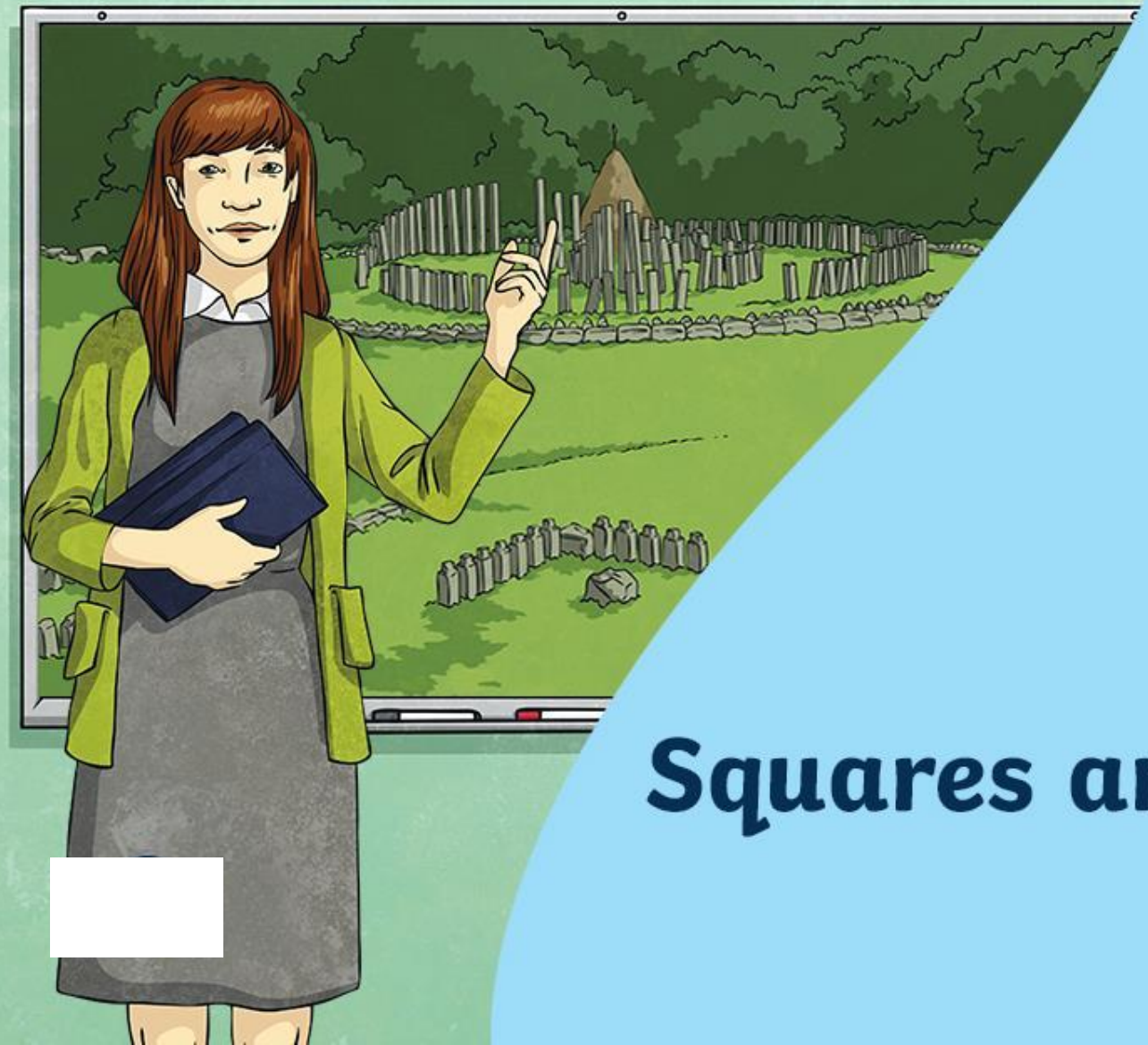
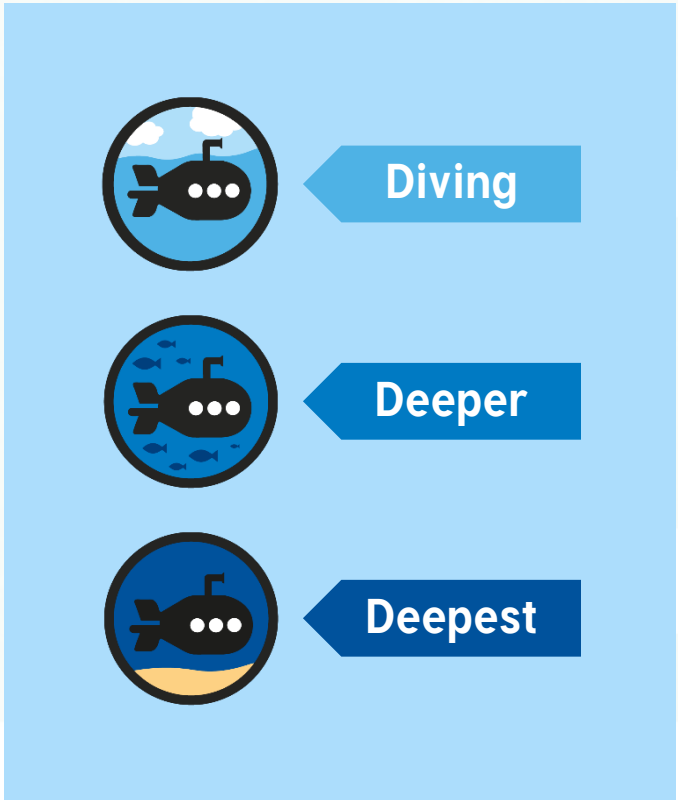
Diving into Mastery



Squares and Cubes

Diving into Mastery Guidance for Educators

Each activity sheet is split into three sections, diving, deeper and deepest, which are represented by the following icons:



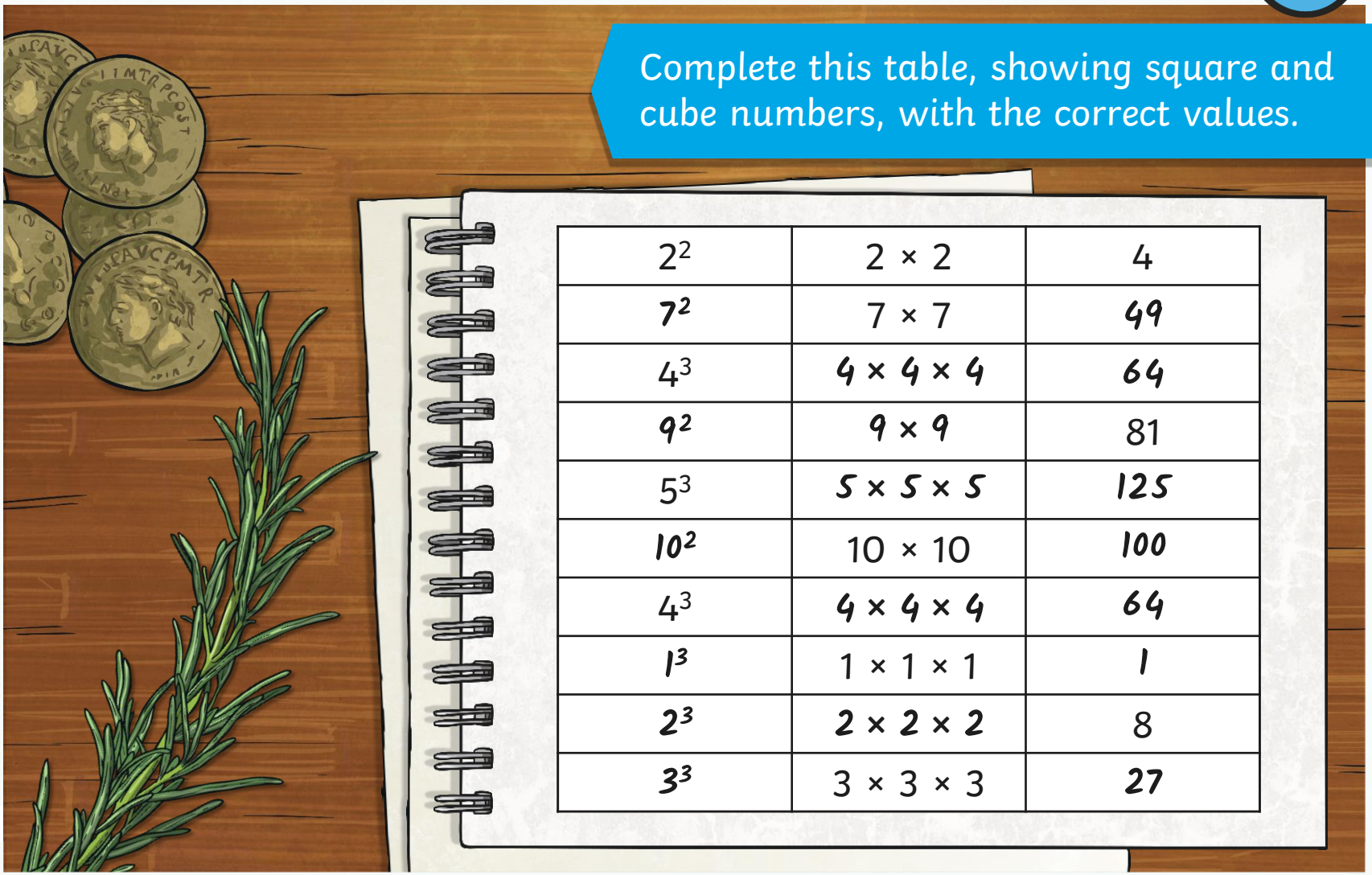
These carefully designed activities take your children through a learning journey, initially ensuring they are fluent with the key concept being taught; then applying this to a range of reasoning and problem-solving activities.

These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.

Aim

- Identify common factors, common multiples and prime numbers.

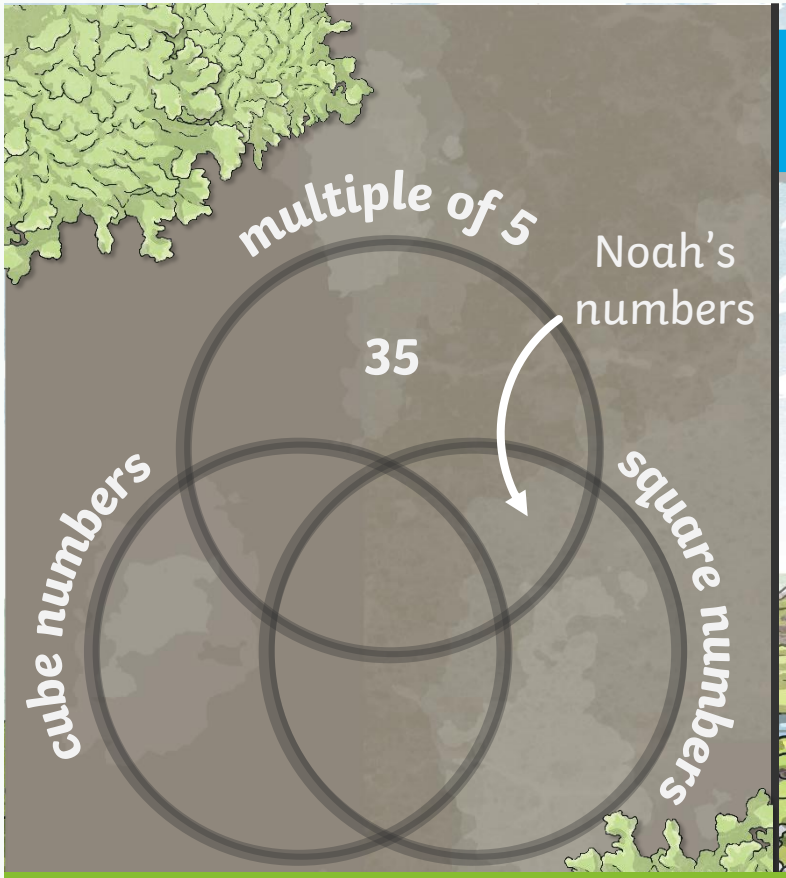
Squares and Cubes | **Diving**



Complete this table, showing square and cube numbers, with the correct values.

2^2	2 × 2	4
7^2	7 × 7	49
4^3	4 × 4 × 4	64
9^2	9 × 9	81
5^3	5 × 5 × 5	125
10^2	10 × 10	100
4^3	4 × 4 × 4	64
1^3	1 × 1 × 1	1
2^3	2 × 2 × 2	8
3^3	3 × 3 × 3	27

Squares and Cubes | **Deeper**



Is Noah correct?
Explain your reasoning.

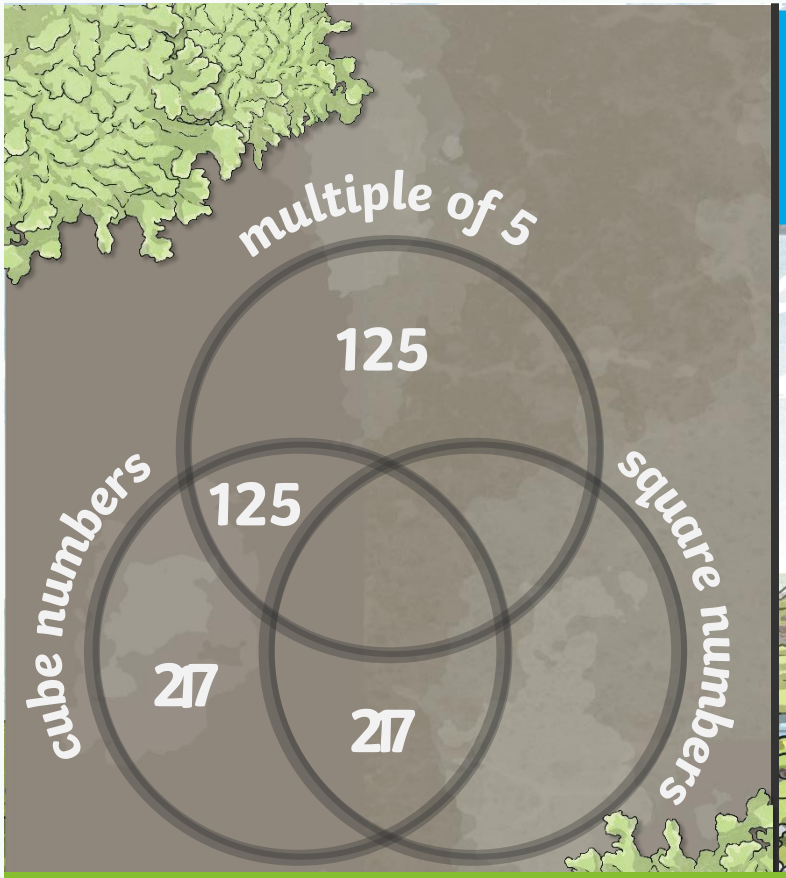
Noah says,

"I think that the only place the numbers 25, 35 and 100 can go are in this section of the diagram."

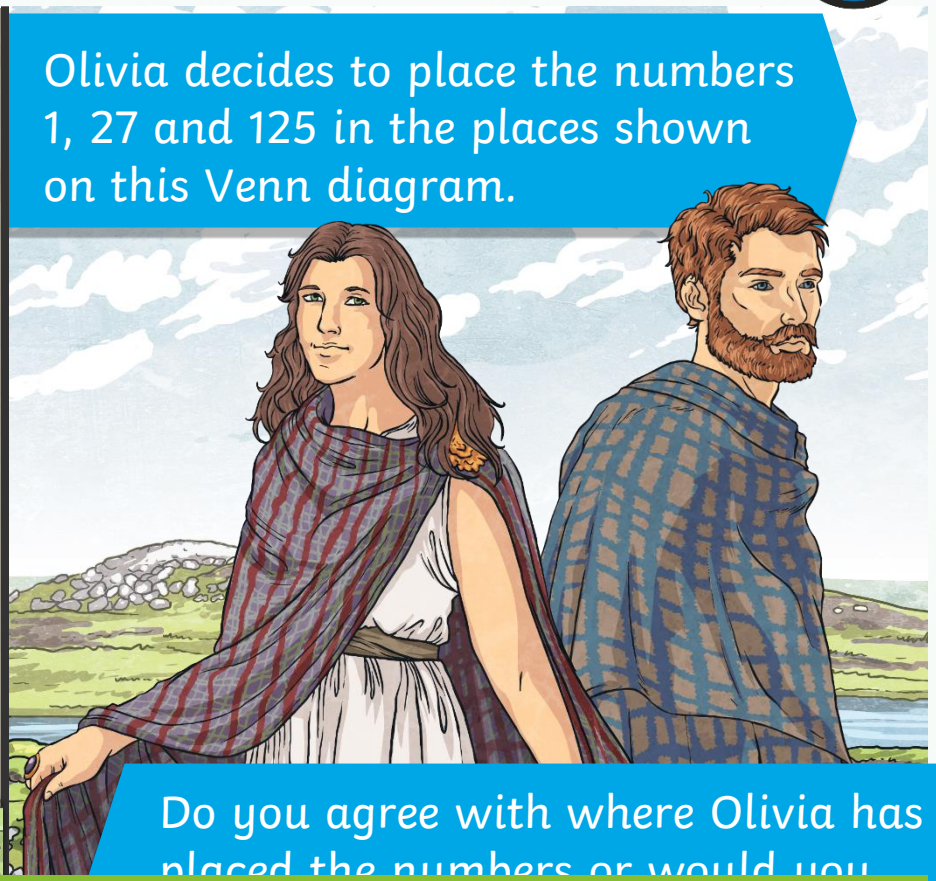
Noah and Olivia have been

Noah is not correct. 25 and 100 are in the correct place as they are both square numbers which are also multiples of 5. He should not have placed 35 in this section as it is not a square number.

Squares and Cubes | **Deeper**



Olivia decides to place the numbers 1, 27 and 125 in the places shown on this Venn diagram.



Do you agree with where Olivia has placed the numbers or would you

Olivia has not placed the numbers correctly. 125 is both a multiple of 5 and is also 5 cubed. 27 is 3 cubed and is not also a square number. The number 1 is both a square and a cube number.

Squares and Cubes | **Deepest**

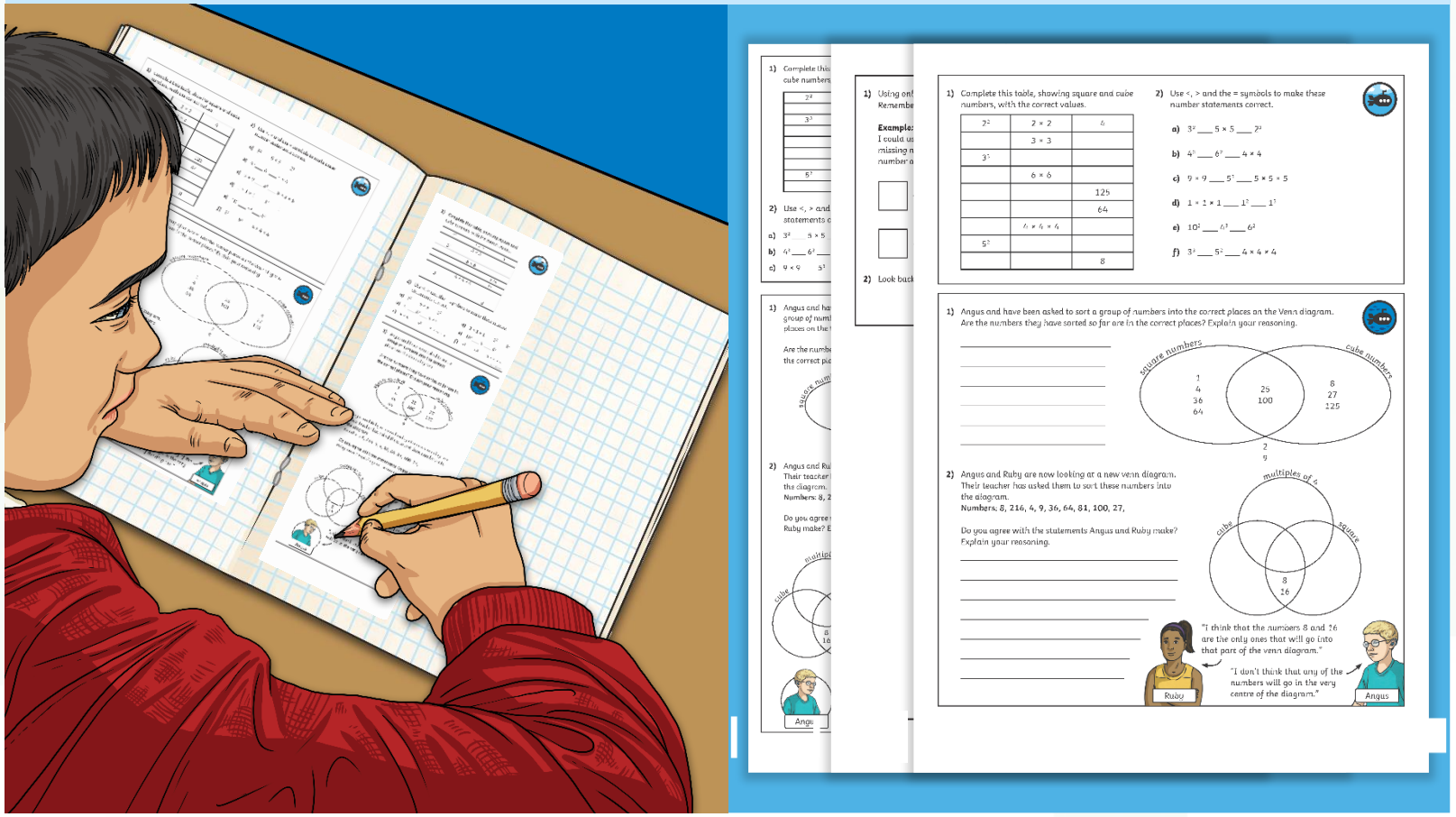
? + 8 + 27 + 64 = 100

Complete this missing number puzzle using only square or cube numbers that are 100 or less. Remember that all the numbers you use must be squares or cubes, including the number after the equals sign!

Click for a clue

Squares and Cubes

Dive in by completing your own activity!



1) Complete this table, showing square and cube numbers, with the correct values.

2^2	2×2	
	3×3	
3^3		
	6×6	
		125
		64
	$4 \times 4 \times 4$	
5^2		
		8

2) Use <, > and the = symbols to make these number statements correct.

a) 3^2 ___ 5×5 ___ 2^3

b) 4^3 ___ 6^2 ___ 4×4

c) 9×9 ___ 5^3 ___ $5 \times 5 \times 5$

d) $1 \times 1 \times 1$ ___ 1^2 ___ 1^3

e) 10^2 ___ 4^3 ___ 6^2

f) 3^3 ___ 5^2 ___ $4 \times 4 \times 4$

1) Angus and have been asked to sort a group of numbers into the correct places on the Venn diagram. Are the numbers they have sorted so far are in the correct places? Explain your reasoning.

square numbers: 1, 4, 36, 64

square numbers and cube numbers: 25, 100

cube numbers: 8, 27, 125

2

9

2) Angus and Ruby are now looking at a new venn diagram. Their teacher has asked them to sort these numbers into the diagram.

Numbers: 8, 216, 4, 9, 36, 64, 81, 100, 27,

Do you agree with the statements Angus and Ruby make? Explain your reasoning.

multiples of 4

cube

square

8

16

"I think that the numbers 8 and 16 are the only ones that will go into that part of the venn diagram."

Ruby

"I don't think that any of the numbers will go in the very centre of the diagram."

Angus

Need Planning to Complement this Resource?

National Curriculum Aim

Identify common factors, common multiples and prime numbers.