KIRF: I can recall square numbers up to 12^2 and their square roots.

Square numbers have an odd number of factors and are the result of multiplying a whole number by itself.

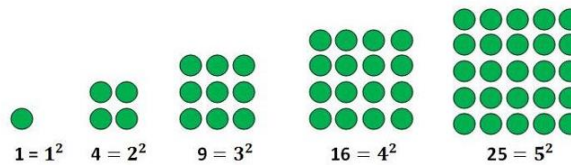The aim is for children to recall square numbers up to 12^2 instantly.

What can this look like?

Concrete:

×	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Concrete and Pictorial:

$1 = 1^2$ $4 = 2^2$ $9 = 3^2$ $16 = 4^2$ $25 = 5^2$

Abstract:

1^2	1 x 1	1
2^2	2 x 2	4
3^2	3 x 3	9
4^2	4 x 4	16
5^2	5 x 5	25
6^2	6 x 6	36
7^2	7 x 7	49
8^2	8 x 8	64
9^2	9 x 9	81
10^2	10 x 10	100
11^2	11 x 11	121
12^2	12 x 12	144

Questions to ask at home

What is 8 **squared**?

What is 7 **multiplied by itself**?

What is the **square root** of 144?

Is 81 a **square number**?

Key vocabulary

Notation- A symbol. The notation ^{2} means squared e.g. 5^2 is 5 squared, 5 × 5 = 25

Square number- The result when a number has been multiplied by itself.

Square root- A square root of a number is a value that, when multiplied by itself, gives the number. e.g. the square root of 9 is 3

Things to try

Around the clock- think of a clock face. What are each of the numbers a square root of? E.g. 12: 12 is the square root of 144.

What are each of the numbers squared?

Dice roll- whatever the number lands on, square it

Cards- turn a card over, square it and call out the answer. Can you say the answer quicker than your partner?

Websites:

https://www.topmarks.co.uk/maths-games/hit-the-button

https://mathszone.co.uk/using-applying/puzzles-and-logic-problems/splat-square100-primary-games-3/

https://wordwall.net/resource/9919606/maths/whack-square

https://whiterosemaths.com/homelearning/year-5/week-9-number-multiplication-division/