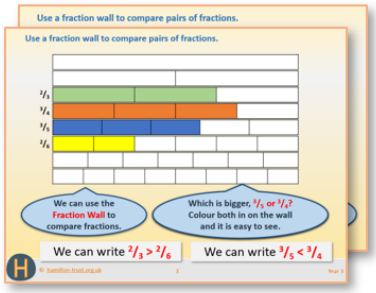
Week 14, Day 2

Use short division, expressing the remainders as fractions.

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.



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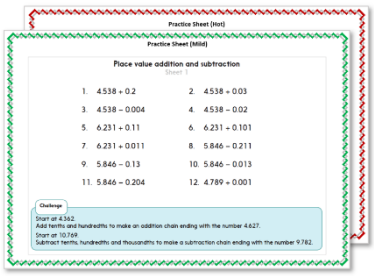
2. Tackle the questions on the **Practice Sheet**.
There might be a choice of either Mild (easier) or Hot (harder)!
Check the answers.



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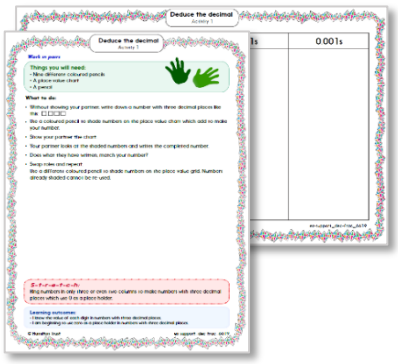
3. Finding it tricky? That's OK… have a go with a grown-up at **A Bit Stuck?**



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

Learning Reminders

Use short division to divide 4-digit numbers by single-digit numbers, expressing the remainders as fractions.

5466 ÷ 4 using short division

Start by dividing 5 by 4.
There is one 4 in 5 and 1 left over.
Write **1** above the line, in the 1000s place.
Write 1 in front of the next digit.

Now divide 14 by 4.
There are three 4s in 14 and 2 left over.
Write **3** above the line, in the 100s place.
Write 2 in front of the next digit.

Now divide 26 by 4.
There are six 4s in 26 and 2 left over.
Write **6** above the line, in the 10s place.
Write 2 in front of the next digit.

Again, there are six 4s in 26.
Write **6** in the 1s place.
There are 2 left over, so write **r 2**.

$$4\overline{)5^{1}4^{2}6^{2}6} \quad 1\,3\,6\,6\ \text{r}\ 2$$

Learning Reminders

Use short division to divide 4-digit numbers by single-digit numbers, expressing the remainders as fractions.

If we want an exact answer we can divide 2 by 4 to give $^{2}/_{4}$.
We can simplify that to $^{1}/_{2}$.

$$4\overline{)5^{1}4^{2}6^{2}6} = 1366\text{ r }2$$

The exact answer is $1366^{1}/_{2}$

Learning Reminders

Use short division to divide 4-digit numbers by single-digit numbers, expressing the remainders as fractions.

1520 ÷ 6 using short division

Start with the 1000s. There are no 6s in 1 so leave a space above the 1 and move on.

Now divide 15 by 6.
There are 2 6s in 15 and 3 left over.
Write 2 above the line, in the 100s place.
Write 3 in front of the next digit.

Now divide 32 by 6.
There are 5 6s in 32 and 2 left over.
Write 5 above the line, in the 10s place.
Write 2 in front of the next digit.

Now divide 20 by 6.
There are 3 6s in 20 and 2 left over.
Write 3 above the line in the 1s place.
There are 2 left over, so write r 2.

$$6\overline{)1\,5^{3}2^{2}0} \quad 2\,5\,3\ \mathrm{r}\ 2$$

Try to write this with a fraction instead of the remainder.

The exact answer!

$253\frac{2}{6}$ or $253\frac{1}{3}$

Practice Sheet Mild

More short division with remainders

1. Calculate:

100 × 3	200 × 3	300 × 3
100 × 4	200 × 4	
100 × 5	200 × 5	

2. Use your answers from above to help you with the following challenges:

452	**731**	**278**	**625**	**927**	**541**	**394**	**847**

a) Choose a number to divide by 3. Your answer must be between 100 and 200.
b) Choose a number to divide by 3. Your answer must be between 200 and 300.
c) Choose a number to divide by 4. Your answer must be between 100 and 200.
d) Choose a different number to divide by 4. Your answer must be between 100 and 200.
e) Choose a number to divide by 5. Your answer must be between 100 and 200.
f) Choose a different number to divide by 5. Your answer must be between 100 and 200.

Challenge

Choose a number from the box that you haven't used yet. Write divisions by 3, 4 and 5 and give a range for the answers.

Practice Sheet Hot

Short division: remainders written as fractions

Calculate the EXACT answers to these divisions. Write any remainders as fractions.

1. 7453 ÷ 3
2. 8342 ÷ 5
3. 2589 ÷ 3
4. 3801 ÷ 7
5. 5124 ÷ 6
6. 3456 ÷ 5
7. 8346 ÷ 4
8. 7621 ÷ 6
9. 2897 ÷ 3
10. 3247 ÷ 4
11. 6532 ÷ 6
12. 5214 ÷ 8

Practice Sheet Answers

Practice Sheet (Mild)

1.

100 × 3 = 300 200 × 3 = 600 300 × 3 = 900

100 × 4 = 400 200 × 4 = 800

100 × 5 = 500 200 × 5 = 1000

2.

a) 452 ÷ 3 = 150 r2 or 541 ÷ 3 = 180 r1 or 394 ÷ 3 = 131 r1

b) 731 ÷ 3 = 243 r2 or 625 ÷ 3 = 208 r1 or 847 ÷ 3 = 282 r1

c) 452 ÷ 4 = 113 or 731 ÷ 4 = 182 r3 or 541 ÷ 4 = 135 r1

d) 452 ÷ 4 = 113 or 731 ÷ 4 = 182 r3 or 541 ÷ 4 = 135 r1

e) 731 ÷ 5 = 146 r1 or 927 ÷ 5 = 185 r2 or 541 ÷ 5 = 108 r1 or 847 ÷ 5 = 169 r2

f) 731 ÷ 5 = 146 r1 or 927 ÷ 5 = 185 r2 or 541 ÷ 5 = 108 r1 or 847 ÷ 5 = 169 r2

Challenge

Choose a number from the box that you haven't used yet. Write divisions by 3, 4 and 5 and give a range for the answers.

e.g. 625 ÷ 3 answer between 200 and 300 (just over 200)

625 ÷ 4 answer between 100 and 200

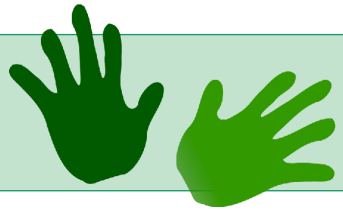
625 ÷ 5 answer between 100 and 200

Practice Sheet (Hot)

1. 7453 ÷ 3 = 2484 $\frac{1}{3}$
2. 8342 ÷ 5 = 1668 $\frac{2}{5}$
3. 2589 ÷ 3 = 863
4. 3801 ÷ 7 = 543
5. 5124 ÷ 6 = 854
6. 3456 ÷ 5 = 691 $\frac{1}{5}$
7. 8346 ÷ 4 = 2086 $\frac{1}{2}$
8. 7621 ÷ 6 = 1270 $\frac{1}{6}$
9. 2897 ÷ 3 = 965 $\frac{2}{3}$
10. 3247 ÷ 4 = 811 $\frac{3}{4}$
11. 6532 ÷ 6 = 1088 $\frac{2}{3}$
12. 5214 ÷ 8 = 651 $\frac{3}{4}$

A Bit Stuck?
Short division practice

Things you will need:
- A pencil



1. 43 ÷ 3

$$\begin{array}{r} 14 \text{ r } 1 \\ 3\overline{)4^{1}3} \end{array}$$

How to do this...
- Look at the first digit
- How many 3s in 4?
- There is 1 so write 1 above the line
- Write the remainder in front of the second digit
- How many 3s in 13?
- There are 4 so write 4 above the line
- How many remaining?
- Write r 1 after the answer.

Now solve these divisions, just like the example:

2. 51 ÷ 4

3. 83 ÷ 5

4. 74 ÷ 6

5. 56 ÷ 3

6. 75 ÷ 4

7. 93 ÷ 6

8. 112 ÷ 5

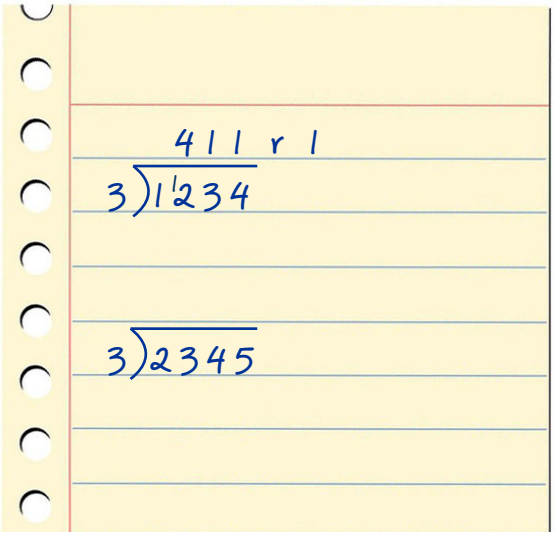
Investigation
Remainder runners

1. Calculate 1234 ÷ 3, 2345 ÷ 3, 3456 ÷ 3, 4567 ÷ 3, 5678 ÷ 3 and 6789 ÷ 3.
   What do you notice about the remainders?

2. Divide the same numbers by 4.
   After the first five, can you predict what the next remainder will be?

3. What do you think the pattern will be if you divide by 5? Try it out!

4. With a partner, split the questions between you to divide the same numbers by 6, 7, 8... all the way up to 12 if you like!
   What patterns do you find?
   Did any surprise you?



Which patterns of remainders are similar to when you are dividing by 3 and 4?
Which are different?
Which of these are similar to each other?
Do ALL divisors give a pattern?