1	**Alternative method 1: total amount of each colour (judgement accepted that ratio is not 4 : 3)**		
	60 ÷ (2 + 1) or 20 or 40	M1	
	80 + their 20 or 100	M1dep	
	28 + 2 × their 20 or 68	M1dep	dep on first M1 only
	100 and 68 and No	A1	
	Alternative method 2: total of red and how much white should have been added or how much there should have been originally or how much there should be now		
	60 ÷ (2 + 1) or 20 or 40	M1	
	80 + their 20 or 100	M1dep	
	their 100 ÷ 4 × 3 or 75	M1dep	dep on M2
	(75 – 2 × 20 =) 35 and No or 40 and (75 – 28 =) 47 and No or 75 and 68 and No	A1	comparing 35 to 28
	Alternative method 3: total of white and how much red should have been added or how much there should have been originally or how much there should be now		
	60 ÷ (2 + 1) or 20 or 40	M1	
	28 + 2 × their 20 or 68	M1dep	
	their 68 ÷ 3 × 4 or $90\frac{2}{3}$ or $\frac{272}{3}$	M1dep	dep on M2
	($90\frac{2}{3}$ – 20 =) $70\frac{2}{3}$ and No or 20 and ($90\frac{2}{3}$ – 80 =) $10\frac{2}{3}$ and No or $90\frac{2}{3}$ and 100 and No	A1	comparing $70\frac{2}{3}$ to 80
	The scheme for question 10 continues on the next page		

1 cont	**Alternative method 4: total of red and what it should be for total amount of paint**		
	60 ÷ (2 + 1) or 20 or 40	M1	
	80 + their 20 or 100	M1dep	
	(60 + 80 + 28) ÷ (4 + 3) × 4 or 96	M1	
	100 and 96 and No	A1	
	Alternative method 5: total of white and what it should be for total amount of paint		
	60 ÷ (2 + 1) or 20 or 40	M1	
	28 + 2 × their 20 or 68	M1dep	
	(60 + 80 + 28) ÷ (4 + 3) × 3 or 72	M1	
	68 and 72 and No	A1	
	Additional Guidance		
	20 from 80 ÷ 4 is incorrect		
	With no incorrect working, 'He should have added 76 red and 32 white' implies full marks		M1M1M1A1
	'No' can be implied, eg on alt 1 accept 100 and 68 and 'He needs 7 more white'		M1M1M1A1
	Condone dubious notation eg 20 : 40 + 80 : 28 = 100 : 68, so No		M1M1M1A1
	Ignore further work if 100 and 68 and No are seen		M1M1M1A1
	Only works out the amounts of red and white there should be for the total amount of paint, eg, 168 ÷ 7 × 4 = 96 and 168 ÷ 7 × 3 = 72		M0M0M1A0

2(a)	3 × 18 or 54 or 2 × 18 + 14 or 50 or 18 + 3 × 14 or 60 or 4 × 14 or 56 or 1 – 0.25 or 0.75 seen	M1	oe
	3 × 18 × (1 – 0.25) or 3 × 18 × 0.75 or 40.5 or 18 × (1 – 0.25) or 18 × 0.75 or 13.5(0)	M1dep	oe
	40.50	A1	condone £40.50p
	Additional Guidance		
	40.5 on answer line		M1M1A0

2(b)	Should have multiplied 15 by 6 or 90	B1	oe eg 15 × 6 accept $\frac{240\times600}{40\times40}$ or $\frac{144000}{1600}$
	Additional Guidance		
	Ignore irrelevant statements alongside a correct answer		
	15 × 6 seen but evaluated incorrectly		B1
	Should have multiplied not added		B1
	Should have multiplied at the end		B1
	Adding was wrong		B1
	He has added		B1
	Times the number for length and width		B1
	Times the length and width		B0
	Calculation at the end is wrong		B0
	Should have multiplied		B0
	Needs to work out the area		B0
	21 is wrong		B0
	Answer is wrong		B0

3	**Alternative method 1**		
	1125 ÷ 5 × 2 or 450	M1	oe
	their 450 ÷ 6 × (7 ÷ 4) or 75 × 1.75 or 131.25	M1dep	
	1125 ÷ their 131.25	M1dep	
	8.57… or 8.6 or $8\frac{4}{7}$ or 8	A1	
	Alternative method 2		
	5 ÷ 2 or 2.5 and 7 ÷ 4 or 1.75	M1	oe
	their 2.5 ÷ their 1.75 or 1.42857… or $\frac{10}{7}$	M1dep	oe
	6 × their 1.42857…	M1dep	
	8.57… or 8.6 or $8\frac{4}{7}$ or 8	A1	
	Alternative method 3		
	(Small bottle fills) $6 \times \frac{4}{7}$ or $\frac{24}{7}$	M1	
	(Large bottle fills) their $\frac{24}{7} \times \frac{5}{2}$ or $\frac{120}{14}$	M1dep	
	their 120 ÷ their 14	M1dep	
	8.57… or 8.6 or $8\frac{4}{7}$ or 8	A1	

3 cont	**Alternative method 4**		
	Any two of $b_1 = 6g_1$ and $b_2 = 2.5b_1$ and $g_2 = 1.75g_1$	M1	oe any letters for small bottle (b_1), small glass (g_1), large bottle (b_2) and large glass (g_2)
	$b_2 = 2.5 \times 6g_1$ or $b_2 = 15g_1$	M1dep	oe
	$b_2 =$ their $15\left(\frac{g_2}{1.75}\right)$	M1dep	
	8.57... or 8.6 or $8\frac{4}{7}$ or 8	A1	
	Additional Guidance		
	If the student attempts more than one method, mark each method and award the highest mark		
	Correct answer seen in working, 9 on answer line		M1M1M1A0

Q	Answer	Mark	Comment
4	15×8 or 120 or 60 (workers) for 2 (days)	M1	oe correct number of workers for any number of days except 8
	$15 \times 8 \div 6$ or 20	M1dep	oe eg $15 \times \frac{8}{6}$ or $15 \div \frac{6}{8}$
	5	A1	ignore units
	Additional Guidance		
	Award M1 for correct working within multiple attempts		

Q	Answer	Mark	Comments
5	**Alternative method 1** Words per minute or words per second		
	416 ÷ 8 or 52	M1	oe eg 416 ÷ (8 × 60) or 416 ÷ 480 or $\frac{13}{15}$ or [0.86, 0.87] or 0.9
	1534 ÷ their 52 or (1534 – 416) ÷ their 52 + 8 or 29.5	M1dep	oe eg 1534 ÷ their [0.86, 0.87] or (1534 – 416) ÷ their [0.86, 0.87] + 8 × 60 or 1770
	29 minutes 30 seconds	A1	SC2 29 minutes 50 seconds or 29 minutes 5 seconds
	Alternative method 2 Minutes per word or seconds per word		
	8 ÷ 416 or $\frac{1}{52}$ or [0.019, 0.019231] or 0.02	M1	oe eg 8 × 60 ÷ 416 or 480 ÷ 416 or $\frac{15}{13}$ or [1.15, 1.154] or 1.2
	1534 × their [0.019, 0.019231] or (1534 – 416) × their [0.019, 0.019231] + 8 or 29.5	M1dep	oe eg 1534 × their [1.15, 1.154] or (1534 – 416) × their [1.15, 1.154] + 8 × 60 or 1770
	29 minutes 30 seconds	A1	SC2 29 minutes 50 seconds or 29 minutes 5 seconds

5 cont	**Alternative method 3** Essay words ÷ report words		
	$1534 \div 416$ or $\frac{59}{16}$ or [3.68, 3.69] or 3.7 or $(1534 - 416) \div 416$ or [2.68, 2.69] or 2.7	M1	oe
	8 × their [3.68, 3.69] or 8 × their [2.68, 2.69] + 8 or 29.5	M1dep	oe eg 8 × 60 × their [3.68, 3.69] or 8 × 60 × their [2.68, 2.69] + 8 × 60 or 1770
	29 minutes 30 seconds	A1	SC2 29 minutes 50 seconds or 29 minutes 5 seconds
	Additional Guidance		
	M1 may be awarded for correct work with no, or incorrect answer, even if this is seen amongst multiple attempts		
	Answer 29.5 minutes 1770 seconds		M1M1A0
	Build-up method must be a fully correct method that would lead to 29.5		
	If working with report words ÷ essay words apply the principles of Alt 3		

6	**Alternative method 1 – finds K in terms of L and substitutes**		
	$3K = 4L$ or $K = L + 2M$	M1	oe correct equation eg $K = \frac{4L}{3}$ or $L = \frac{3K}{4}$ may be implied by values on diagram
	$\frac{4L}{3} = L + 2M$	M1dep	oe correct equation in L and M eg $4L = 3L + 6M$
	6	A1	condone 6M (= L)
	Alternative method 2 – finds two variables in terms of the other variable		
	Finds one variable in terms of one other eg L is $\frac{3}{4}$ of K	M1	oe fractions, decimals, percentages or ratio eg $K : L = 1 : \frac{3}{4}$ may be implied by values on diagram
	Finds two variables in terms of the other eg L is $\frac{3}{4}$ of K and M is $\frac{1}{8}$ of K	M1dep	oe fractions, decimals, percentages or ratio eg $K : L : M = 1 : \frac{3}{4} : \frac{1}{8}$ may be implied by values on diagram
	6	A1	condone 6M (= L)
	Alternative method 3 – assumes a mass for one unknown		
	Assumes a mass for one unknown and works out the mass of one other	M1	eg K = 2 kg and L = 1.5 kg
	Assumes a mass for one unknown and works out the masses of the other two	M1dep	eg K = 2 kg and L = 1.5 kg and M = 0.25 kg
	6	A1	condone 6M (= L)
	Additional Guidance		
	Condone 1.33 or better for $\frac{4}{3}$, but 0.125 for $\frac{1}{8}$ must be correct		
	3K : 4L is not enough for M1		
	Ignore units		

Q	Answer	Mark	Comments
7	**Alternative method 1: uses total and proportion in S with W**		
	$4480 \times \frac{9}{7}$ or 5760	M1	oe total in S with W eg 640×9
	$1 - \frac{1}{4} - \frac{3}{10}$ or $\frac{9}{20}$	M1	oe proportion in S with W eg 0.45 or 45%
	their 5760 ÷ their $\frac{9}{20}$	M1dep	oe full method dep on M2
	12800	A1	
	Alternative method 2: uses total in S with W and total in N with E		
	$4480 \times \frac{9}{7}$ or 5760	M1	oe total in S with W eg 640×9
	$4480 \times \frac{11}{7}$ or 7040	M1	oe total in N with E eg 640×11
	their 5760 + their 7040	M1dep	oe full method eg 640×20 dep on M2
	12800	A1	
	Alternative method 3: sets up an equation		
	$4480 \times \frac{9}{7}$ or 5760	M1	oe total in S with W eg 640×9
	$\frac{1}{4}x + \frac{3}{10}x +$ their $5760 = x$	M1dep	oe equation in any variable eg $10x + 12x + 230400 = 40x$
	their $5760 \div \left(1 - \frac{1}{4} - \frac{3}{10}\right)$	M1dep	oe full method eg $230400 \div 18$
	12800	A1	

7 cont	**Alternative method 4: works out proportion in W or proportion in S**		
	$1-\frac{1}{4}-\frac{3}{10}$ or $\frac{9}{20}$	M1	oe proportion in S with W eg 0.45 or 45%
	$\frac{7}{9}\times$ their $\frac{9}{20}$ or $\frac{7}{20}$ or $\frac{2}{9}\times$ their $\frac{9}{20}$ or $\frac{2}{20}$	M1dep	oe proportion in W eg 0.35 or 35% eg $\frac{7}{7+2}\times$ their $\frac{9}{20}$ or oe proportion in S eg 0.1 or 10% eg $\frac{2}{7+2}\times$ their $\frac{9}{20}$
	$4480\div$ their $\frac{7}{20}$ or $4480\times\frac{2}{7}\div$ their $\frac{2}{20}$	M1dep	oe full method eg 640×20
	12800	A1	
	Additional Guidance		
	Up to M2 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	Proportions can be percentages but in calculations values must be used eg Alt 1 $5760\div 45\%$ is awarded M2 but cannot be awarded the 3rd M1 unless $\frac{9}{20}$ or 0.45 is subsequently used correctly		

Q	Answer	Mark	Comments
8	This is not representative of all flats or He didn't take into account flats on the other floors	B1	oe
	Additional Guidance		
	Ignore incorrect or irrelevant statements or incorrect values alongside a correct reason, unless contradictory		
	Data is biased	B1	
	Missing floor or Misses top 2 floors (ignore incorrect value)	B1	
	There could be different results on the other 4 floors (ignore incorrect value)	B1	
	Must have a flat from each floor, do another 27 (ignore irrelevant statement)	B1	
	Only doing 5 out of the 8 floors	B1	
	Not tested any on floor 7 or 8	B1	
	Missing most of the other floors (ignore 'most of' as irrelevant)	B1	
	Some floors might be different to others	B1	
	Sample all floors, sample size too small (ignore incorrect statement)	B1	
	Needs to sample them all (all may refer to all flats not floors)	B0	
	Sample too small	B0	
	Some flats might be different to others	B0	
	Didn't test a third of the flats	B0	