Homework/Extension
Step 12: Square and Cube 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:

Questions 1, 4 and 7 (Varied Fluency)
Developing Complete the table by calculating the square numbers up to 12^2 and cube numbers up to 5^3. Includes the corresponding multiplication, i.e. 4 x 4 x 4.
Expected Complete the table by calculating the square numbers up to 12^2 and cube numbers up to 12^3.
Greater Depth Complete the table by calculating the root numbers, square numbers up to 12^2 and cube numbers up to 12^3. Numbers presented within a calculation.

Questions 2, 5 and 8 (Varied Fluency)
Developing Identify if the square numbers up to 12^2 and cube numbers up to 5^3 have been sequenced in order from smallest to largest. Includes the index and the corresponding multiplication, i.e. $4^3 = 4 \times 4 \times 4$.
Expected Identify if the square numbers up to 12^2 and cube numbers up to 12^3 have been sequenced in order from smallest to largest.
Greater Depth Identify if the square numbers up to 12^2, cube numbers up to 12^3 and root numbers have been sequenced in order from smallest to largest. Numbers presented within calculations involving all four operations.

Questions 3, 6 and 9 (Reasoning and Problem Solving)
Developing Solve the word problem using knowledge of square numbers up to 12^2 and cube numbers up to 5^3. Includes the index and the corresponding multiplication, i.e. $4^3 = 4 \times 4 \times 4$.
Expected Solve the word problem using knowledge of square numbers up to 12^2 and cube numbers up to 12^3.
Greater Depth Solve the word problem using knowledge of square numbers up to 12^2 and cube numbers up to 12^3. Numbers presented within calculations involving all four operations.

More Year 6 Four Operations resources.

Did you like this resource? Don't forget to review it on our website.

Square and Cube Numbers

1. Complete the table below.

Root Number	Squared	Cubed
5	5 x 5 = ☐	5 x 5 x 5 = ☐
4	4 x 4 = ☐	4 x 4 x 4 = ☐
2	2 x 2 = ☐	2 x 2 x 2 = ☐
3	3 x 3 = ☐	3 x 3 x 3 = ☐

D

VF
HW/Ext

2. True or false?

The numbers below have been ordered from smallest to largest.

6^2 (6 x 6) | 7^2 (7 x 7) | 4^3 (4 x 4 x 4) | 11^2 (11 x 11)

D

VF
HW/Ext

3. Solve the word problem below.

Kath is trying to work out Sam's age.

He is younger than 3^3 (3 x 3 x 3) and older than 5^2 (5 x 5).

Use square and cube numbers to help Kath work out Sam's age.

D

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Square and Cube Numbers

4. Complete the table below.

Root Number	Squared	Cubed
7		
6		
11		
8		

E

VF
HW/Ext

5. True or false?

The numbers below have been ordered from smallest to largest.

5^3 | 64 | 12^2 | 9^3

E

VF
HW/Ext

6. Solve the word problem below.

Emily is trying to work out Paul's age.

His age is a square number and a cube number.

Use the square numbers up to 12^2 and cube numbers up to 12^3 to help Emily work out Paul's age.

E

RPS
HW/Ext

Square and Cube Numbers

7. Complete the table below.

Root Number	Squared + Root Number	Cubed – Root Number
8		504
	156	
		720
	132	

GD

VF
HW/Ext

8. True or false?

The numbers below have been ordered from smallest to largest.

$4^3 + 6^2$ | $9^3 - 200$ | cube root of 1,728 | $10^3 \div 2$

GD

VF
HW/Ext

9. Solve the word problem below.

Mel is trying to work out Greg's age.

He is younger than $7^3 - 250$ and older than $8^2 + 3^3$.

Use square and cube numbers to help Mel work out Greg's age.

GD

RPS
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Square and Cube Numbers

Developing

1.

Root Number	Squared	Cubed
5	5 x 5 = 25	5 x 5 x 5 = 125
4	4 x 4 = 16	4 x 4 x 4 = 64
2	2 x 2 = 4	2 x 2 x 2 = 8
3	3 x 3 = 9	3 x 3 x 3 = 27

2. True
3. Sam is 26 because $3^3 = 27$ and $5^2 = 25$.

Expected

4.

Root Number	Squared	Cubed
7	49	343
6	36	216
11	121	1,331
8	64	512

5. False, the correct order is 64, 5^3, 12^2, 9^3
6. Paul is 64 because $8^2 = 64$ and $4^3 = 64$. None of the other numbers up to 12^2 and 12^3 are both square and cube numbers.

Greater Depth

7.

Root Number	Squared + Root Number	Cubed – Root Number
8	72	504
12	156	1,716
9	90	720
11	132	1,320

8. False, the correct order is cube root of 1,728, $4^3 + 6^2$, $10^3 \div 2$, $9^3 - 200$
9. Greg is 92 because $7^3 - 250 = 93$ and $8^2 + 3^3 = 91$