Week 14, Day 1

Use short division to divide, including writing remainders.
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**...
Use short division to divide 3 and 4-digit numbers by 1-digit numbers, including those that leave a remainder.

**Solving $547 \div 3$ using short division**

Start by dividing 5 by 3.
There is one 3 in 5 and 2 left over.
So, write 1 above the line, in the 100s place.
Write the 2 left over in front of the next digit.

Now divide 24 by 3.
There are exactly eight 3s in 24.
So, write 8 above the line, in the 10s place.

Now divide 7 by 3.
There are two 3s in 7, and 1 left over.
So, write 2 above the line, in the 1s place.
There is 1 left over, so we write r 1.

The answer is $182 \, r \, 1$. 

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Learning Reminders

Use short division to divide 3 and 4-digit numbers by single-digit numbers, including those that leave a remainder.

1381 ÷ 6

Now let’s try an example with 4 digits! Roughly how many 6s are in 1381?

200 × 6 = 1200 and 300 × 6 = 1800. The answer must lie between 200 and 300.

Set out the question carefully. Leaving a space between digits for any extra digits we may need to write in.

6 1 3 8 1
Learning Reminders

Use short division to divide 3 and 4-digit numbers by 1-digit numbers, including those that leave a remainder.

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

Now divide 13 by 6. There are two 6s in 13 and 1 left over. So, write 2 above the line, in the 100s place. Write the 1 left over in front of the next digit.

Now divide 18 by 6. There are exactly three 6s in 18. So, write 3 above the line, in the 10s place.

There are no 6s in 1. Write 0 above the line in the 1s place. There is 1 left over, so write r 1.

The answer is 230 r 1.
Practice Sheet Mild
Short division with remainders

1. 542 ÷ 4
2. 523 ÷ 3
3. 746 ÷ 5
4. 638 ÷ 3
5. 982 ÷ 4
6. 249 ÷ 4
7. 341 ÷ 4
8. 283 ÷ 3
9. 364 ÷ 5
10. 754 ÷ 6

Challenge

Alys says 'The biggest remainder you can have when you divide by 6 is 5.'
Do you agree with her?
Explain your reasoning...

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Practice Sheet Hot
Short division with remainders

1. \(5237 \div 4\)
2. \(8351 \div 6\)
3. \(8343 \div 8\)
4. \(2734 \div 5\)
5. \(9535 \div 4\)
6. \(2347 \div 3\)
7. \(1429 \div 4\)
8. \(1532 \div 7\)
9. \(4735 \div 6\)
10. \(5391 \div 8\)

Challenge
Write two different 4-digit numbers which when divided by 5 will give a remainder of 2.
Write two different 4-digit numbers which when divided by 4 will give a remainder of 3.
Practice Sheet Answers

Practice Sheet (Mild)

1. $542 \div 4 = 135 \text{ r}2$
2. $523 \div 3 = 174 \text{ r}1$
3. $746 \div 5 = 149 \text{ r}1$
4. $638 \div 3 = 212 \text{ r}2$
5. $982 \div 4 = 245 \text{ r}2$
6. $249 \div 4 = 62 \text{ r}1$
7. $341 \div 4 = 85 \text{ r}1$
8. $283 \div 3 = 94 \text{ r}1$
9. $364 \div 5 = 72 \text{ r}4$
10. $754 \div 6 = 125 \text{ r}4$

Challenge

Yes, Alys is correct. If the remainder is bigger than 5, then more groups of 6 can be made.

Practice Sheet (Hot)

1. $5237 \div 4 = 1309 \text{ r}1$
2. $8351 \div 6 = 1391 \text{ r}5$
3. $8343 \div 8 = 1042 \text{ r}7$
4. $2734 \div 5 = 546 \text{ r}4$
5. $9535 \div 4 = 2383 \text{ r}3$
6. $2347 \div 3 = 782 \text{ r}1$
7. $1429 \div 4 = 357 \text{ r}1$
8. $1532 \div 7 = 218 \text{ r}6$
9. $4735 \div 6 = 789 \text{ r}1$
10. $5391 \div 8 = 673 \text{ r}7$

Challenge

Write two different 4-digit numbers which when divided by 5 will give a remainder of 2.

e.g. $1712 \div 5 = 342 \text{ r}2$ and $2817 \div 5 = 563 \text{ r}2$

Write two different 4-digit numbers which when divided by 4 will give a remainder of 3.

e.g. $2651 \div 4 = 662 \text{ r}3$ and $3135 \div 4 = 783 \text{ r}3$

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Work in pairs

Things you will need:
• A pencil

What to do:
• Choose a division.
• Work out the answer individually.
• Share your jottings with your partner.
• Repeat at least four more times.
• Score 10 points for each correct answer between 10 and 20, 20 points for each answer between 20 and 30, and also the remainder as a bonus!

111 ÷ 4  53 ÷ 3  125 ÷ 5  97 ÷ 4  84 ÷ 6
110 ÷ 9  84 ÷ 3  75 ÷ 4  132 ÷ 5  139 ÷ 5

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

Learning outcomes:
• I can use chunking to divide, giving answers between 10 and 30, with remainders.
• I am beginning to use chunking to divide, giving answers between 30 and 40, with remainders.

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Investigation
Investigating remainders

1262  1862  1922

• Choose one of the numbers and divide it in turn by 3, 4, 5 and 6.
• Record each division, and the remainder, what do you notice?
• Now try the same with the other two numbers, what happens this time?
• How can you explain this?

Clue!
Try subtracting 2 from each of the three starting numbers and think about what you know about factors and multiples...

• Find the difference between 1862 and 1262; then between 1922 and 1862.
• Use that information to find two more numbers that will give you the same results when you divide them by 3, 4, 5 and 6.
• How can you be sure without even trying out the divisions?

Wow! That’s amazing...

Challenge
Can you find three 5-digit numbers that will also produce the same remainder when dividing by 3, 4, 5 and 6?
Try to include at least one number that doesn’t begin with 6!

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