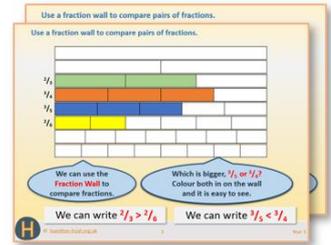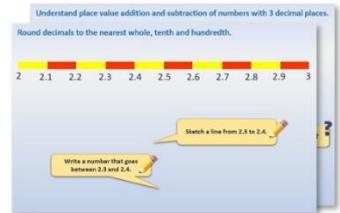# Week 7, Day 5

Multiplying a pair of 2-digit numbers using grid multiplication.

Each day covers one maths topic. It should take you about 1 hour or just a little more.
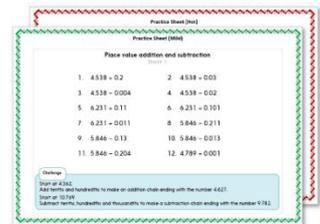
1.   If possible, watch the **PowerPoint presentation** with a teacher or another grown-up.

     OR start by carefully reading through the **Learning Reminders**.

2.   Tackle the questions on the **Practice Sheet**.
     There might be a choice of either Mild (easier) or Hot (harder)!
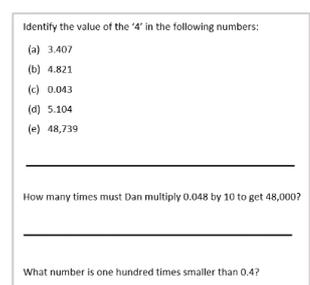   Check the answers.

3.   Finding it tricky? That's OK… have a go with a grown-up at **A Bit Stuck?**

4.   Think you've cracked it? Whizzed through the Practice Sheets?
     Have a go at the **Investigation**…

5.   Have I mastered the topic? A few questions to **Check your understanding**.
     Fold the page to hide the answers!

Learning Reminders

Multiplying a pair of 2-digit numbers using grid multiplication.

23×34

We can **partition** both numbers and set them out in a grid.

x	30	4	
20	600	80	680
3	90	12	102
			782

On the first row we are working out 20 lots of 34 by finding 20 lots of 30 **(600)** and 20 lots of 4 **(80)** and adding the two together.

On the second row we are working out 3 lots of 34 by finding 3 lots of 30 **(90)** and 3 lots of 4 **(12)** and adding the two together.

Then we add the answers to 20 lots of 34 **(680)** and 3 lots of 34 **(102)** to find 23 lots of 34 **(782).**

Learning Reminders

Multiplying a pair of 2-digit numbers using grid multiplication.

57 × 24

> Let's estimate first. Round 57 to 60 and 24 to 20.
>
> 60 x 20 = 1200

> **Partition** both numbers and set them out in a grid. Put the larger number on the top row.

x	50	7	
20	1000	140	1140
4	200	28	228
			1368

> On this row we have found 20 lots of 57.

> On this row we have found 4 lots of 57.

> Now we add to find 24 lots of 57.

> How does the **answer** compare with our **estimate**?

Practice Sheet Mild
Multiplying pairs of 2-digit numbers

1.   24 × 34

×	30	4	
20			
4			

20 lots of 34

4 lots of 34

2.   27 × 35

×	30	5	
20			
7			

3.   23 × 42

×	40	2	
20			
3			

4.   26 × 38

×	30	8	
20			
6			

Challenge

Draw your own grids for these multiplications:

5.   25 × 43   6.   28 × 32

Multiplying pairs of 2-digit numbers

Estimate first, then use grid method to solve these.

1. 32 × 27

2. 34 × 48

3. 52 × 24

4. 75 × 32

5. 45 × 45

6. 42 × 68

7. 36 × 73

8. 28 × 65

Challenge

Fill in the missing numbers on this grid, then write a number sentence for the multiplication:

×			
	1550	240	
	350	56	

⬭ x ⬭ = ⬭

Practice Sheets Answers

Multiplying pairs of 2-digit numbers (mild)

1.   24 × 34

×	30	4	
20	600	80	
4	120	16	

600 + 120 + 80 + 16 = 816

2.   27 × 35

×	30	5	
20	600	100	
7	210	35	

600 + 210 + 100 + 35 = 945

3.   23 × 42

×	40	2	
20	800	40	
3	120	6	

800 + 120 + 40 + 6 = 966

4.   26 × 38

×	30	8	
20	600	160	
6	180	48	

600 + 180 + 160 + 48 = 988

Challenge

5.   25 × 43

×	40	3	
20	800	60	
5	200	15	

800 + 200 + 60 + 15 = 1075

6.   28 × 32

×	30	2	
20	600	40	
8	240	16	

600 + 240 + 40 + 16 = 896

Practice Sheets Answers

Multiplying pairs of 2-digit numbers (hot)

1. 32 × 27

×	20	7	
30	600	210	
2	40	14	

600 + 210 + 40 + 14 = 864

2. 34 × 48

×	40	8	
30	1200	240	
4	160	32	

1200 + 240 + 160 + 32 = 1632

3. 52 × 24

×	20	4	
50	1000	200	
2	40	8	

1000 + 200 + 40 + 8 = 1248

4. 75 × 32

×	30	2	
70	2100	140	
5	150	10	

2100 + 150 + 140 + 10 = 2400

5. 45 × 45

×	40	5	
40	1600	200	
5	200	25	

1600 + 200 + 200 + 25 = 2025

6. 42 × 68

×	60	8	
40	2400	320	
2	120	16	

2400 + 320 + 120 + 16 = 2856

7. 36 × 73

×	70	3	
30	2100	90	
6	420	18	

2100 + 420 + 90 + 18 = 2628

8. 28 × 65

×	60	5	
20	1200	100	
8	480	40	

1200 + 480 + 100 + 40 = 1820

Challenge

×	50	8	
30	1500	240	
7	350	56	

37 x 58 = 2146

Work in pairs

Things you will need:
• A pencil

What to do:

• Use the grid method to work out the answers to these multiplications:

   2 x 444 (you don't need the grid method for this one!)
   3 x 444
   4 x 444
   5 x 444
   6 x 444
   7 x 444
   8 x 444
   9 x 444

• You can split the work up between you.

• Add the digits of each answer.

• What do you notice?

3 x 444

x	400	40	4	
3	1200	120	12	1332

S-t-r-e-t-c-h:
Now try multiplying 888 by 2, 3, 4... 9.
What do you notice about the answers? And the sums of the digits?

Learning outcomes:
• I can use the grid method to multiply 3-digit numbers by 1-digit numbers.
• I can look for patterns.

Investigation
Reverse digits, same product

1. Try these multiplications:
   12 x 42 and 21 x 24.

2. Now try 12 x 84 and 21 x 48.

3. Now try 13 x 62 and 31 x 26.

4. Then try 23 x 96 and 32 x 69,
   then 24 x 63 and 42 x 36.

5. What do you notice? Can you explain it?

   Can you find another pair which 'work'
   in the same way?

x	40	2	
10	400	20	= 504
2	80	4	

x	20	4
20		
1		

Check your understanding
Questions

Choose a method to find:

50 × 70 =

879 × 3 =

71 × 16 =

54 × 23 =

2307 × 4 =

A crate contains 27 boxes of oranges. There are 24 oranges in a box.
A supermarket orders 3 crates of oranges. How many oranges is this in total?

How many hours are there altogether in November and December?

Answers on next page

Check your understanding
Answers

Choose a method to find:

  50 × 70 = 3500   (Use times tables fact).

  879 × 3 = 2637   (Short multiplication or grid).

  71 × 16 = 1136   (Grid method).

  54 × 23 = 1242   (Grid method).

  2307 × 4 = 9228 (Short multiplication or a mental method: 'double and double again').

A crate contains 27 boxes of oranges. There are 24 oranges in a box.

A supermarket orders 3 crates of oranges. How many oranges is this in total?

1944 oranges in total. Note that this is a 2-step problem. Either solve by 27 x 24 x 3 or multiply 27 or 24 by 3 first.

How many hours are there altogether in November and December?

1464 hours altogether. (61 x 24). (November has 30 days, December 31).