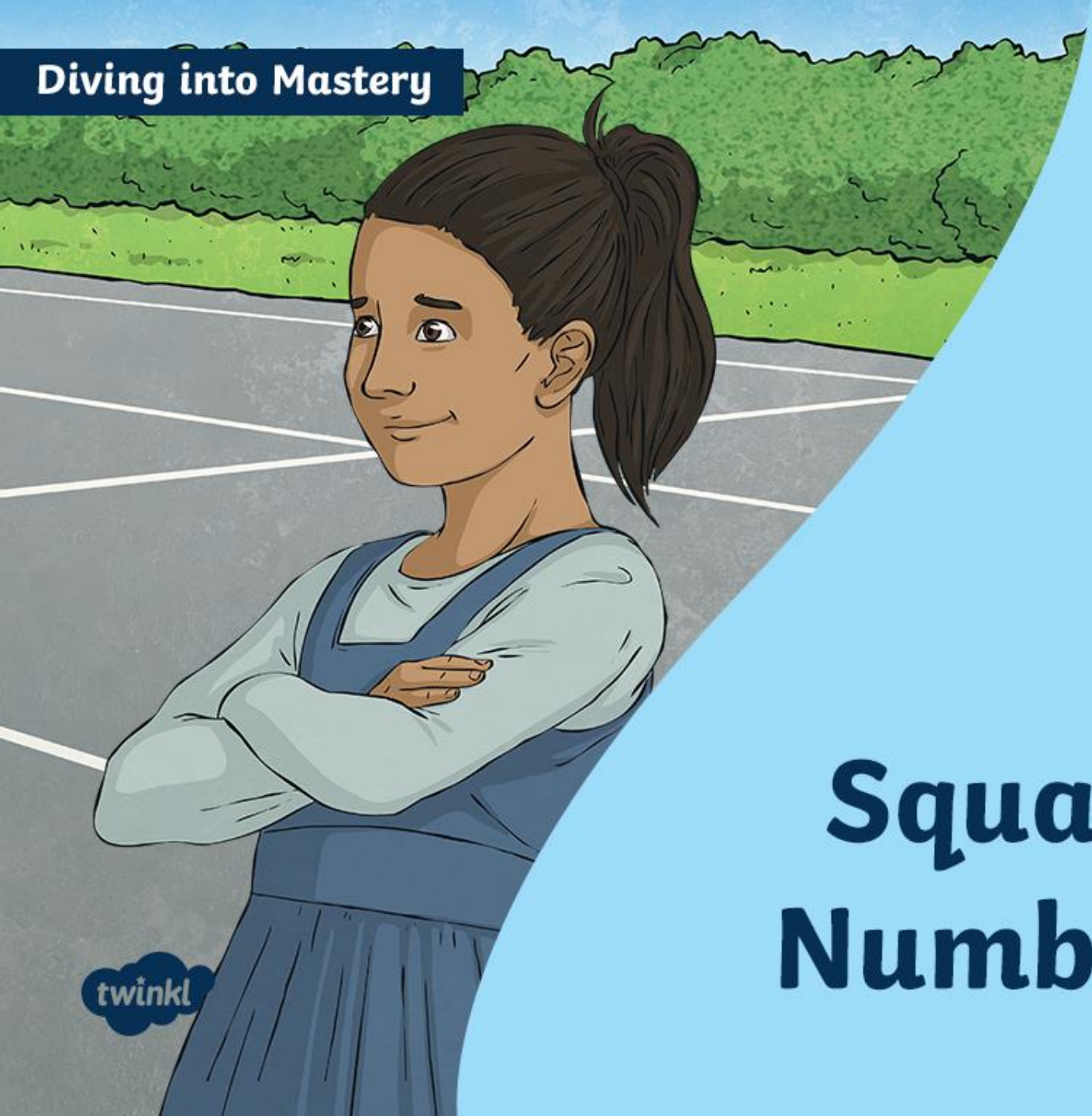
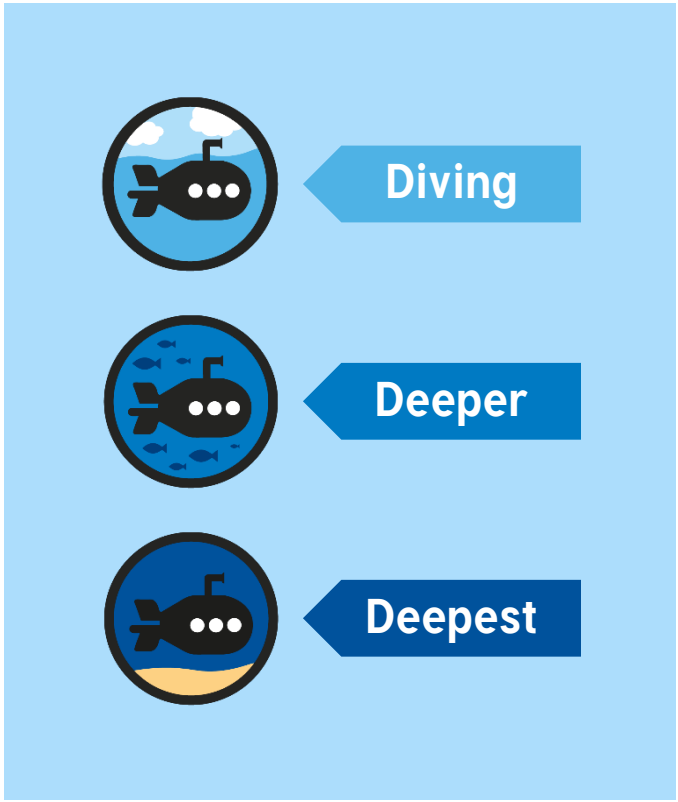
Diving into Mastery



Square Numbers

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

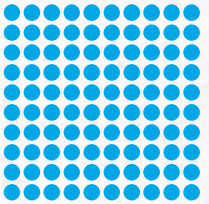
- Recognise and use square numbers and cube numbers, and the notation for squared and cubed.

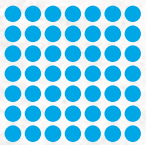
Square Numbers | **Diving**

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

$2^2 \square 6 \times 6 \square$ 

$8^2 \square 7 \times 7 \square$ 

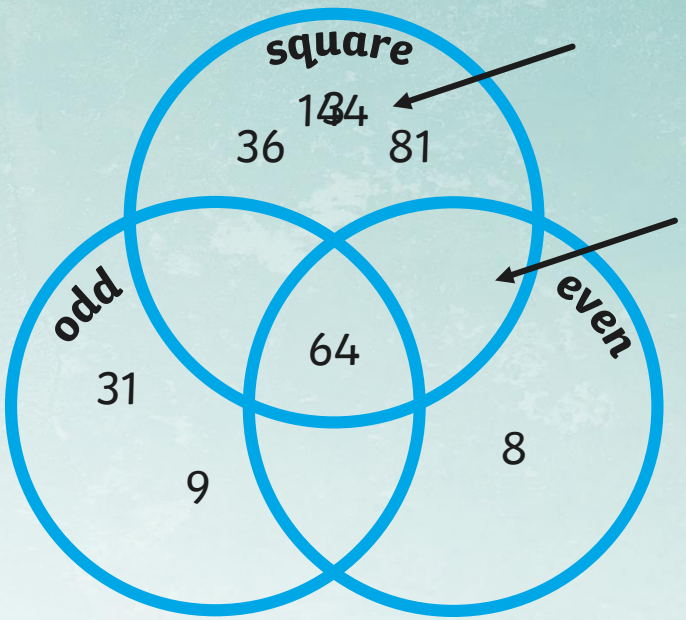
$9 \times 9 \square 10^2 \square$ 

$12^2 \square$  $\square 9 \times 9$

$4 \times 4 \square 3^2 \square$ 

Square Numbers | **Deeper**

Read the statements and decide whether they are true or false, giving reasons why.



1. All the numbers have been placed correctly in the Venn diagram.

   False.

2. If I were to add the number 144, it would go into this part of the diagram.

   False. As it is an even square number, it would need to be placed here.

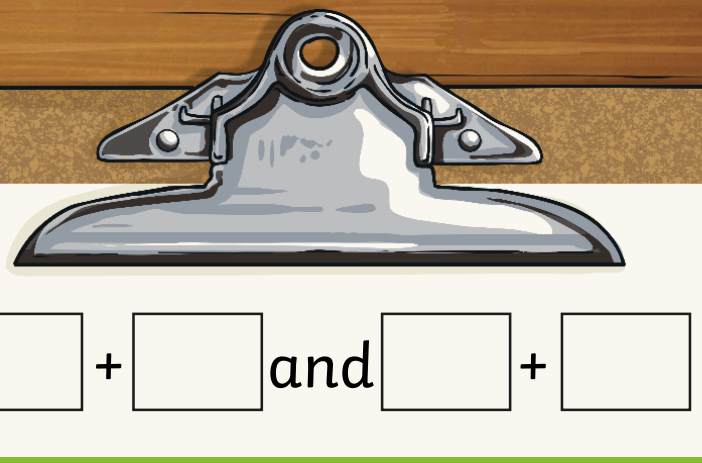
3. No numbers can go in the centre of the diagram.

   True. Numbers cannot be square, odd **and** even.

Square Numbers | **Deepest**

When I add two different square numbers together and then add another two different square numbers together, the difference between the two answers is less than 5. What could my four different square numbers be?

Complete the problem by only using square numbers up to 12 squared.



Various answers are possible, including the following:

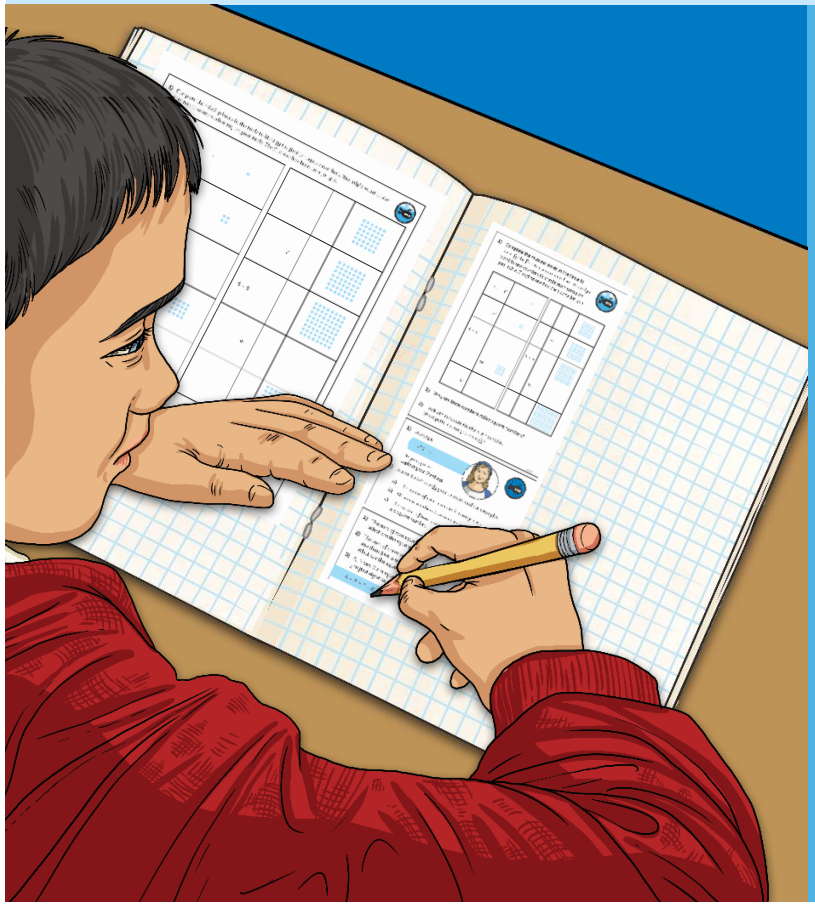
9 + 1 and 9 + 4 (difference = 3) **16 + 9 and 25 + 1** (difference = 1)

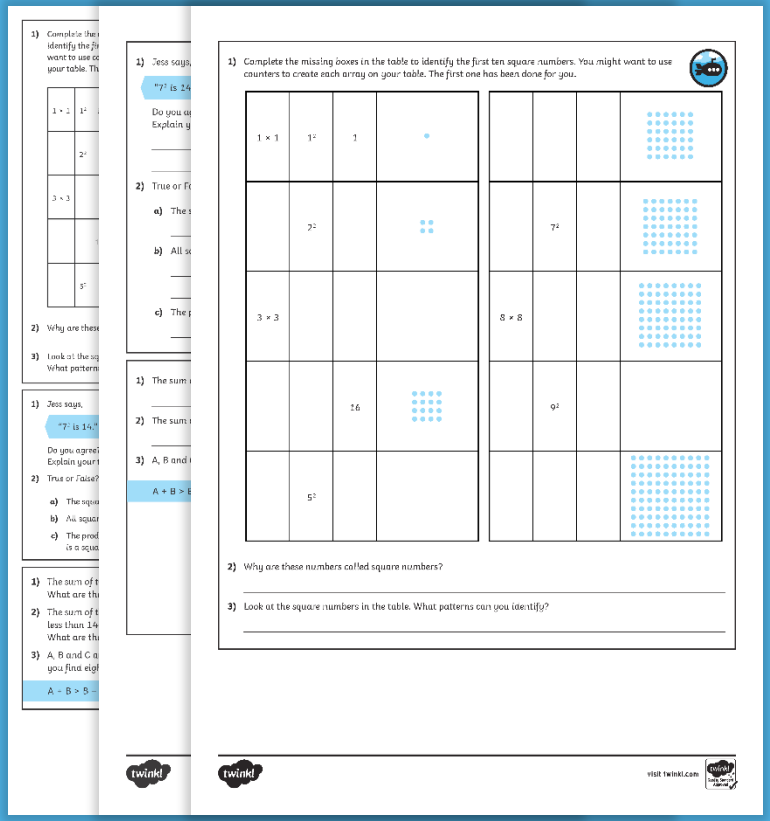
9 + 4 and 16 + 1 (difference = 4) **81 + 49 and 121 + 9** (difference = 0)

36 + 49 and 4 + 81 (difference = 0) **49 + 16 and 64 + 1** (difference = 0)

Square Numbers

Dive in by completing your own activity!





1) Complete the missing boxes in the table to identify the first ten square numbers. You might want to use counters to create each array on your table. The first one has been done for you.

1 × 1	1^2	1	
	7^2		
3 × 3			
		16	
	5^2		

	7^2		
8 × 8			
	9^2		

2) Why are these numbers called square numbers?

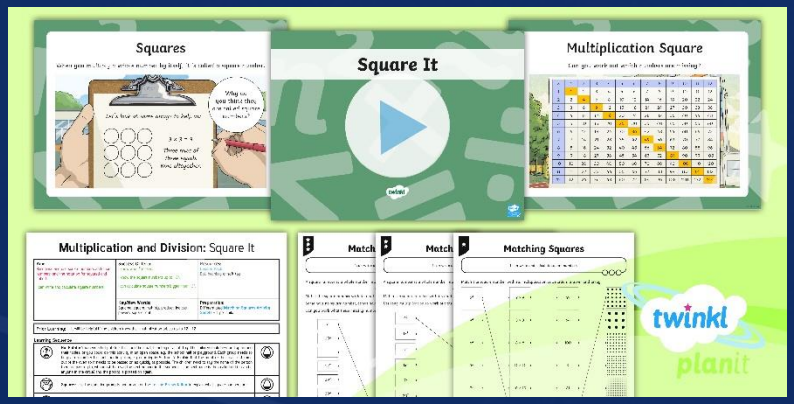
3) Look at the square numbers in the table. What patterns can you identify?

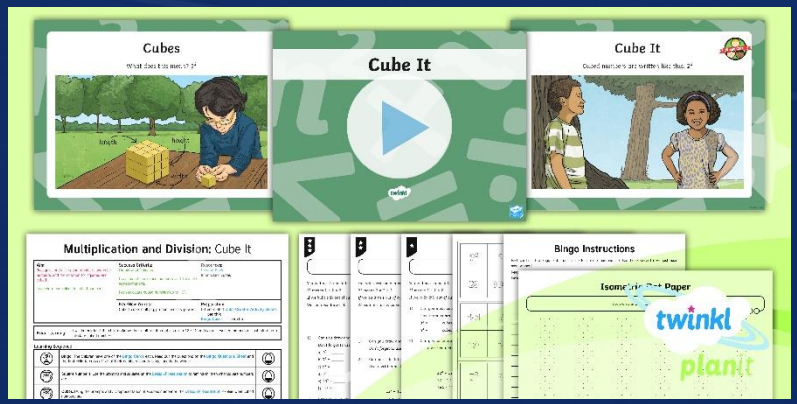
Need Planning to Complement this Resource?

National Curriculum Aim

Recognise and use square numbers and cube numbers, and the notation for squared and cubed.

For more planning resources to support this aim, click here.





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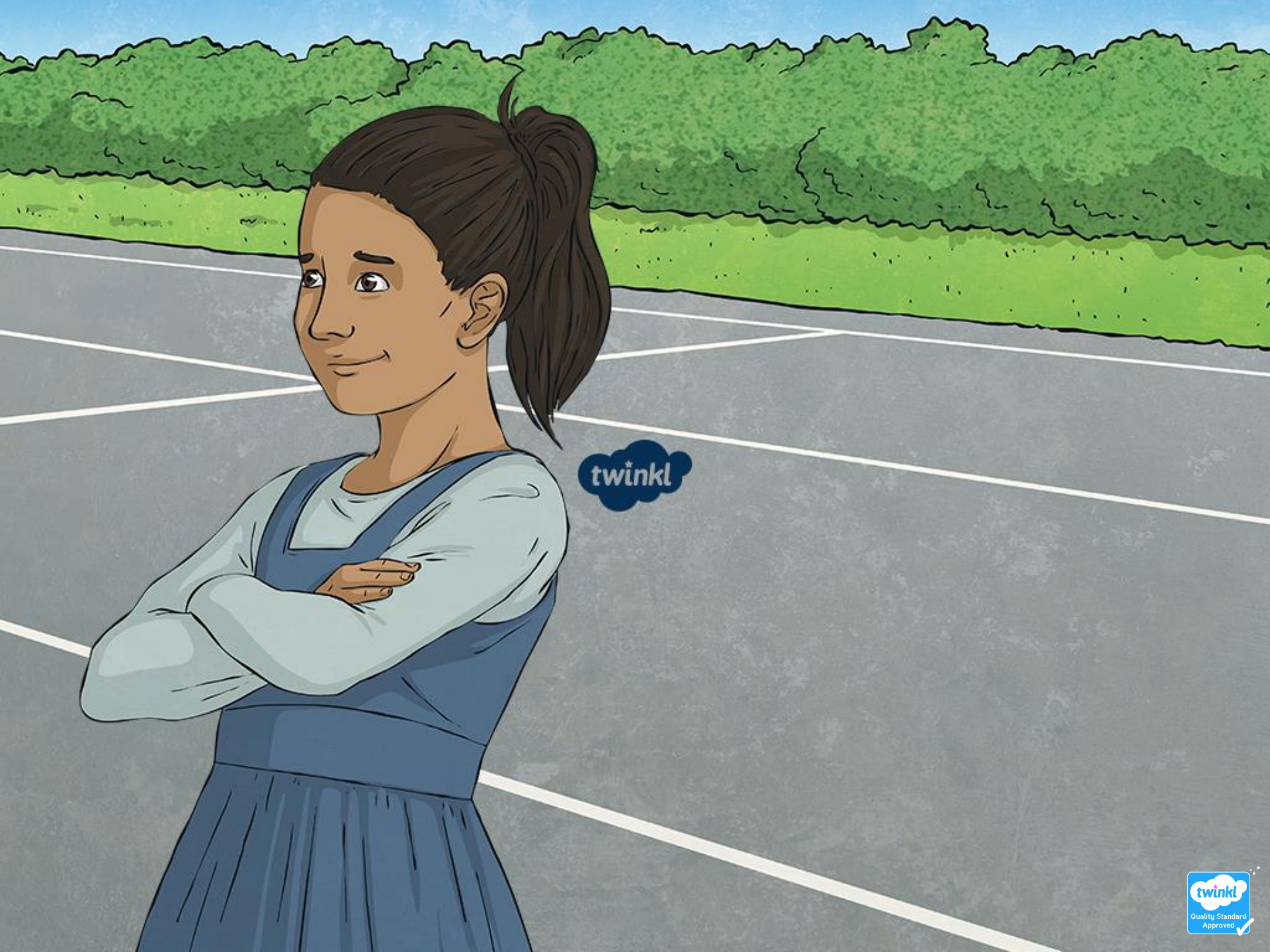
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