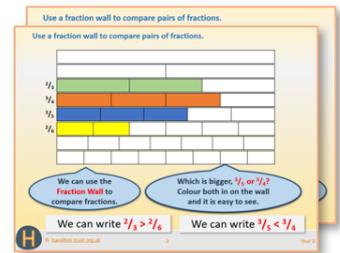


Week 6, Day 1

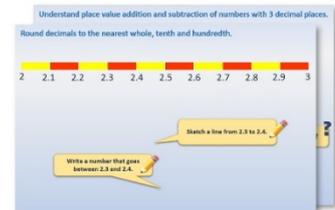
Use mental strategies to multiply by 5, 20, 6, 4 and 8.

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

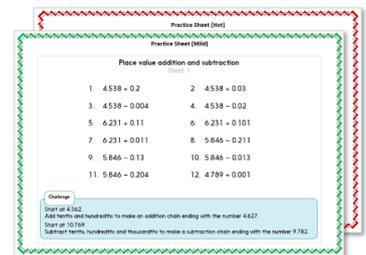
1. If possible, watch the **PowerPoint presentation** with a teacher or another grown-up.



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**...

Learning Reminders

Use mental strategies to multiply by 5, 20, 6, 4 and 8.

$$23 \times 10 = 230$$

We can multiply numbers by 5 by **multiplying by 10**, then halving.

$$23 \times 5 = 115$$

$$23 \times 20 = 460$$

We can **double the answer** to 23×10 to find 23×20 .

$$23 \times 19 = 437$$

We can **subtract 23** from the answer to 23×20 to find 23×19 .

Learning Reminders

Use mental strategies to multiply by 5, 20, 6, 4 and 8.

$$23 \times 3 = 69.$$

$$23 \times 6 = 138$$

We can use $23 \times 3 = 69$ to work out the answer to 23×6 . Try doubling 69!

So one way to multiply a number by 6 is to multiply by 3, and then by 2.
We are using a pair of factors of 6.

Learning Reminders

Use mental strategies to multiply by 5, 20, 6, 4 and 8.

We can use doubling to multiply by 4 and by 8!

To multiply by 4 double twice
To find 23×4 double 23, then double the answer.

Double 23 is 46.

Double 46 is 92.

$$23 \times 4 = 92.$$

To multiply by 8 double three times
To find 13×8 . Double 13, then double the answer twice more!

Double 13 is 26.

Double 26 is 52.

Double 52 is 104.

$$13 \times 8 = 104.$$

Practice Sheet Mild

Using mental strategies to multiply

1. Solve these:

$$34 \times 10 \quad 34 \times 2 \quad 34 \times 3$$

2. Use your answers from question 1 to make it easy to solve these:

$$34 \times 5 \quad 34 \times 20 \quad 34 \times 4 \quad 34 \times 8 \quad 34 \times 6$$

3. Use similar strategies to solve the following:

$$62 \times 5$$

$$51 \times 20$$

$$43 \times 6$$

$$31 \times 4$$

$$26 \times 8$$

Note down what you did to find the answer to each question, e.g. 'Multiplied by 10 and then doubled'.

Challenge

Does 24×30 give the same answer as 34×20 ?

Make a prediction.

Use mental strategies to solve each multiplication and test your prediction.

Practice Sheet Hot

Using mental strategies to multiply

1. Solve these:

$$36 \times 10 \quad 36 \times 2 \quad 36 \times 3$$

2. Use your answers from question 1 to easily solve:

$$36 \times 5 \quad 36 \times 20 \quad 36 \times 4 \quad 36 \times 8 \quad 36 \times 6$$

3. Use similar strategies to solve the following:

$$76 \times 5$$

$$64 \times 20$$

$$53 \times 6$$

$$82 \times 4$$

$$37 \times 8$$

$$153 \times 5$$

$$240 \times 20$$

In each case note down what you did to find the answer, e.g. 'Multiplied by 10 and then doubled'.

4. Does 24×30 give the same answer as 34×20 ?

Make a prediction.

Use mental strategies to solve each multiplication and test your prediction.

Challenge

Can you find a strategy for quickly solving these:

$$36 \times 50 \quad 36 \times 200 \quad 36 \times 60$$

(Hint! Look at what you already know.)

Practice Sheets Answers

Using mental strategies to multiply (mild)

1. $34 \times 10 = 340$
 $34 \times 2 = 68$
 $34 \times 3 = 102$

2. $34 \times 5 = 170$
 $34 \times 20 = 680$
 $34 \times 4 = 136$
 $34 \times 8 = 272$
 $34 \times 6 = 204$

3. $62 \times 5 = 310$
 $51 \times 20 = 1020$
 $43 \times 6 = 258$
 $31 \times 4 = 124$
 $26 \times 8 = 208$

Challenge

$30 \times 24 = 720$. $20 \times 34 = 680$

Using mental strategies to multiply (hot)

1. $36 \times 10 = 360$
 $36 \times 2 = 72$
 $36 \times 3 = 108$

2. $36 \times 5 = 180$
 $36 \times 20 = 720$
 $36 \times 4 = 144$
 $36 \times 8 = 288$
 $36 \times 6 = 216$

3. $76 \times 5 = 380$
 $64 \times 20 = 1280$
 $53 \times 6 = 318$
 $82 \times 4 = 328$
 $37 \times 8 = 296$
 $153 \times 5 = 765$
 $240 \times 20 = 4800$

4. $30 \times 24 = 720$ $20 \times 34 = 680$

Challenge

$36 \times 50 = 1800$ $36 \times 200 = 7200$ $36 \times 60 = 2160$

Students should notice that these multiplications are similar to the first three multiplications in Question 2, except the second number has been multiplied by ten. This means that students simply need to add on a zero to the answers they already have.

A Bit Stuck?

Moving multiplications

Work in pairs

Things you will need:

- A set of 0 to 12 cards
- Multiples strips
- A pencil



What to do:

- Choose a pair of times tables. Find that table.
- Shuffle a pack of 0 to 12 cards and place face down.
- Turn the cards over one at a time.
- Write the number in the left column of the table.
- Multiply that number by the two numbers in the table, e.g. 2 and 20.
- Write the answers on the table.
- Repeat with another pair of tables.

	$\times 2$	$\times 20$
3	6	60
0	0	0
8	16	160
4	8	

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

Try and fill in ALL the tables!

Learning outcomes:

- I can use times tables and place value to multiply by 20 and 50.
- I am beginning to multiply by 30 and 40.

Investigation

Mega mental multiplications

1. Make a bank of useful calculations...

Write the answer to:

- 42×10
- 42×3
- 42×2

2. Use these to solve at least 5 of the following multiplications:

- 42×5
- 42×6
- 42×20
- 42×12
- 42×19
- 42×8
- 42×11

Explain your mental strategy for each calculation you chose.

<input type="radio"/>	
<input type="radio"/>	
<input type="radio"/>	42×6
<input type="radio"/>	42×3 can be completed mentally by partitioning:
<input type="radio"/>	$(40 \times 3) + (2 \times 3) = 120 + 6 = 126$
<input type="radio"/>	Doubling this product gives the answer to 42×6 :
<input type="radio"/>	double $126 = 252$
<input type="radio"/>	
<input type="radio"/>	

3. Now try the same thing with 62.

4. Now try the same thing with 123.

Challenge

Can you suggest a strategy to multiply a number by 15? Try it with four different starting numbers.