	[1] Finding $x$ (alternatively $0.2t \times \frac{5}{8} = 0.125t$ )
	Hence , $8 \times 20 = 160$ employees	[1] Correct number of employees (alternatively $0.2375t = 38$ , $t = 160$ )

END