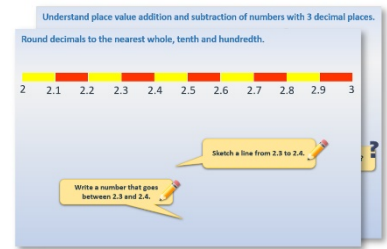


Week 9, Day 2

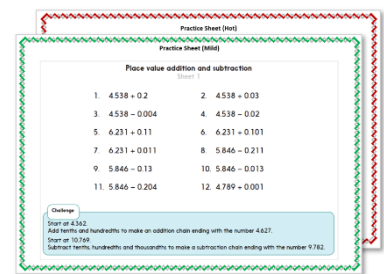
Short division

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

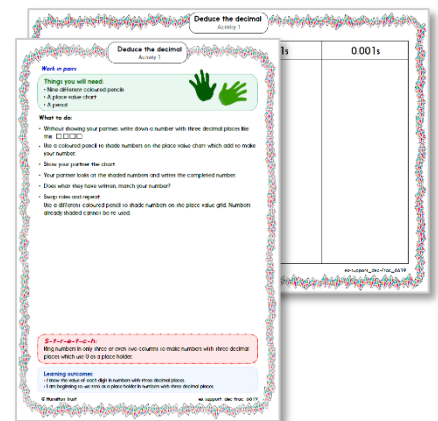
1. Start by reading through the **Learning Reminders**. They come from our *PowerPoint* slides.



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 short division.

$$496 \div 3$$

$$496 \div 6$$



$$496 \div 12$$

$$896 \div 3$$

Decide which you think will have the biggest answer and which will have the smallest answer and why.

$496 \div 12$ will have the smallest answer as the smaller number is divided into the biggest number of groups, so the answer will be less than $496 \div 3$ or $496 \div 4$.

$896 \div 3$ will give the biggest answer as the bigger number is divided into the smallest number of groups, so each group will be bigger than the groups in the other divisions.

$$\begin{array}{r} 41 \text{ r } 4 \\ 12 \overline{) 496} \end{array}$$

$$496 \div 12 = 41\frac{4}{12}$$

We can simplify $\frac{4}{12}$ to $\frac{1}{3}$.

Work out $496 \div 6$ using short division. Write the remainder as a fraction, simplifying if you can. Your answer should be double the answer to $496 \div 12$!

$$= 82\frac{4}{6} = 82\frac{2}{3}$$

$$\begin{array}{r} 82 \text{ r } 4 \\ 6 \overline{) 496} \end{array}$$

Learning Reminders

Use short division.

$$496 \div 3 = 165\frac{1}{3} \quad 496 \div 6 = 82\frac{2}{3}$$

$$496 \div 12 = 41\frac{1}{3} \quad 896 \div 3 = 298\frac{2}{3}$$

Today's top tip is use multiplication to check division.

Use multiplication to check two of the divisions. What do you need to do with the remainder?

We need to multiply the fraction part of the answer, or add the remainder on if it has not been written as a fraction.

$$\begin{array}{r|l} 82\frac{2}{3} \times 6 \\ \times \quad 80 \quad 2 \\ \hline 6 \quad 480 \quad 12 \quad = 492 \end{array}$$

$$\frac{2}{3} \times 6 = \frac{12}{3} = 4$$
$$492 + 4 = 496$$

Practice Sheet Mild

Short division

Write any remainders as fractions.

1. $4 \overline{)456}$

6. $8 \overline{)972}$

2. $3 \overline{)523}$

7. $3 \overline{)427}$

3. $6 \overline{)678}$

8. $4 \overline{)129}$

4. $5 \overline{)736}$

9. $3 \overline{)194}$

5. $4 \overline{)622}$

10. $5 \overline{)427}$

Challenge

Marika says 'The biggest remainder you can have when dividing by 6 is 5.'
Do you agree with her? Explain your ideas.

Practice Sheet Hot

Short division

Write any remainders as fractions and as decimals (to two decimal places) where you can.

1. $4 \overline{)429}$

7. $12 \overline{)486}$

2. $5 \overline{)647}$

8. $12 \overline{)627}$

3. $8 \overline{)860}$

9. $11 \overline{)419}$

4. $7 \overline{)873}$

10. $8 \overline{)578}$

5. $4 \overline{)359}$

11. $6 \overline{)298}$

6. $6 \overline{)195}$

12. $11 \overline{)575}$

Challenge

Write a division of a 3-digit number by 1-digit number with an answer greater than any of the answers to these questions.

Write a division of a 3-digit number by 1-digit number with an answer less than any of the answers to these questions.

Practice Sheets Answers

Short division (mild)

1. $456 \div 4 = 114$
2. $523 \div 3 = 174 \frac{1}{3}$
3. $678 \div 6 = 113$
4. $736 \div 5 = 147 \frac{1}{5}$
5. $622 \div 4 = 155 \frac{1}{2}$
6. $972 \div 8 = 121 \frac{1}{2}$
7. $427 \div 3 = 142 \frac{1}{3}$
8. $129 \div 4 = 32 \frac{1}{4}$
9. $194 \div 3 = 64 \frac{2}{3}$
10. $427 \div 5 = 85 \frac{2}{5}$

Challenge

Yes, Marika is correct. If you had more than 5 left over, you could make another group of 6!

Short division (hot)

1. $429 \div 4 = 107 \frac{1}{4} = 107.25$
2. $647 \div 5 = 129 \frac{2}{5} = 129.4$
3. $860 \div 8 = 107 \frac{1}{2} = 107.5$
4. $873 \div 7 = 124 \frac{5}{7} = 124.71$
5. $359 \div 4 = 89 \frac{3}{4} = 89.75$
6. $195 \div 6 = 32 \frac{1}{2} = 32.5$
7. $486 \div 12 = 40 \frac{1}{2} = 40.5$
8. $627 \div 12 = 52 \frac{1}{4} = 52.25$
9. $419 \div 11 = 38 \frac{1}{11} = 38.09$
10. $578 \div 8 = 72 \frac{1}{4} = 72.25$
11. $298 \div 6 = 49 \frac{2}{3} = 49.67$
12. $575 \div 11 = 52 \frac{3}{11} = 52.27$

Challenge

e.g. $940 \div 3 = 313 \frac{1}{3}$
or $123 \div 9 = 13 \frac{2}{3}$

A Bit Stuck? Any left?

Work in pairs

What to do:

1. Work out the answers to:

$$10 \times 5 = \quad 20 \times 5 = \quad 30 \times 5 = \quad 40 \times 5 = \quad 50 \times 5 = \quad 60 \times 5 = \quad 70 \times 5 = \quad 80 \times 5 = \quad 90 \times 5 = \quad 100 \times 5 =$$

Now use your answers to help work out the answers to at least two of these divisions.

You score 10 points for each correct answer BUT you will score 10 bonus points if the division has a remainder.

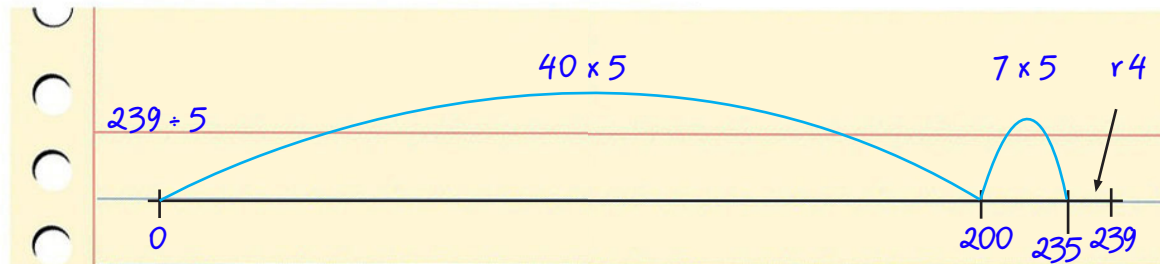
$239 \div 5$

$162 \div 5$

$365 \div 5$

$235 \div 5$

$414 \div 5$



2. Work out the answers to:

$$10 \times 4 = \quad 20 \times 4 = \quad 30 \times 4 = \quad 40 \times 4 = \quad 50 \times 4 = \quad 60 \times 4 = \quad 70 \times 4 = \quad 80 \times 4 = \quad 90 \times 4 = \quad 100 \times 4 =$$

Now use your answers to help work out the answers to at least two of these divisions.

You score 10 points for each correct answer BUT you will score 10 bonus points if the division has a remainder.

$143 \div 4$

$249 \div 4$

$326 \div 4$

$371 \div 4$

$208 \div 4$

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

Use chunking to work out $254 \div 6$ and $378 \div 6$.
What multiplication facts could you list to help?

Learning outcomes:

- I can use chunking to divide, using lists of multiples of 10 of the divisor to help.
- I am beginning to write my own lists of multiples to help.



Things you will need:

- A pencil

Investigation

Awesome answers

1. Use this magic square.

2	9	4
7	5	3
6	1	8

2. Generate a 3-digit number by using numbers with adjacent sides. Each number can be used only once.

3. Choose a divisor.

4. Divide your 3-digit number by your divisor.

5. Write the remainder as a fraction. Make sure it is in its simplest form, e.g. $\frac{3}{6}$ is $\frac{1}{2}$.

6. Your challenge is to construct divisions with each of these fractions in the answer:

$$\frac{1}{2} \quad \frac{1}{3} \quad \frac{2}{3} \quad \frac{1}{4} \quad \frac{1}{5} \quad \frac{1}{6} \quad \frac{1}{10} \quad \frac{1}{12}$$

7. You must use 3-digit numbers generated using the magic square as above.

HINT: Think what divisors can be used to generate each fraction!

○

○

○ Number 435

○ Divisor is 6

○

○

○ $72 \text{ r}3$ or

○ $6 \overline{)435}$

○ $72\frac{1}{2}$

○

Challenge

Try starting with a 4-digit number and getting an answer with $\frac{5}{6}$ in it. Set your own challenge for you or a partner!