1	2 and 7 or 2 and 13 or 2 and 19	B2	either order B1 any pair of **different** numbers chosen from 2, 3, 5, 7, 11, 13, 17, 19 eg 2 and 3 or 3 and 5
	Additional Guidance		
	Mark the answer line but, if answer line blank, the pair of numbers must be clearly selected for B2 or B1		
	List of prime numbers without selecting a pair		B0

2	720	B2	B1 at least 3 multiples of 120 (> 120) and at least 3 multiples of 144 (> 144) eg 240 360 480 and 288 432 576 or (120 =) $2 \times 2 \times 2 \times 3 \times 5$ or (144 =) $2 \times 2 \times 2 \times 2 \times 3 \times 3$ or (Answer =) $2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5$ or (Answer =) $2^4 \times 3^2 \times 5$ or (Answer =) any multiple of 720 (> 720) eg 1440 or 17280
	Additional Guidance		
	Prime factor responses for B1 may be in index form eg (120 =) $3 \times 5 \times 2^3$		B1
	Prime factor responses for B1 may be seen on a factor tree or a Venn diagram or in repeated division eg1 2 2 2 3 5 on a factor tree for 120 eg2 2 2 2 2 3 3 inside one circle on a Venn diagram		B1 B1
	For B1 allow some incorrect multiples if 3 correct of each eg1 240 380 480 720 900 (3 correct) and 288 432 576 868 (3 correct) eg2 Answer 1440 but some incorrect multiples seen		B1 B1
	Any multiple of 720 (> 720) given in unsimplified form eg1 $2^7 \times 3^3 \times 5$ eg2 $2 \times 2 \times 2 \times 2 \times 2 \times 5 \times 3 \times 3$		B1 B1
	B1 can still be awarded even if subsequently works out HCF		
	Answer 720 with some incorrect multiples seen		B2
	For products of prime factors, ignore inclusion of $\times 1$		

3	Five different factors of 100 on the spinner	B1	1 2 4 5 10 20 25 50 100
	Exactly three single digit numbers on the spinner all of which are factors of 100	B1	1 2 4 5 allow repeats
	Exactly one multiple of 25 on the spinner	B1	

Additional Guidance	
A fully correct answer will consist of a spinner with three of 1 2 4 5 and exactly one of 25 50 100 and exactly one of 10 20	
Spinner with 2 4 5 10 25	B1B1B1
Spinner with 2 4 5 25 50	B1B1B0
Spinner with 2 5 10 20 25	B1B0B1
Spinner with 1 2 4 10 75	B0B1B1
Spinner with 2 2 5 25 50	B0B1B0
Spinner with 1 2 25 only	B0B0B1
Spinner with 1 2 4 25 25	B0B1B0
Spinner with 1 2 10 10 25	B0B0B1
Spinner with 1 2 5 5 10	B0B0B0
Spinner with 1 2 3 4 20	B0B0B0
Spinner with 1 2 25 40 75	B0B0B0

4	8	B1	
	$\frac{1}{0.4}$ or $\frac{10}{4}$ or 2.5 or $\frac{1}{\frac{2}{5}}$ or $\frac{5}{2}$ or $2\frac{1}{2}$	M1	8 × 0.4 or 3.2 implies B1M1 16 : 5 or equivalent ratio implies B1M1
	3.2 : 1 or $\frac{16}{5}$: 1 or $3\frac{1}{5}$: 1	A1ft	ft B0M1
	Additional Guidance		
	$8^3 = 512$ or $8 \times 8 \times 8 = 512$ alone is not sufficient for B1		
	ft answers must have n exact or correctly rounded to at least 2 sf eg $\sqrt{512} = 22.62$ (incorrect and truncated) 2.5 9.05 : 1		B0 M1 A1ft
	ft answer exact surd value eg $\sqrt{512} = 16\sqrt{2}$ 2.5 9.05 : 1 or $\frac{32}{5}\sqrt{2}$: 1		B0 M1 A1ft

Q	Answer	Mark	Comments
5	16	B1	

Q	Answer	Mark	Comments
6	Two multiples of 9 with a difference of 54 eg 9 and 63 or 18 and 72 or 27 and 81 or 36 and 90 or 45 and 99 or 54 and 108	B2	either order B1 at least one multiple of 9 other than 9 or 54 seen or two numbers with a difference of 54
	Additional Guidance		
	11 × 9 = 99, 5 × 9 = 45, Answer 11 and 5		B1

Q	Answer	Mark	Comments
7	23 or 29	B1	implied by correct answer
	$\frac{23}{125}$ (× 100) or $\frac{29}{125}$ (× 100) or $\frac{\text{their number}}{125}$ (× 100) or their number = $\frac{125x}{100}$	M1	oe their number can be any integer value
	18.4 or 23.2 or correct evaluation of their number as a percentage of 125	A1ft	ft B0M1 oe their number must be an integer [20, 30] or any prime number
	Additional Guidance		
	18.4 or 23.2		B1M1A1
	18.4 and 23.2		B1M1A1
	23 or 29 must be clearly indicated as their prime number		
	Any integer [20, 30] used can score B0M1A1ft eg 25 ÷ 125 × 100 with answer 20		B0M1A1ft
	Any prime number used can score B0M1A1ft eg 7 ÷ 125 × 100 with answer 5.6		B0M1A1ft
	24% of 125 is 30 with answer 24		B0M1A1ft
	29% of 125 is 36.25 (36.25 is not an integer)		B1M0A0ft
	28% of 125 is 35 with answer 28 (35 is an integer out of range)		B0M1A0ft
	28% of 125 is 35 scores M1 (35 is an integer)		
	25% of 125 is 31.25 scores M0 (31.25 is not an integer)		

Q	Answer	Mark	Comments
8	125 and 17 or 5^3 and 17 or 5 and 5 and 5 and 17	B2	together in any order eg 125 × 17 or 17 × 5^3 or 5, 5, 5, 17 or 2125 ÷ 17 = 125 or 2125 ÷ 125 = 17 B1 at least three of 8, 27, 64, 125, 216, 343, 512, 729, 1000, 1331, 1728, 2197 etc (allow 2^3, 3^3, 4^3 etc) or all four of 11, 13, 17, 19 (ignore any numbers not between 10 and 20) or (cube number > 1) × (prime number between 10 and 20) or 2125 ÷ (cube number > 1) or 2125 ÷ (prime number between 10 and 20)

Additional Guidance

B1 may be awarded for correct work with no, or incorrect answer, even if this is seen amongst multiple attempts	
B2 responses may be seen on a factor tree	
B1 for three cube numbers given in index form – evaluations can be ignored eg 4^3 5^3 6^3 scores B1 with no evaluations or with incorrect evaluations	
B1 for multiplications or divisions – evaluation can be ignored eg1 2^3 × 13 scores B1 with no evaluation or evaluated incorrectly eg2 2125 ÷ 27 scores B1 with no evaluation or evaluated incorrectly eg3 2125 ÷ 11 scores B1 with no evaluation or evaluated incorrectly	
125 and 17 seen in multiple attempts is B2 if 2125 included eg 125 × 17 = 2125 or 2125 ÷ 17 = 125 or 2125 ÷ 125 = 17 seen amongst multiple attempts	B2
125 and 17 seen in multiple attempts is B1 if 2125 not included eg 125 × 17 seen amongst multiple attempts	B1
11 13 15 17 19 does not score B1 unless 11 13 17 19 selected	
Incomplete list eg 11 13 19 does not score B1	

Q	Answer	Mark	Comments
9	5	B1	

Q	Answer	Mark	Comments
10(a)	300 or 360 or 480 or 7 (× 60) or 7th or any 3 multiples of 60 that are greater than 60	M1	
	420	A1	
	Additional Guidance		
	420 in working with answer 7 or 7th or 7 × 60		M1A0

Q	Answer	Mark	Comments
10(b)	6	B2	B1 answer 2 or answer 3 or answer 2 (×) 3 or answer 2, 6 or answer 3, 6 or answer 2, 3, 6 or (1) 2 3 4 6 (12) or (1) 2 3 6 9 (18) or (12 =) 2 (×) 2 (×) 3 or 2^2 (×) 3 or (18 =) 2 (×) 3 (×) 3 or 2 (×) 3^2
	Additional Guidance		
	If correct answer 6 is obtained from a list of factors, then the list must contain no errors		
	For use of prime factors, allow in repeated division or a factor tree or a Venn diagram or inclusion of 1		
	List of factors may be seen in factor pairs (allow repeats) eg (1 × 12) 2 × 6 3 × 4		B1

Q	Answer	Mark	Comments
11	All conditions met: • first number is prime • second number is prime • correctly evaluated • even answer • answer in range	B3	if their product is incorrectly evaluated or missing, then 'even answer' and 'answer in range' refer to the correct product for their multiplication B2 4 conditions met B1 3 conditions met
	Additional Guidance		
	$2 \times 29 = 58$ (or $29 \times 2 = 58$) is the only fully correct solution		B3
	Allow 50 to 60 inclusive for 'answer in range'		
	Award the best mark from boxes or in working for up to B2		
	The two prime numbers do not have to be different		

Q	Answer	Mark	Comments
12 (a)	3 × 10 or 6 × 5	B2	either order B1 uses a factor of 12 and the product of the two numbers is [24, 36] **or** uses a factor of 40 and the product of the two numbers is [24, 36] **or** the product of the two numbers is 30
	Additional Guidance		
	3 × 9		B1
	7 × 5		B1
	30 × 1		B1
	15 × 2		B1
	Fractions and/or decimals are acceptable for non-factors for B1		
	Mark the boxes		

Q	Answer	Mark	Comments
12 (b)	36 ÷ 2	B2	B1 any square number > 1 or any prime number
	Additional Guidance		
	Allow squares to be written in index form for B2 or B1 eg 6^2 ÷ 2		B2
	2 ÷ 36		B1
	÷ 9		B1
	72 ÷ 4		B1
	Mark the boxes		

Q	Answer	Mark	Comments
13	75	B1	

Q	Answer	Mark	Comments
14	At least two of 2^3, 3^2, 7 selected eg $2^3 \times 3^2 \times 7$ or 2 2 2 3 3 7 7 or $2^2 + 3^2 + 7$ or $2^3 \times 3^2$ or $2^3 + 7$ or 3^2. 7	M1	allow 2^3 to be $2 \times 2 \times 2$ or 8 allow 3^2 to be 3×3 or 9 allow 7 to be 7^1 selection is implied by inclusion in intersection of overlapping circles M0 inclusion of 5 in selection
	504	A1	
	Additional Guidance		
	$8 \times 9 \times 7$	M1	
	8, 9, 49	M1	
	$4 + 9 + 7$	M1	
	Intersecting circles with eg only 9 and 7 in the intersection	M1	
	Allow inclusion of 1 for up to M1 eg $1 \times 2^3 \times 3^2 \times 7$	M1	
	$2^3 \times 3^2 \times 5 \times 7$	M0	
	Answer 504	M1A1	
	M1 seen with answer the LCM	M1A0	

Q	Answer	Mark	Comments
15(a)	29 and 31 with no other values	B2	either order B1 29 with at most one incorrect value or 31 with at most one incorrect value
	Additional Guidance		
	Ignore any values out of range for B1		
	1, 29, 31	B1	
	1, 23, 29	B1	