

Multiply 2 Digits (Area Model)

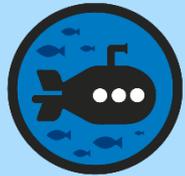


Diving into Mastery Guidance for Educators

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



Diving



Deeper



Deepest

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

- Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers.



Multiply 2 Digits (Area Model)

Diving

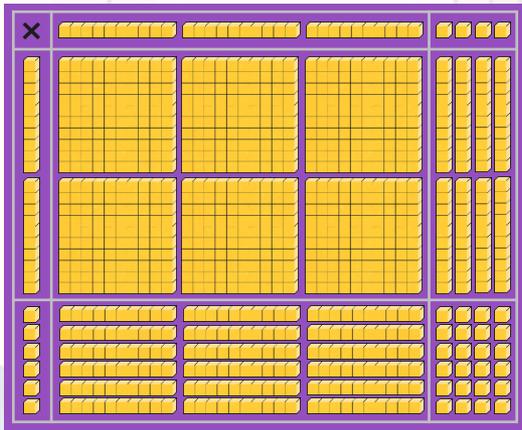


Find the three different representations that match each of these calculations:

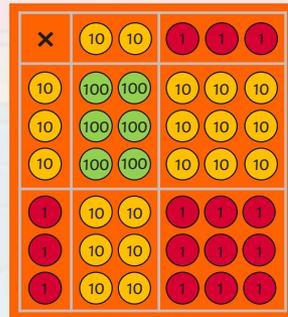
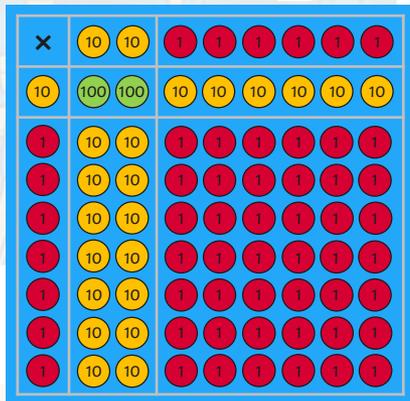
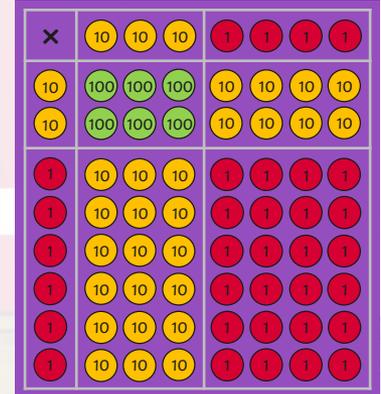
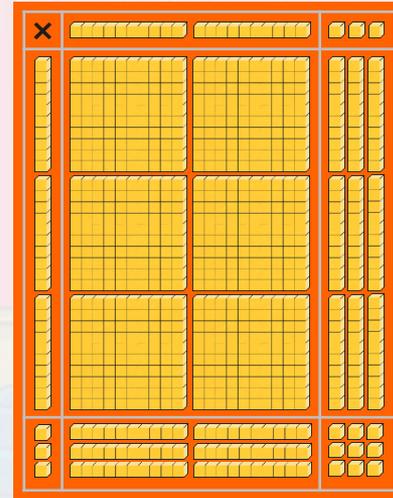
$$26 \times 17$$

$$34 \times 26$$

$$23 \times 33$$

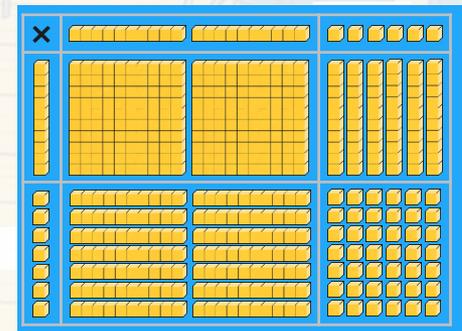


×	20	6
10	200	60
7	140	42



×	20	3
30	600	90
3	60	9

×	30	4
20	600	80
6	180	24

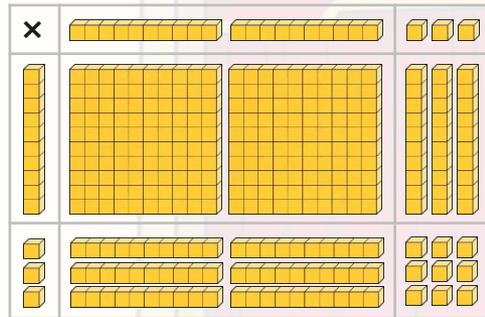


Multiply 2 Digits (Area Model)

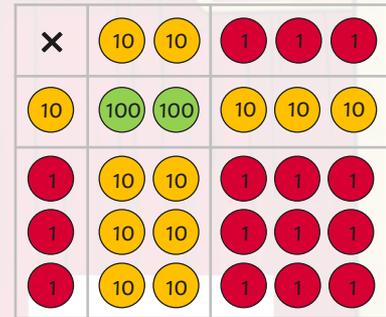
Diving



Use base ten to represent 23×13 .



Next, use place value counters to show this multiplication calculation.



Finally, show this correctly using a grid.

×	20	3	
10	200	30	
3	60	9	
			2 0 0
			3 0
			6 0
			+ 9
			2 9 9

Multiply 2 Digits (Area Model)

Deeper



Paul and Prue are calculating 16×28 .

Who has completed the grid correctly?

What mistakes have been made?

\times	10	6
20	200	120
8	80	48

This method is correct.

Prue has incorrectly recorded 20×10 as 2000 whereas it is in fact 200.

\times	20	8
10	2000	80
6	120	48

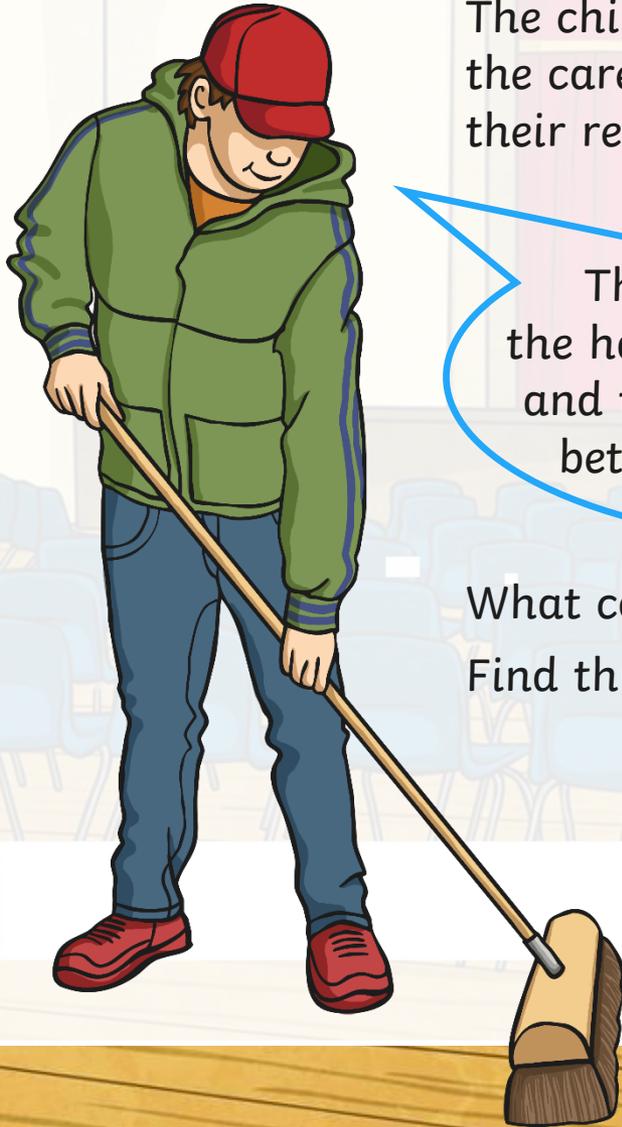
	2	0	0
	1	2	0
		8	0
+		4	8
	4	4	8
	1		

	2	0	0	0
		1	2	0
			8	0
+			4	8
	2	2	4	8
				1



Multiply 2 Digits (Area Model)

Deepest



The children at Twinkl Academy are trying to solve the caretaker's clues to find the measurements of their rectangular school hall floor.

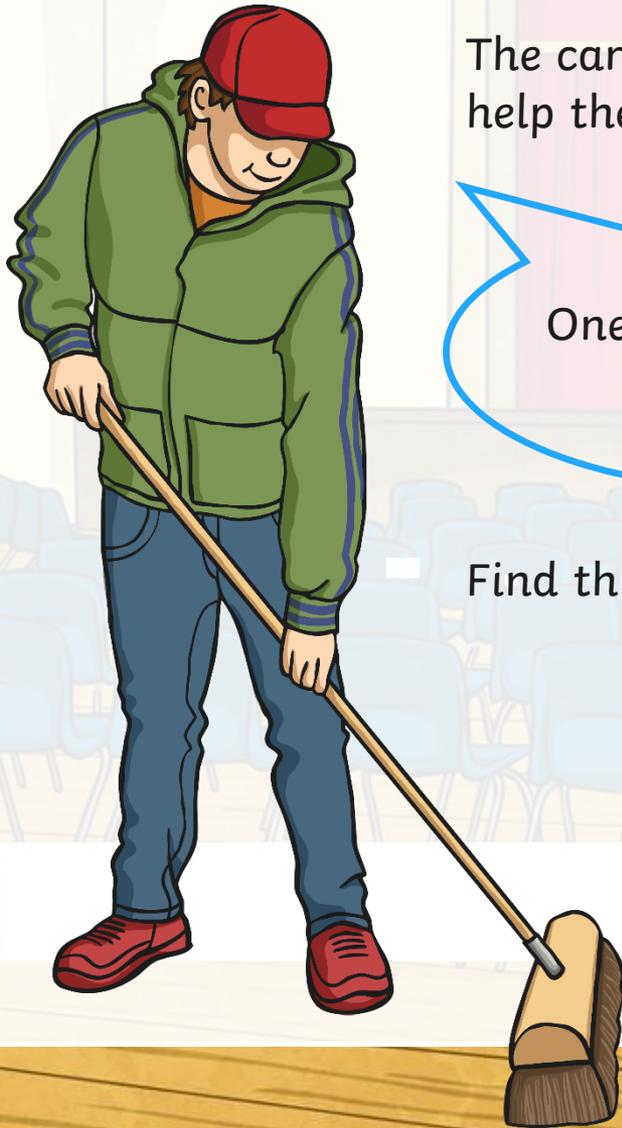
The length of each side of the hall floor is a 2-digit number and the area of the hall floor is between 500m^2 and 550m^2 .

What could the measurements be?
Find three possible solutions.

Possible solutions include $26\text{m} \times 21\text{m}$, $19\text{m} \times 28\text{m}$ and $32\text{m} \times 16\text{m}$.

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Deepest



The caretaker adds an extra clue to help the children.

One of the sides has a digit sum of 6.

Find three possible solutions.

Possible solutions include $33\text{m} \times 16\text{m}$, $15\text{m} \times 36\text{m}$ and $24\text{m} \times 22\text{m}$.

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Deepest



The caretaker gives a final clue.

The other side has a digit sum of 4 and the exact area is 528m^2 .

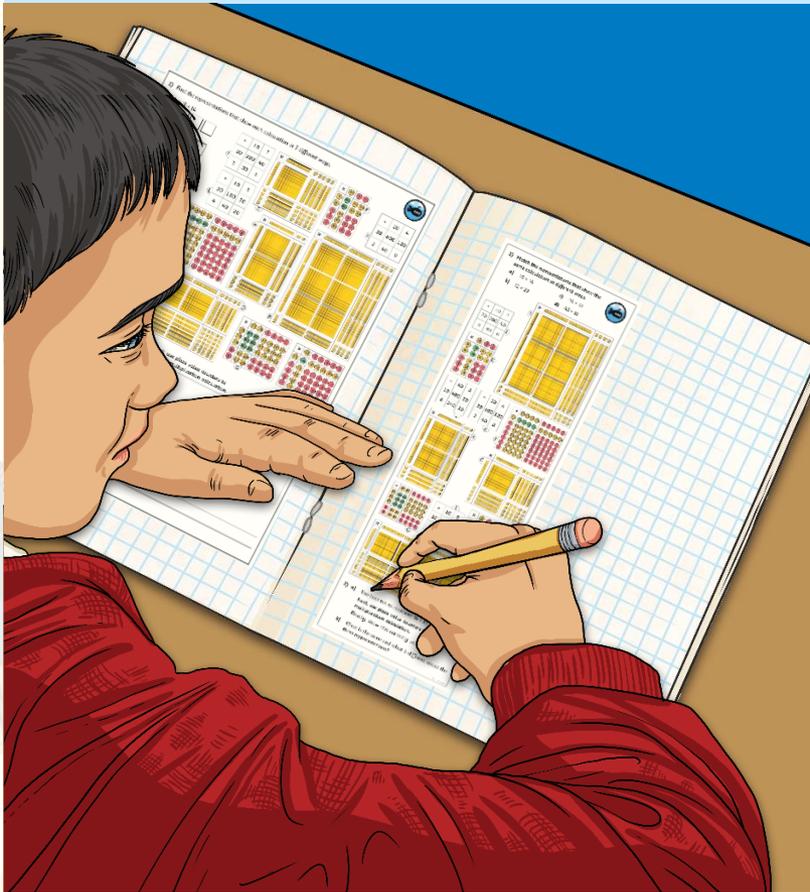
What are the exact measurements of the hall?

The sides of the hall floor measure 24m and 22m .

$$24\text{m} \times 22\text{m} = 528\text{m}^2$$

Multiply 2 Digits (Area Model)

Dive in by completing your own activity!



1) Melissa, Harry and Hank are

I will do 24×10 and then 24×3 and add those together.

Hank

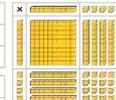
2) Zena is practising the grid method. Explain what she has done wrong.

x	50	2	
20	100	40	
4	200	8	

1) Find the representations that show each calculation in 3 different ways.

a) 15×14

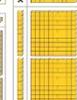
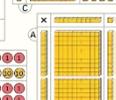
x	10	2
20	200	40
3	30	6



x	20	4
30	600	120
2	40	8

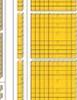
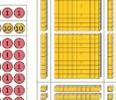
b) 12×23

x	10	5
10	100	50
4	40	20



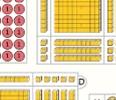
c) 24×32

x	40	5
10	400	50
6	240	30

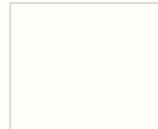


d) 45×16

x	40	5
10	400	50
6	240	30



2) a) Use base ten to represent 14×17 .



Next, use place value counters to show this multiplication calculation.



Finally, show this correctly using a grid.



b) What is the same and what is different about the three representations?



