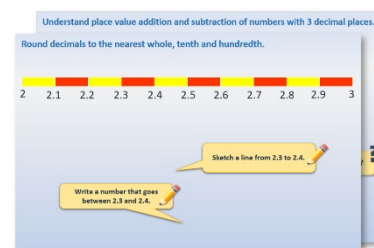


Week 8, Day 2

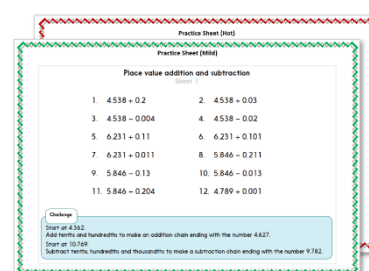
Grid multiplication (2)

Each day covers one maths topic. It should take you about 1 hour or just a little more.

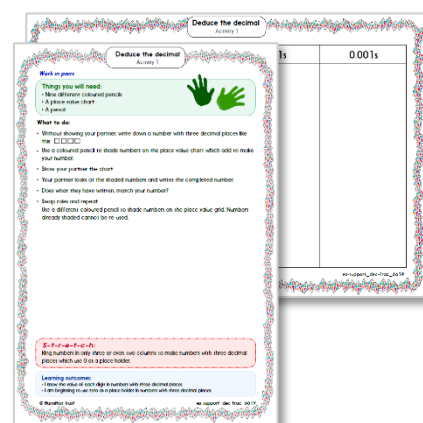
1. Start by reading through the **Learning Reminders**. They come from our *PowerPoint* slides.



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**...

Learning Reminders

Use partitioning to multiply 3-digit numbers by 1-digit numbers.

6×376 , 319×5 , 3×482 , 407×4 .

Which of these will have the biggest answer?

Round the 3-digit number and multiply to estimate the answers.

Write down your approximations for each. 

 Which of these could we do without using a written method?

407×4

$400 \times 4 = 1600$, $7 \times 4 = 28$
and $1600 + 28 = 1628$.

Learning Reminders

Use partitioning to multiply 3-digit numbers by 1-digit numbers.

Try 6×376 using
the grid method.



x	300	70	6	
6	1800	420	36	2256

Try 319×5 using
the grid method.



x	300	10	9	
5	1500	50	45	1595

$6 \times 376 = 2256$, $319 \times 5 = 1595$, 3×482 , $407 \times 4 = 1628$

Compare your answers
with your estimates. Are
you surprised by any of
the results?

$3 \times 482 =$

x	400	80	2
3	1200	240	6

$$1200 + 240 + 6 = 1446$$

Practice Sheet Mild

Partitioning to multiply

Before you start, which multiplication do you think will have the smallest answer?
And the biggest answer?

$$3 \times 121$$

$$352 \times 4$$

$$3 \times 235$$

$$244 \times 6$$

$$5 \times 113$$

$$6 \times 531$$

$$454 \times 5$$

$$4 \times 512$$

$$423 \times 3$$

$$4 \times 345$$

Challenge

Find the missing numbers:

x	300		7
		240	56

 =

Practice Sheet Hot

Partitioning to multiply

Before you start, which multiplication do you think will have the smallest answer?
And the biggest answer?

$$324 \times 3$$

$$437 \times 5$$

$$4 \times 582$$

$$6 \times 206$$

$$132 \times 8$$

$$365 \times 6$$

$$463 \times 4$$

$$8 \times 508$$

$$3 \times 213$$

$$5 \times 145$$

Challenge

Will 354×6 have a larger or smaller answer than 654×3 ? How do you know?

Will 315×4 have a larger or smaller answer than 415×3 ? How do you know?

Practice Sheet Answers

Partitioning to multiply (Mild)

$3 \times 121 = 363$

$352 \times 4 = 1408$

$3 \times 235 = 705$

$244 \times 6 = 1464$

$5 \times 113 = 565$

$6 \times 531 = 3186$

$454 \times 5 = 2270$

$4 \times 512 = 2048$

$423 \times 3 = 1269$

$4 \times 345 = 1380$

Partitioning to multiply (Hot)

$324 \times 3 = 972$

$437 \times 5 = 2185$

$4 \times 582 = 2328$

$6 \times 206 = 1236$

$132 \times 8 = 1056$

$365 \times 6 = 2190$

$463 \times 4 = 1852$

$8 \times 508 = 4064$

$3 \times 213 = 639$

$5 \times 145 = 725$

Challenge

x	300	30	7
8	2400	240	56
	= 2696		

Challenge

354 x 6 will have a **larger** answer than 654 x 3.

315 x 4 will have a **smaller** answer than 415 x 3.

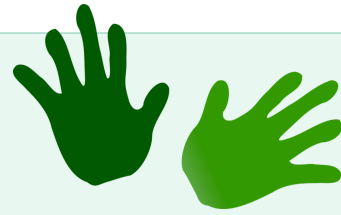
A Bit Stuck?
Grid luck

Discuss your work together, in pairs

Things you will need:

- A pencil

- A pencil



What to do:

- Use the grid method to work out the multiplications on the sheet.
- Start by partitioning the 2-digit number. Write the numbers in the correct places on the grid along the top.
- Write the 1-digit multiplier on the grid.
- Multiply the numbers and write the answers.
- Add the answers and complete the number sentence for the calculation.
- You can use the place value grid to help you multiply by 10 and 100.

$6 \times 23 =$

$\times$	20	3	=
6	120	18	

S-t-r-e-t-c-h:

Use the digits 2, 3, 4 and 5 in any order that you wish to make a 3-digit by 1-digit multiplication, e.g. 5×342 . Find the answer using the grid method.

The person who has the answer closest to 1000 wins.

Use the digits 2, 3, 4 and 5 in any order that you wish to make a 3-digit by 1-digit multiplication, e.g. 5×342 . Find the answer using the grid method.

The person who has the answer closest to 1000 wins.

Learning outcomes:

- I can use the grid method to multiply 2-digit numbers by 1-digit numbers.
- I am beginning to use the grid method to multiply 3-digit numbers by 1-digit numbers.

- I can use the grid method to multiply 2-digit numbers by 1-digit numbers.
- I am beginning to use the grid method to multiply 3-digit numbers by 1-digit numbers.

A Bit Stuck?
Grid luck

100s	10s	1s

A Bit Stuck?

Grid luck

$4 \times 35 =$

x	30	5	=
4			

$3 \times 42 =$

$6 \times 32 =$

A Bit Stuck?

Grid luck

$4 \times 235 =$

x	200	30	5	=
4				

$6 \times 123 =$

x				=

$3 \times 315 =$

Investigation Roots

- For this investigation you need to know how to find a digital root.

Digital Root

Add the digits of a number.
Keep adding until you get a 1-digit number.

Example

1753 add the digits
 $1 + 7 + 5 + 3 = 16$
 $1 + 6 = 7$
 Digital root = 7

- Choose a 3-digit number to multiply by a 1-digit number, using the grid method.
- Before you start, find the digital root of the 3-digit number. Then multiply it by your chosen 1-digit number and find the digital root of the answer.
- After you have multiplied the 3-digit number by your chosen 1-digit number, find the digital root of the answer.
- What do you find?
- See if what you have found works for other numbers too.

Example: 426×6

Digital root of 426:

$4 + 2 + 6 = 12$, then $1 + 2 = 3$

$3 \times 6 = 18$ and $1 + 8 = 9$

426×6

x	400	20	6
6	2400	120	36

Answer = 2556

Digital root is $2 + 5 + 5 + 6 = 18$ and $1 + 8 = 9$