

# Varied Fluency

## Step 5: Square Numbers

### National Curriculum Objectives:

Mathematics Year 5: (5C5d) [Recognise and use square numbers and cube numbers, and the notation for squared \(2\) and cubed \(3\)](#)

Mathematics Year 5: (5C8a) [Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes](#)

### Differentiation:

**Developing** Questions to support identifying and calculating square numbers up to and including  $10 \times 10$  using numbers only.

**Expected** Questions to support identifying and calculating square numbers up to and including  $12 \times 12$  using numbers and words.

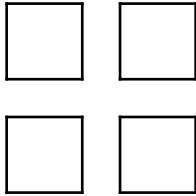
**Greater Depth** Questions to support identifying and calculating square numbers up to  $12 \times 12$  and beyond, using numbers and words.

[More resources](#) which follow the same small steps as White Rose.

Did you like this resource? Don't forget to [review](#) it on our website.

## Square Numbers

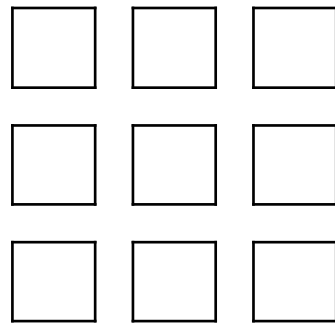
1a. Which squared number does this diagram represent?



VF

## Square Numbers

1b. Which squared number does this diagram represent?



VF

2a. Calculate:



VF

2b. Calculate:



VF

3a. Match the squared numbers. The first one has been done for you.

1 <sup>2</sup>	3 <sup>2</sup>	5 <sup>2</sup>	7 <sup>2</sup>	9 <sup>2</sup>
3 x 3	1 x 1	7 x 7	9 x 9	5 x 5
9	81	1	49	25

Arrows indicate: 1<sup>2</sup> matches 1 x 1 and 1; 3<sup>2</sup> matches 3 x 3 and 9.



VF

3b. Match the squared numbers. The first one has been done for you

2 <sup>2</sup>	6 <sup>2</sup>	7 <sup>2</sup>	4 <sup>2</sup>	8 <sup>2</sup>
7 x 7	2 x 2	8 x 8	4 x 4	6 x 6
4	16	36	49	64

Arrows indicate: 2<sup>2</sup> matches 2 x 2 and 4; 4<sup>2</sup> matches 4 x 4 and 16.



VF

4a. Complete the table below.

__ <sup>2</sup>	9
__ <sup>2</sup>	36
__ <sup>2</sup>	64



VF

4b. Complete the table below.

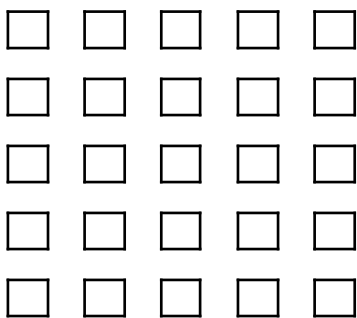
__ <sup>2</sup>	25
__ <sup>2</sup>	49
__ <sup>2</sup>	81



VF

## Square Numbers

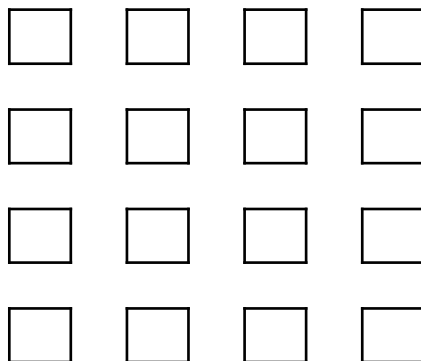
5a. Which squared number does this diagram represent?



VF

## Square Numbers

5b. Which squared number does this diagram represent?



VF

6a. Calculate:

3 squared

$5^2$

11 squared

$7^2$

8 squared

$6^2$



VF

6b. Calculate:

2 squared

$1^2$

10 squared

$8^2$

12 squared

$7^2$



VF

7a. Circle the square numbers.

11

16

21

22

36

25

9

10

23

46

62

64

66

68

60



VF

7b. Circle the square numbers.

81

91

101

111

121

104

144

56

49

35

64

74

84

94

100



VF

8a. Complete the table below.

$\_\_\_^2$	$2 \times 2$	4
	$4 \times 4$	
$11^2$		
	$8 \times 8$	



VF

8b. Complete the table below.

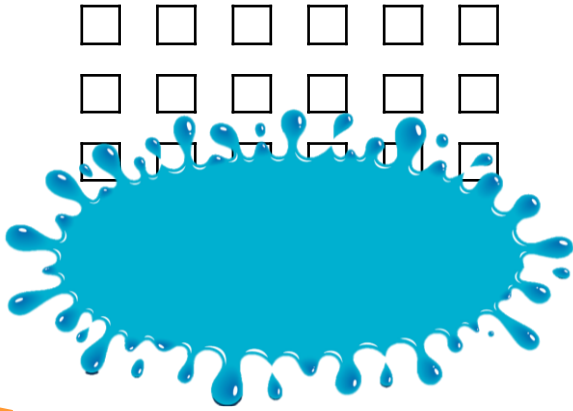
$\_\_\_^2$	$3 \times 3$	9
	$5 \times 5$	
		49
	$12 \times 12$	



VF

## Square Numbers

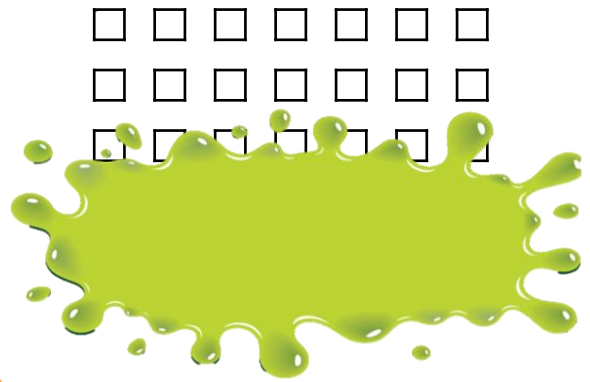
9a. Which squared number could this diagram represent?



VF

## Square Numbers

9b. Which squared number could this diagram represent?



VF

10a. Calculate:

$3^2 + 5$

$11^2 - 10$

$7^2 + 3$

$5^2 - 7$

$8^2 + 4$

$6^2 - 6$



VF

10b. Calculate:

$1^2 + 3$

$12^2 - 5$

$10^2 - 4$

$9^2 + 9$

$4^2 + 8$

$3^2 + 12$



VF

11a. Circle the square numbers.

16	21	eleven	twenty two	46
nine	225	twelve	36	twenty three
sixty four	62	169	sixty eight	60



VF

11b. Circle the square numbers.

101	ninety two	81	110	121
144	104	fifty two	36	forty nine
sixty four	94	104	ninety four	400



VF

12a. Complete the table below.

$12^2$	$12 \times 12$	144
$13^2$		
$14^2$		
$15^2$		



VF

12b. Complete the table below.

	$13 \times 13$	169
$14^2$	$14 \times 14$	196
$15^2$		225
		400



VF

## Varied Fluency Square Numbers

### Developing

1a.  $2^2 = 4$

2a.  $2^2 = 4$ ,  $3^2 = 9$ ,  $4^2 = 16$ ,  $5^2 = 25$ ,  $6^2 = 36$

3a.  $3^2 = 3 \times 3 = 9$ ,  $5^2 = 5 \times 5 = 25$ ,

$7^2 = 7 \times 7 = 49$ ,  $9^2 = 9 \times 9 = 81$

4a.  $3^2 = 9$ ,  $6^2 = 36$ ,  $8^2 = 64$

### Expected

5a.  $5^2 = 25$

6a. 3 squared = 9, 11 squared = 121,  
8 squared = 64,  $7^2 = 49$ ,  $5^2 = 25$ ,  $6^2 = 36$

7a. 16, 36, 25, 9, 64

8a.

$2^2$	$2 \times 2$	4
$4^2$	$4 \times 4$	16
$11^2$	$11 \times 11$	121
$8^2$	$8 \times 8$	64

### Greater Depth

9a.  $6^2 = 36$

10a.  $3^2 + 5 = 14$ ,  $11^2 - 10 = 111$ ,  $7^2 + 3 = 52$ ,  
 $5^2 - 7 = 18$ ,  $8^2 + 4 = 68$ ,  $6^2 - 6 = 30$

11a. 16, 36, 225, nine, sixty-four, 169.

12a.

$12^2$	$12 \times 12$	144
$13^2$	$13 \times 13$	169
$14^2$	$14 \times 14$	196
$15^2$	$15 \times 15$	225

## Varied Fluency Square Numbers

### Developing

1b.  $3^2 = 9$

2b.  $1^2 = 1$ ,  $2^2 = 4$ ,  $7^2 = 49$ ,  $9^2 = 81$ ,  $8^2 = 64$

3b.  $6^2 = 6 \times 6 = 36$ ,  $7^2 = 7 \times 7 = 49$ ,

$4^2 = 4 \times 4 = 16$ ,  $8^2 = 8 \times 8 = 64$

4b.  $5^2 = 25$ ,  $7^2 = 49$ ,  $9^2 = 81$

### Expected

5b.  $4^2 = 16$

6b. 2 squared = 4, 12 squared = 144,  
7 squared = 49,  $10^2 = 100$ ,  $8^2 = 64$ ,  $1^2 = 1$

7b. 81, 121, 144, 49, 64, 100

8b.

$3^2$	$3 \times 3$	9
$5^2$	$5 \times 5$	25
$7^2$	$7 \times 7$	49
$12^2$	$12 \times 12$	144

### Greater Depth

9b.  $7^2 = 49$

10b.  $1^2 + 3 = 4$ ,  $12^2 - 5 = 139$ ,  $10^2 - 4 = 96$ ,  
 $9^2 + 9 = 90$ ,  $4^2 + 8 = 24$ ,  $3^2 + 12 = 21$

11b. 81, 121, 144, forty-nine, 36, sixty-four,  
400

12b.

$13^2$	$13 \times 13$	169
$14^2$	$14 \times 14$	196
$15^2$	$15 \times 15$	225
$20^2$	$20 \times 20$	400