

1		$2 \times 2 \times 2 \times 7$	M1	for complete method to find prime factors; could be shown on a complete factor tree with no more than 1 arithmetic error accept $2^3 \times 7$
			A1	

2		$2 \times 2 \times 3 \times 3$	M1	for complete method to find prime factors; could be shown on a complete factor tree with no more than 1 arithmetic error or 2,2,3,3,(1) $2 \times 2 \times 3 \times 3$ oe
			A1	

3		15	P1	strategy to start the problem, eg 8 : 20 and 20 : 5 process to solve the problem, eg $\frac{5}{33} \times 100$ or 24 : 60 : 15 cao
			P1	
			A1	

4	(a)	280	M1	for listing at least 3 multiples of both 40 and 56 OR finds the prime factors of both 40 and 56 cao	40, 80, 120, ... 56, 112, 168, ... OR 2,2,2,5 and 2,2,2,7
			A1		
	(b)	60	B1		

5		10	P1	for start to a process to find the LCM of 20, 45 and 120 (= 360), eg $45 = 3 \times 3 \times 5$ or $20 = 2 \times 2 \times 5$ or $120 = 2 \times 2 \times 2 \times 3 \times 5$ or writes down at least 3 multiples of 45 and 120	Could be presented as complete prime factor trees for 45 or 120 Must use a common multiple. Working may be in minutes.
			P1		
			A1		

6		18	M1	for listing factors of 72 and 90, at least 4 correct for each (with no more than 1 incorrect in each list), could be in factor pairs OR for the prime factors of 72 (2, 2, 2, 3, 3) or 90 (2, 3, 3, 5) for 18 or 2×3^2 oe SC B1 for answer of 6 or 9 if M0 scored	Factors of 72: 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72 Factors of 90: 1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, 90 $2, 3^2$ is not enough, it must be a product
			A1		

7	(a)	Explanation	C1	For stating the LCM of (4+7) and (5+3) is 88 or there is no smaller multiple of 8 and 11 (than 88)	May be seen in a two-way table or probability tree	
	(b)		23	P1		for using a scale factor appropriately eg $4 \times 8 (=32)$ or $3 \times 11 (=33)$ or $7 \times 8 (=56)$ or $5 \times 11 (=55)$ or for writing a pair of suitable fractions, eg $\frac{7}{11}$ and $\frac{3}{8}$ or $\frac{4}{11}$ and $\frac{5}{8}$ or $\frac{3}{8}$ and $\frac{4}{11}$
				P1		for finding the number of large cubes and red cubes or small and yellow or small and red eg $7 \times 8 (=56)$ and $3 \times 11 (=33)$ or $4 \times 8 (=32)$ and $5 \times 11 (=55)$ or $4 \times 8 (=32)$ and $3 \times 11 (=33)$ OR a suitable fractional equation, eg $\frac{7}{11} - x = \frac{3}{8}$ or $\frac{5}{8} - x = \frac{4}{11}$ or $x = 1 - \frac{3}{8} - \frac{4}{11}$ OR a suitable pair of probabilities with a common denominator, eg $\frac{56}{88}$ and $\frac{33}{88}$ or $\frac{32}{88}$ and $\frac{55}{88}$ or $\frac{33}{88}$ and $\frac{32}{88}$
			A1	cao	$\frac{23}{88}$ scores P2A0	

8		1080	M1	for method to write one number as a product of prime factors (condone one division error in method chosen), eg. one complete factor tree or 2, 2, 3, 3, 3 or 2, 2, 2, 3, 5 or for listing at least 5 multiples of either number (condone one error) or for any common multiple ($\neq 1080$), eg. 12960 ($= 108 \times 120$)	Accept first 5 multiples if all correct or one error in the first 6 multiples For the list not containing 1080, accept first 5 correct multiples or one error in the first 6 multiples	
				M1		for method to write both numbers as a product of prime factors (condone a total of one division error) eg. two complete factor trees or 2, 2, 3, 3, 3 and 2, 2, 2, 3, 5 or lists of multiples of the two numbers, at least 5 of each, one of which includes 1080
				A1		cao SC: B2 for any product that would lead to 1080, eg. $2^3 \times 3^3 \times 5$ or $12 \times 9 \times 10$

9	(a)	$2 \times 2 \times 3 \times 7$	M1	for a complete method to find prime factors, could be shown on a factor tree, with no more than one arithmetic error or for 2, 2, 3, 7	Condone the use of 1 Accept $2^2 \times 3 \times 7$ 60, 120, 180, 240, 300, 360, 420 84, 168, 252, 336, 420 $60 = 2 \times 2 \times 3 \times 5$ or $2^2 \times 3 \times 5$ If factor tree in (a) is incorrect fit this factor tree in part3 (b) for M1 only	
				A1		for $2 \times 2 \times 3 \times 7$ oe
	(b)		420	M1		for at least 3 multiples of both 60 and 84 (can include 60 and 84) or finds the prime factors of both 84 (may be seen in (a)) and 60, may be seen in factor trees
			A1	420 or $2 \times 2 \times 3 \times 5 \times 7$ oe		

10	(a)	12	M1	for a correct factor tree for either 60 or 84 with no more than one arithmetic error or for listing factors of 60 or 84, at least 4 correct for either (with no more than 1 incorrect in either list), could be in factor pairs or for the prime factors of 60 (2, 2, 3, 5) or 84 (2, 2, 3, 7)	Condone the use of 1 in any factor tree 60: 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60 84: 1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42, 84
			A1	for 12 or $2 \times 2 \times 3$ oe SC B1 for answer of 4 or 6, if M0 scored	2,2,3 is not enough, it must be a product
	(b)	120	M1	for a correct factor tree for either 24 or 40 with no more than one arithmetic error or for at least 3 multiples of both 24 and 40 (can include 24 and 40) or for the prime factors of either 24 (2, 2, 2, 3) or 40 (2, 2, 2, 5) or for a common multiple from their lists ($\neq 120$)	Condone the use of 1 in any factor tree 24: 24, 48, 72, 96, 120, ... 40: 40, 80, 120, ... For the list not containing 120, accept the first 3 correct multiples or one error in the first 4 multiples
			A1	for 120 or $2 \times 2 \times 2 \times 3 \times 5$ oe	