

PATTERNS AND SEQUENCES

Sequence questions are all linked to identifying patterns and repeating them. Below is a list of common patterns to become familiar with:

EVEN NUMBERS	2, 4, 6, 8, 10, 12 ...	PRIME NUMBERS	2, 3, 5, 7, 11 ...
ODD NUMBERS	1, 3, 5, 7, 9, 11 ...	SQUARE NUMBERS	1, 4, 9, 16, 25, 36 ...
DOUBLING NUMBERS	1, 2, 4, 8, 16, 32 ...	CUBE NUMBERS	1, 8, 27, 64, 125 ...
HALVING NUMBERS	48, 24, 12, 6 ...	TRIANGULAR NUMBERS	1, 3, 6, 10, 15, 21 ...
MULTIPLES	8, 16, 24, 32, 40 ...		

To find the pattern, you need to find the rule.
In some sequences the rule remains the same, e.g.



In others, the rule may increase or decrease from the previous step, e.g.



In some patterns, the rules work in pairs and so can be harder to spot, e.g.

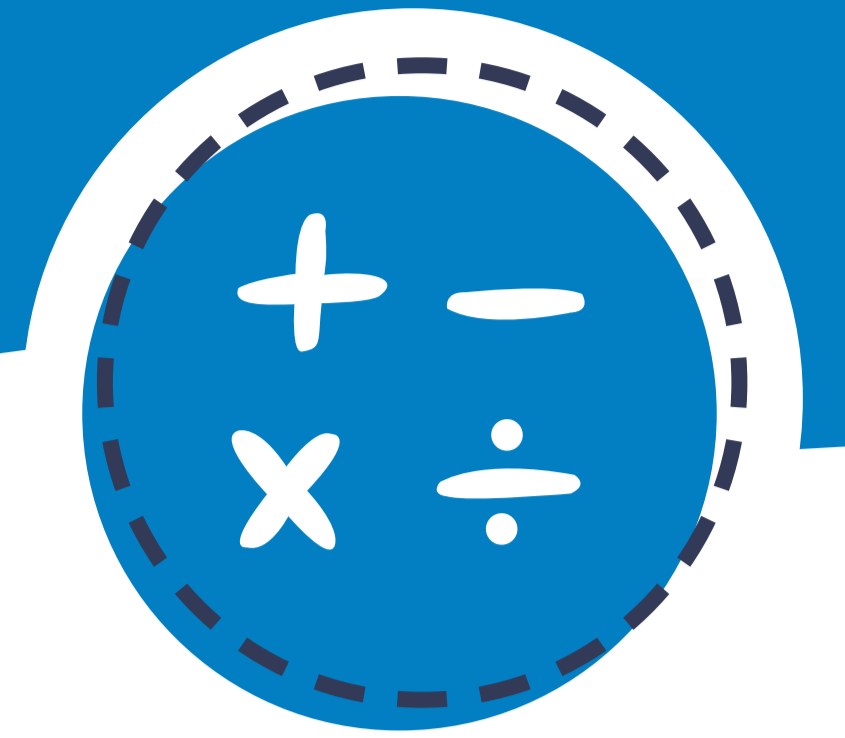


1 Challenge one

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

1 1) Write the first 5 numbers that are coloured in on the number square.

2 This 100 square shows the multiples of what number?



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3 If the sequence continued, what would the first three numbers over 100 be?

2 Challenge two

1 Colour in all the multiples of 7 on this square.

2 If the sequence continued, what would the first three numbers over 100 be?

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

3 Challenge three

What is the next number in each sequence? What is happening in the sequence?

Sequence	Next Number	What is Happening
2, 4, 6, 8, 10	12	+2
4, 9, 14, 19		
2, 4, 8, 16, 32		
36, 30, 24, 18, 12		
50, 46, 42, 38, 34		
64, 32, 16, 8, 4		

4 Challenge four

Create some sequences of your own, then test you friends and family. Can they find the next number in the sequence?