1	**Find prime numbers and test numbers to see if they are prime**	
a	Write down all the prime numbers between 50 and 60	
b	Steve thinks that 143 is a prime number. Steve is wrong. Explain why.	

2	**Find common factors of numbers**	
a	Find all the common factors of 20 and 24	
b	Is 2 a common factor of 30? Justify your answer.	

3	**Find the highest common factor of numbers in simple cases, including co-prime examples**	
a	Find the highest common factor of 30 and 48	
b	Is the following statement always true, sometimes true, or never true? *The highest common factor of two numbers is 1*	

4	**Find common multiples of numbers**	
a	Find a common multiple of 12 and 8	
b	Jane says '9 is a common multiple of 72 and 54'. Do you agree with Jane? Explain why.	

5	**Recognise and solve problems involving the lowest common multiple**	
a	A pattern of flashing lights uses three colours. A red light flashes every 4 seconds, a blue light flashes every 6 seconds and a yellow light flashes 8 seconds. All three lights flash together at the start of the display. How long is it until all three lights flash together again?	
b	What is wrong with this statement, and how can you correct it? *To find the lowest common multiple of two numbers, multiply the numbers together*	

6	**Use linear (arithmetic) number patterns to solve problems**	
a	Find the missing numbers in this linear sequence: 3, ___, ___, 15, 19	
b	Jonas is asked to continue the linear number sequence that starts 2, 4, … He writes 2, 4, 8, 16, 32, … Comment on Jonas' sequence.	

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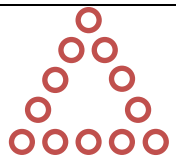
7	**Recognise and use triangular numbers**	
a	Write down the eighth triangular number	
b	Marek draws this diagram. He says, 'My diagram shows that 12 is a triangular number'. Do you agree with Marek? Explain your answer.	



8	**Recognise and use square and cube numbers**	
a	1 is both a square number and a cube number. What is the next number that is both a square number and a cube number?	
b	What is wrong with this statement, and how can you correct it? *5 × 5 =25. 25 × 25 = 625. Therefore 625 is a cube number.*	

9	**Read, write and evaluate powers**	
a	Evaluate 2^6	
b	What is wrong with this statement, and how can you correct it? $6^3 = 6 \times 3$	

10	**Define and find square roots (including using the $\sqrt{\ }$ symbol)**	
a	Evaluate $\sqrt{81}$	
b	Is the following statement always true, sometimes true, or never true? *To find the square root of a number, divide by 2*	

11	**Define and find cube roots (including using the $\sqrt[3]{\ }$ symbol), including the use of a scientific calculator**	
a	Evaluate $\sqrt[3]{216}$	
b	Is the following statement always true, sometimes true, or never true? *To find the cube root of a number, divide by 3*	

12	**Define and find other roots (including using the a $\sqrt{\ }$ symbols), including the use of a scientific calculator**	
a	Evaluate $\sqrt[4]{10000}$	
b	Lindsey writes, $\sqrt[5]{243} = 243 \div 5 = 48.6$ Lindsey is wrong. Correct her solution.	

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	Key learning point	☹	😐	😐	☺
1	Find prime numbers and test numbers to see if they are prime				
2	Find common factors of numbers				
3	Find the highest common factor of numbers in simple cases, including co-prime examples				
4	Find common multiples of numbers				
5	Recognise and solve problems involving the lowest common multiple				
6	Use linear (arithmetic) number patterns to solve problems				
7	Recognise and use triangular numbers				
8	Recognise and use square and cube numbers				
9	Read, write and evaluate powers				
10	Define and find square roots (including using the $\sqrt{\ }$ symbol)				
11	Define and find cube roots (including using the $\sqrt[3]{\ }$ symbol), including the use of a scientific calculator				
12	Define and find other roots (including using the a $\sqrt{\ }$ symbols), including the use of a scientific calculator				

Top three improvements for me to make

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1a	53, 59	
1b	Reason; e.g. $143 = 13 \times 11$	
2a	1, 2, 4	
2b	No, and reason; e.g. a common factor must be common to at least two numbers	
3a	6	
3b	Sometimes true, ideally with examples	
4a	Any multiple of 24	
4b	No, and reason; e.g. it is a common factor	
5a	24 seconds	
5b	Explanation; e.g. this will only give the LCM is some cases.	
6a	7, 11	
6b	Valid comment; e.g. it is not linear	
7a	36	
7b	No, and explanation; e.g. it doesn't show 1 + 2 + 3 + …	
8a	64	
8b	Explanation; e.g. it shows 5^4, the second calculation should be 25×5	
9a	64	
9b	Explanation; e.g. it should be $6 \times 6 \times 6$	
10a	9	
10b	Sometimes true (but only by fluke since $\sqrt{4} = 4 \div 2 = 2$)	
11a	6	
11b	Never true	
12a	10	
12b	3	

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