1		2×2×3×3	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)
			A1	for 2×2×3×3 oe

2		No	B1	for showing 11 or 13 or 17 or 19 with no non-prime numbers between 10 and 20, or for showing 23 or 29 with no non-prime numbers between 20 and 30. Ignore any numbers shown below 11.
		(supported)	C1	"No" supported by listing 11, 13, 17, 19 and 23, 29 and no non-prime

3		1, 2, 3, 6, 9, 18	B2	for all 6 factors with no incorrect
			[B1	for at least 3 factors with no more than one error]

4		2, 7 or 3, 13 or 5, 11 or 2, 23	M1	for identifying two different prime numbers or two numbers which add up to give a square number or for a list of at least 3 prime numbers with no errors **and** a list of 3 square numbers with no errors.
			A1	for two correct prime numbers

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

6	14	B1	cao	

7	3 and 9	P1	for starting to list factors of 36 **or** multiples of 3 **or** odd numbers	Must be at least 3.
		A2	cao	In either order
		(A1	for one correct answer)	

8	(a)	23, 29	B2	for 23 **and** 29 **and** no extras	
			(B1	for one correct **and** no more than one incorrect)	2 correct and 1 incorrect award B1
	(b)	Explanation	C1	for decision **and** explanation eg yes and because all other even numbers have 2 as a factor	Decision is required may be yes or implied by she is ... oe. Do not accept statements that are ambiguous, or contradictory

9	(a)	280	M1	for listing at least 3 multiples of both 40 and 56 **OR** finds the prime factors of both 40 and 56	40, 80, 120, … 56, 112, 168, … **OR** 2,2,2,5 and 2,2,2,7
			A1	cao	
	(b)	60	B1	60 **or** $2^2 \times 3 \times 5$ oe	2^2, 3, 5 not enough ie must be a product

10	1, 2, 3, 5, 6, 10, 15, 30	B2 (B1	cao for at least 3 correct factors with no more than one incorrect answer)	Numbers may be shown in any order eg paired; Accept numbers repeated

11	5	B1	cao	

12	3 and 29 or 13 and 19	M1 A1	for two numbers with a sum of 32, only one of which is prime, eg 5, 27 or 1, 31 cao	Do not accept 1 as a prime number.

13	Two correct factors	B1	for 2 correct factors from 1, 2, 3, 4, 6, 12 and no incorrect factors	Accept one correct product

14	18	B1	cao	

15	18	B1	cao	18 must be the only number selected for this award

16	L23, U23, L29, U29	B2 (B1	for all 4 outcomes with no extras or repeats for at least 2 correct outcomes out of at most 8 different outcomes **or** for indicating 23 and 29 are the only prime numbers between 20 and 30)	Pairs must be unambiguous and in the correct order of letter number

17	(a)	$2\times2\times3\times7$	M1 A1	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 for $2 \times 2 \times 3 \times 7$ oe	Condone the use of 1 Accept $2^2 \times 3 \times 7$
	(b)	420	M1 A1	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 420 or $2 \times 2 \times 3 \times 5 \times 7$ oe	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 ft this factor tree in part (b) for M1 only

18	(a)	25	B1	cao	
	(b)	24	B1	cao	

19	(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 $2\times2\times3$ 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 $2\times2\times2\times3\times5$ oe	