




Key Areas of Learning:	Oak Academy Links	Around the home activities	Your Challenge						
-Multiplication -Multiplying by 10 and 100 -Knowledge of times tables up to 12x12 -Using a formal written method to multiply two-digit numbers by a one-digit number -Fact families and derivation.	https://classroom.thenational.academy/lessons/multiplication-and-division-64r32e?activity=video&step=1 https://classroom.thenational.academy/lessons/factor-pairs-61k3cd	- Create some real-life arrays using objects around your house! - Cut out and make your own digit cards – use these to help you in your sessions. -Make a set of times table cards for the 6, 7, 8 or 9 -times table. Make the questions on one piece of paper and the answers on a separate piece. Can you match them? Can you play a pairs game? Can you play snap with an adult?	Using efficient methods when multiplying Mo, Amir and Annie worked out 35×6 in 3 different ways. <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  Mo </div> <div style="text-align: center;">  Annie </div> <div style="text-align: center;">  Amir </div> </div>						
Key Questions	https://classroom.thenational.academy/lessons/solving-three-1-digit-multiplication-equations-60rkat?step=2&activity=video								
-Is that the only possible answer? - How do you know? -How can you prove your thinking? -Is that always true?	https://classroom.thenational.academy/lessons/multiplying-numbers-by-10-and-100-6tgpac https://classroom.thenational.academy/lessons/using-arrays-to-multiply-a-2-digit-number-by-a-1-digit-number-cctk4c	<table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td style="padding: 5px;">$1 \times 6 =$</td> <td style="padding: 5px; border: 2px solid red;">6</td> </tr> <tr> <td style="padding: 5px;">$2 \times 6 =$</td> <td style="padding: 5px; border: 2px solid red;">12</td> </tr> <tr> <td style="padding: 5px;">$3 \times 6 =$</td> <td style="padding: 5px; border: 2px solid red;">18</td> </tr> </tbody> </table>	$1 \times 6 =$	6	$2 \times 6 =$	12	$3 \times 6 =$	18	a) Work out the answer using each method to show that they are all correct. b) Who has used the most efficient method? Talk about it with a partner.
$1 \times 6 =$	6								
$2 \times 6 =$	12								
$3 \times 6 =$	18								

Suggested Learning Activities	Resources	Desired Outcome
Each activity is either activity A or activity B. Activity A will include a video to refresh the children's memories plus activities to complete. Activity B will link to the objective of activity A and will be pitched at a Year 4 level and include reasoning.		
PLEASE NOTE – During the video the terminology 'Dienes'. Our children will know these as Base 10.		
<u>Activity A – Pictorial Representations of multiplication and division equations, commutativity and the inverse</u> Click the link here → watch the videos on the page, complete the practise activities	Pencil + Paper https://classroom.thenational.academy/lessons/multiplication-and-division-64r32e?activity=video&step=1 This multiplication square can be used throughout all activities if you are finding multiplication challenging.	-To use the inverse to check answers. -To create fact families. -To understand that multiplication is commutative.

12 X 12 Multiplication Table

X	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	36
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	72
7	0	7	14	21	28	35	42	49	56	63	70	77	84
8	0	8	16	24	32	40	48	56	64	72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24	36	48	60	72	84	96	108	120	132	144

Activity B - Pictorial Representations of multiplication and division equations, commutativity and the inverse

Using what we know about commutativity (that multiplication can be done in any order), create fact families (we know them as facts for free) with the following numbers:

1. 6, 3 and 18
2. 2, 5 and 10
3. 7, 9 and 63
4. 8, 96 and 12

	x		=	
	x		=	

	÷		=	
	÷		=	

Let's move on to looking at the inverse. The inverse is when we use the opposite operation to check an answer. The inverse for multiplication is division and the inverse for division in multiplication.

Pencil + Paper

Reasoning sentences starters which you could use are:

- I have noticed that...
- I already know that... so I know...
- This is true/false because...

Example:

True or false?

56 days are equal to 8 weeks.

This is true. I know this because there are 7 days in one week. If I multiply 7 x 8, I get the answer 56 which means that there are 56 days in 8 weeks.

Miss Kenwright has been doing some multiplication and division calculations. Circle the correct inverse calculation that will help her to check her answers.

Miss Kenwright's Calculation	Inverse			
$5 \times 6 = 30$	$30 \div 6 = 5$	$6 \times 30 = 5$	$5 \div 6 = 30$	
$96 \div 8 = 12$	$8 \times 96 = 12$	$12 \div 96 = 8$	$12 \times 8 = 96$	
$4 \times 9 = 36$	$9 \div 4 = 36$	$36 \times 9 = 4$	$36 \div 9 = 4$	
$108 \div 9 = 12$	$12 \times 9 = 108$	$9 \div 12 = 108$	$108 \times 12 = 9$	

With the last activity before your challenge, you will need to write out the calculation as an inverse calculation. For example,

_____ $\times 4 = 12$

You will need to write the inverse which is $12 \div 4 = 3$. Then you will be able to write the missing number which is 3 in the original question so that it says $3 \times 4 = 12$

Use the inverse to find the missing numbers.

1. $9 \times \text{_____} = 45$

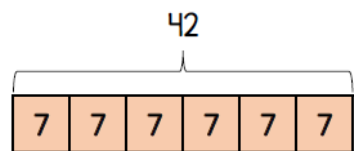
2. $\text{_____} \div 3 = 6$

3. $72 \div \text{_____} = 9$

4. $\text{_____} \times 4 = 32$

The final question is going to be a Reasoning activity. Remember, reasoning means being able to explain how or why you think an answer is correct or incorrect or being able to explain what you notice about something. Look carefully at the question below and have a go at writing your own answer. Think carefully about what you already know and look for clues. Don't let the questions catch you out. Here is an example to help you →

Challenge



So $42 \div 6 = 7$

Activity A – Factor Pairs

Click the link here → watch the video and have a go at the questions as you are going through.

<https://classroom.thenational.academy/lessons/factor-pairs-61k3cd>

Pencil + Paper

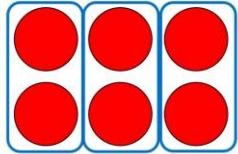
Activity B – Factor Pairs

The first thing I would like you to do is write down all the ways that you can make 6 using your times tables. How many multiplication calculations can you do?

Repeat with 16.

In the video above, you learnt about factor pairs.

What is a factor?



2 rows of 3 are equal to 6

$$2 \times 3 = 6$$

3 columns of 2 are equal to 6

$$3 \times 2 = 6$$

factor
factor product

2 and 3 are factors of 6

Factors are numbers that can be multiplied to make a product (the solution to a multiplication calculation).

Let's look at the factor pairs for 8.

A trick is to always begin with number 1.

1 and 8 is a factor pair of 8 because $1 \times 8 = 8$

2 and 4 is a factor pair of 8 because $2 \times 4 = 8$

3? 8 doesn't appear in the 3 times tables nor can you divide 8 by 3.

There are 2 factor pairs in 8. Even though multiplication is commutative and we can say $8 \times 1 = 8$ and $4 \times 2 = 8$, we have already used those factor pairs at the beginning. We **can't** say them again and they are the same pair.

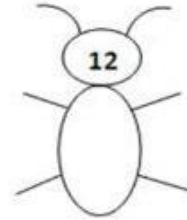
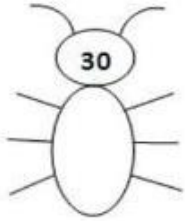
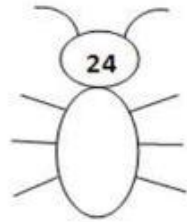
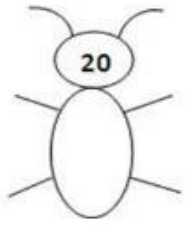
Now, complete the factor bugs.

Pencil + Paper

Reasoning sentences starters which you could use are:

- I have noticed that...
- I already know that... so I know...
- This is true/false because...

-To understand the meaning of the vocabulary 'factors' and 'product'
-To use multiplication facts to find factor pairs



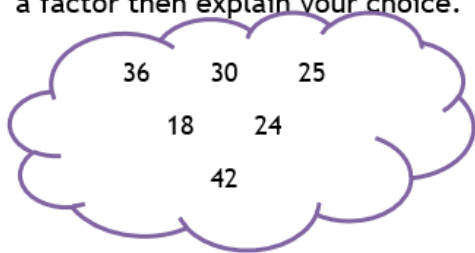
Can you now create your own factor bugs for 24 and 48?
How many factor pairs do they have?

The final question is going to be a Reasoning activity. Remember, reasoning means being able to explain how or why you think an answer is correct or incorrect or being able to explain what you notice about something. Look carefully at the two questions below and have a go at writing your own answer. Think carefully about what you already know and look for clues. Don't let the questions catch you out.

Challenge – Reasoning

Odd One Out

Circle the number which does not have 6 as a factor then explain your choice.



Tommy is finding factors of 12 and 18

12 and 18
have the same number
of factor pairs.



a) Is Tommy correct?

Explain your answer.

b) Find two other numbers with the same number of factor pairs.

Activity A – Multiplying 3 1-digit numbers

Click the link here → and follow the lesson.

<https://classroom.thenational.academy/lessons/solving-three-1-digit-multiplication-equations-60rkat?step=2&activity=video>

Pencil + Paper

Activity B - Multiplying 3 1-digit numbers

You have already seen how to multiply 3 1-digit numbers from the previous video. Let's recap. When you multiply 3 1-digit numbers, we work systematically. For example, for $3 \times 5 \times 2$ we would start with 3×5 which is 15. Then we would multiply 15×2 which is 30 to complete the calculations. The answer for $3 \times 5 \times 2 = 30$.

For this task you will need a dice. Roll the dice 3 times to generate three numbers. Write down each number and then multiply them.

E.g.

$$6 \times 4 \times 5 =$$

You then need to rearrange the numbers to create as many different calculations as you can and work them out. Remember to show any working out that you do.

$$4 \times 5 \times 6 =$$

$$4 \times 6 \times 5 =$$

$$5 \times 4 \times 6 =$$

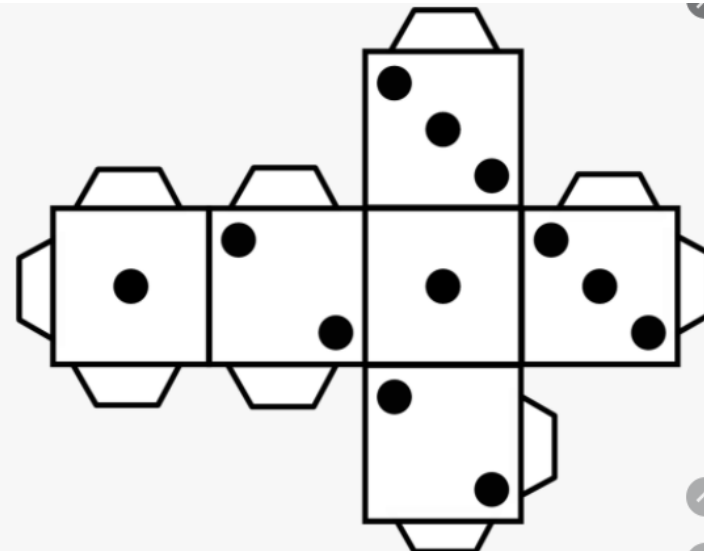
$$5 \times 6 \times 4 =$$

$$6 \times 5 \times 4 =$$

What do you notice about the answers? Repeat again with a set of three new numbers.

Pencil + Paper

Dice – If you don't have a dice at home you could make one using the template below or take it in turns to pick turned over number cards.



A 200 square can be used at any time to support with any of the tasks

-To be able to multiply 3 1-digit numbers
-To understand that multiplication can be done in any order (commutativity)

Challenge – Reasoning

For this challenge, you need to explain why the calculation is true or false. There are 4 different calculations.

Is each statement true or false?

$$7 \times 8 = 7 \times 4 \times 2$$

$$3 \times 2 \times 8 = 5 \times 8$$

$$12 \times 4 = 2 \times 4 \times 6$$

$$2 \times 7 \times 4 = 4 \times 7 \times 2$$

Challenge – Problem solving

Answer the problem below. Write your answer as a full sentence.

Dani has _____ eggs now.

Eggs are put in boxes in arrays of 2×3

Dani buys 12 boxes.

How many eggs does she buy altogether?

Dani buys 5 more boxes.

How many eggs does she have now?



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

Reasoning sentences starters which you could use are:

- I have noticed that...
- I already know that... so I know...
- This is true/false because...

Activity A – Multiplying by 10 and 100

Click the link here → and follow the lesson.

<https://classroom.thenationalacademy/lessons/multiplying-numbers-by-10-and-100-6tgpac>

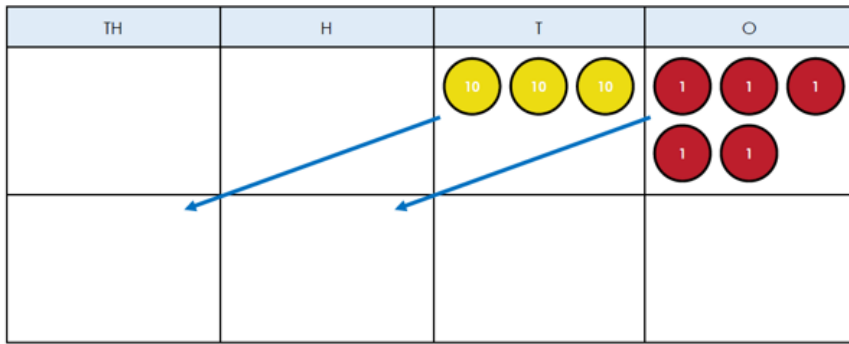
Pencil + Paper

Activity B - Multiplying by 10 and 100

We know that if we multiply any number by 10, then we are making our number 10x bigger. This means we move each digit **one** place to the **left**. Draw counters on the grid below to show the answer to 56×10 .

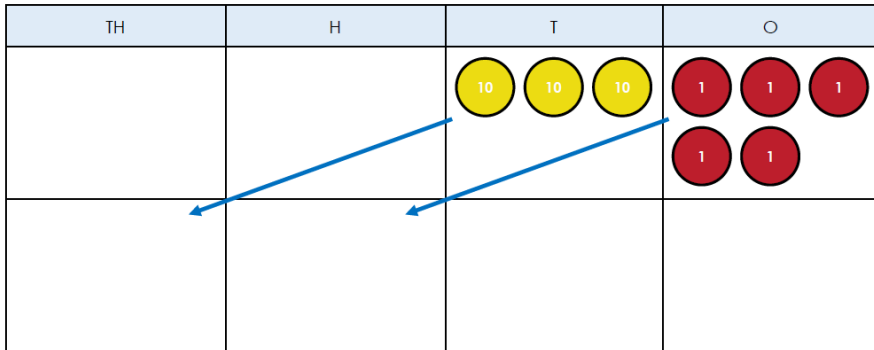
Pencil + Paper
Place value grid

-To multiply whole numbers by 10 and 100.
-To understand the process of multiplying by 10 and 100 and what happens to each digit.



$56 \times 10 =$

We also know that if we multiply any number by 100, then we are making our number 100x bigger. This means we move each digit **two** places to the **left**. Draw counters on the grid below to show the answer to 35×100 .



Now fill out the table using your knowledge of multiplying by 10 and 100. Use a place value grid to help you.

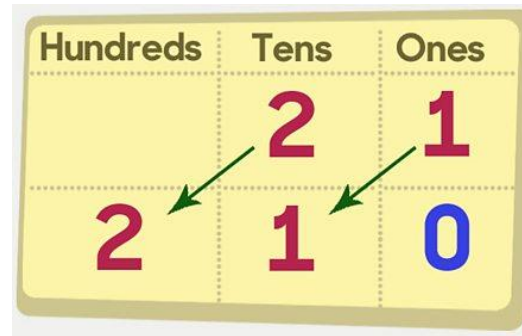
Remember how many places we move each digit by depending on whether we are multiplying 10 or 100. The place value grid in the resources section can be used as a support.

	X 10	X 100
65		
300		
85		
3.1		

Remember to write your place holder (0)!

My Place Value Grid

Th	H	T	U	.	$\frac{1}{10}$	$\frac{1}{100}$
Thousands	Hundreds	Tens	Units		Tenths	Hundredths



Reasoning sentences starters which you could use are:

- I have noticed that...
- I already know that... so I know...
- This is true/false because...

The final question is going to be a Reasoning activity. Remember, reasoning means being able to explain how or why you think an answer is correct or incorrect or being able to explain what you notice about something. Look carefully at the question below and have a go at writing your own answer. Think carefully about what you already know and look for clues. Don't let the questions catch you out.

Challenge

Would you rather have 600 bags of 10 cookies or 10 multipacks which contain 6 packs of 10 cookies?

Explain your reasoning.



Activity A – Using arrays to multiply a 2-digit number and a 1-digit number

Click the link here → and follow the lesson.

<https://classroom.thenational.academy/lessons/using-arrays-to-multiply-a-2-digit-number-by-a-1-digit-number-cctk4c>

Pencil + Paper

Activity B - Using arrays to multiply a 2-digit number and a 1-digit number

- **Look at the array below.** what multiplication does it show? Explain that when we are looking at arrays, we are looking at how many groups we have.



- Number of groups x by the size of the group. There are 3 groups of 4 so the calculation will be 3×4 .
- Great! Try this one independently. What multiplication does it show?



Pencil + Paper
Scissors
Ruler

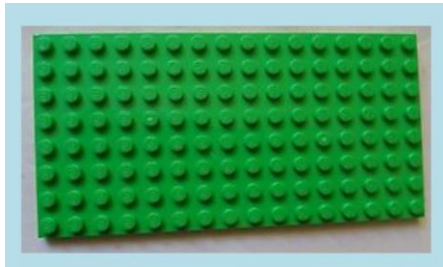
Reasoning sentences starters which you could use are:

- I have noticed that...
- I already know that... so I know...
- This is true/false because...
- The mistake is that...

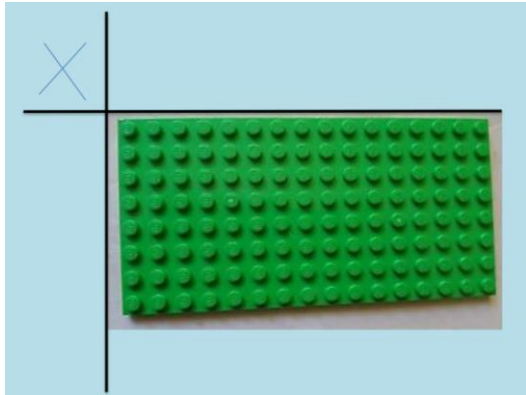
Arrays for task

-To be able to use a written method to multiply larger numbers
-To use arrays to multiply a 2-digit and 1-digit number

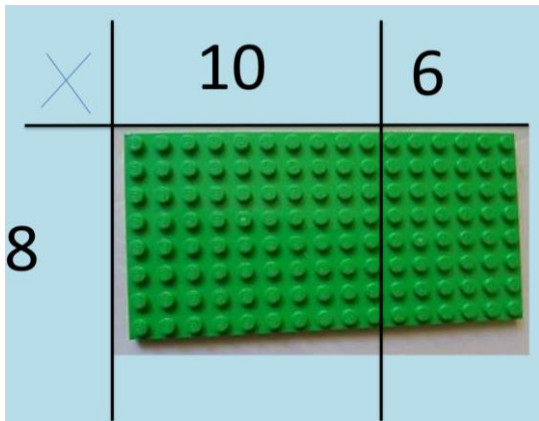
- Let's move on draw lines on arrays.



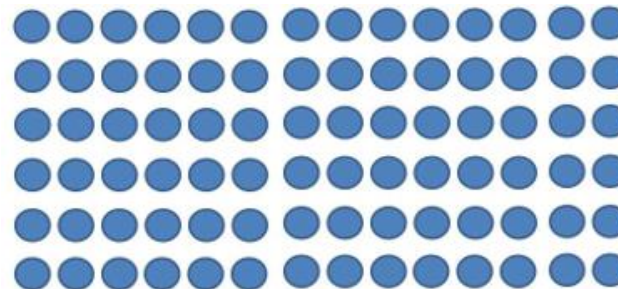
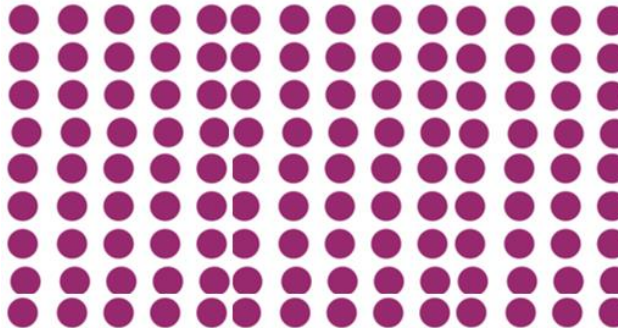
What is the calculation? How many groups and how many are in each group?
How can we turn this into a grid?



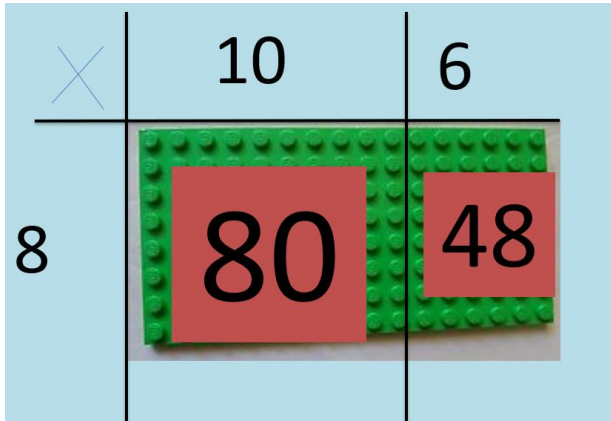
- On the left, we look at the number of groups. How many groups do we have? 8
- What number goes at the top? – 16 because that is the group size. We can't write 16 on the grid so what can we do? Partition? How? We can partition into 10s and 1s. How many tens? How many ones?



- We can then work out the answer.
- We complete 8×10 first which is 80



- Then we can complete the last section of the grid. 6×8 which is 48.



- Finally, we add 48 and 80 together. We do this mentally or using column method.
- The answer is 128!

Now it's your turn! Cut the images of arrays out/draw them and stick on your piece of paper.

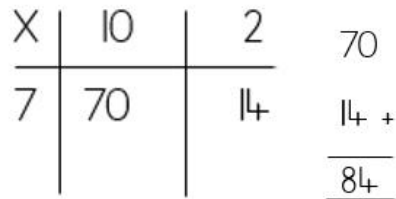
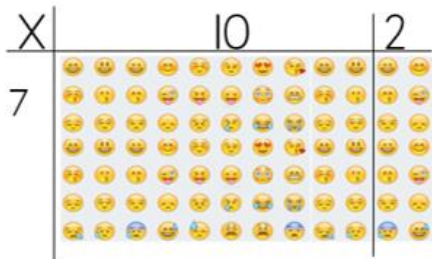
Draw the partitioning lines and then draw the grid method next to it.

Then you need to work out the answer. You might need to use column addition but think carefully about the most efficient way to complete this part.

Remember to write the full multiplication calculation too!

Set it out like this:

1. $7 \times 12 = 84$



Challenge

Can you spot the mistake in this grid? Explain the mistake and correct it. Then work out the answer to the calculation.

x	10	4
7	700	25