

Multiplication and Division

Strategies for division

Objectives

Day 4

Dividing using multiplication facts, with remainders

Divide numbers above the 10th multiple using chunking or a written method

Day 4: **Dividing using multiplication facts, with remainders;** Divide numbers above the 10th multiple using chunking or a written method

Without working them out, which of these do you think has an answer closest to 20? Which is closest to 10?



$42 \div 3$ $78 \div 4$ $85 \div 5$

You could find 10 and 20 lots of 3, 4 and 5 and see if 10 or 20 lots is closer to the number being divided...

For example

$10 \times 3 = 30$ and $20 \times 3 = 60$ so $42 \div 3$ is closer to 10 than 20, since 42 is closer to 30 than 40.

Day 4: **Dividing using multiplication facts, with remainders;** Divide numbers above the 10th multiple using chunking or a written method

Y4 can you talk us through $42 \div 3$ on the number line?

$$42 \div 3 = 14$$

$$10 \times 3$$

$$4 \times 3$$

0

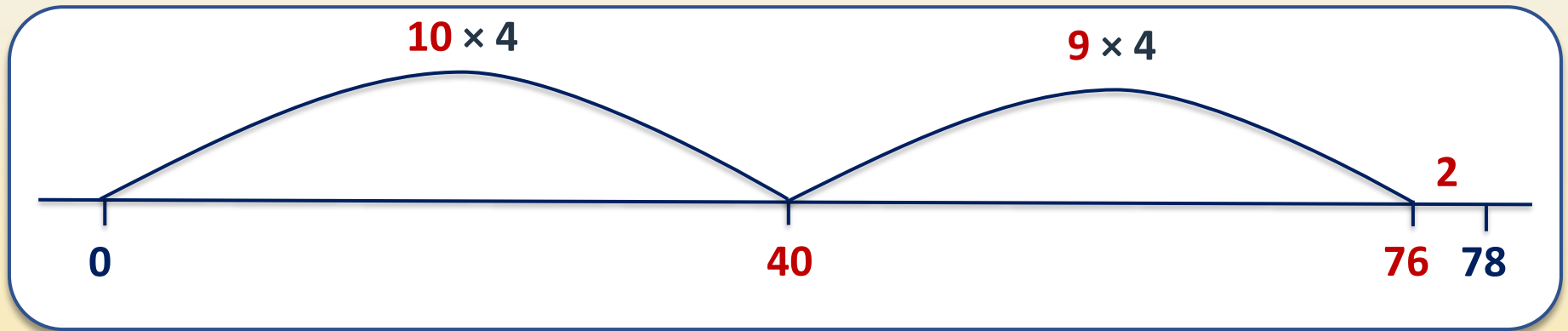
30

42

Day 4: **Dividing using multiplication facts, with remainders; Divide numbers above the 10th multiple using chunking or a written method**

Y4 can you talk us through $78 \div 4$ on the number line?

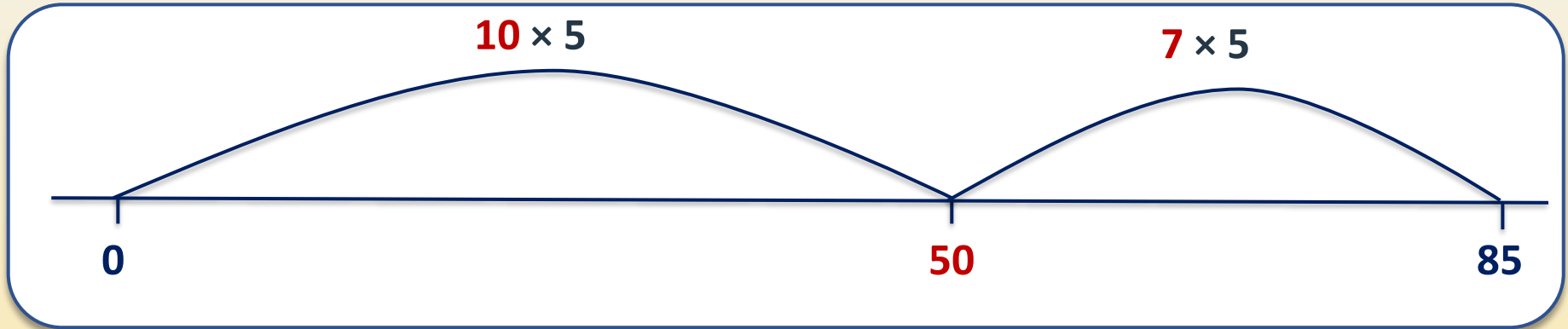
$$78 \div 4 = 19 \text{ r } 2$$



Day 4: **Dividing using multiplication facts, with remainders; Divide numbers above the 10th multiple using chunking or a written method**

Y4 can you talk us through $85 \div 5$ on the number line?

$85 \div 5 = 17$



Day 4: **Dividing using multiplication facts, with remainders;** Divide numbers above the 10th multiple using chunking or a written method

Without working them out, which of these do you think will have the largest and which the smallest answer?

$46 \div 5$ $46 \div 3$ $46 \div 10$

Which will 'go' more times into 46, the largest or smallest divisor?

Now work them out to check – you can always check your division by multiplying.

Division with remainders – mixed problems

Sheet 3

$56 \div 3 =$

$103 \div 6 =$

$78 \div 4 =$

$112 \div 8 =$

Complete the divisions above.

Then solve these word problems.

1. Emily is sharing 43 playing cards between 3 children.
How many cards does each child get? How many cards are left over?
2. Jamal is arranging 46 books on a bookcase so that there are the same number of books on each shelf.
There are 3 shelves. How many books are on each shelf? How many books are left over?
3. 75 children are put into groups.
There are 4 children in each group, how many groups are there? The rest of the children make a smaller group.
How many children are in this group?
4. Asha is sharing sweets into party bags. She has 66 sweets altogether and she puts 5 sweets in each bag.
How many bags of 5 sweets are there? How many sweets are left for Asha to eat before the party?
5. 58 sandwiches are arranged onto plates. There are 6 sandwiches on each plate. How many plates are there?
How many sandwiches are left over?
6. There are 55 mini cupcakes at a party. Each child eats 4 cupcakes and some are left over.
How many children are there? How many cakes are left over?
7. Candles are being put into boxes. There is room for 8 candles in each box.
If there are 89 candles, how many boxes can be filled? How many candles are left over?

Challenge



Day 4: Dividing using multiplication facts, with remainders.

Let's check...

answer? How do you know?

$$32 \div 3 = 10 \text{ r } 2.$$

$$32 \div 4 = 8.$$

If 32 was divided by 3 and 5, which answers would be correct? How do you know?

$$32 \div 5 = 6 \text{ r } 2.$$

Now work with a partner to find the answers to those 3 questions.

Day 4: Dividing using multiplication facts, with remainders.

21

28

33

35

36

41

43

49

Choose one of the numbers and divide by either 2, 3, 4 or 5. Your answer must be between 6 and 12 and must have a remainder.

Score 1 point for an answer between 6 and 12 and add the remainder for a bonus!

Let's try $21 \div 2$.

The answer is 10 r 1.

Score 2.

More division with remainders

Sheet 1

For each set of questions ring the one that you think doesn't have a remainder.
Now work the answers out for each set to check.

Set 1	Set 2	Set 3	Set 4
$26 \div 5$	$26 \div 4$	$21 \div 5$	$49 \div 4$
$17 \div 5$	$23 \div 10$	$26 \div 3$	$36 \div 3$
$38 \div 5$	$16 \div 5$	$37 \div 10$	$58 \div 5$
$30 \div 5$	$33 \div 3$	$28 \div 4$	$71 \div 10$
$23 \div 5$	$31 \div 2$	$31 \div 3$	$25 \div 2$

Challenge



Multiplication and Division

Strategies for division



Well Done! You've completed this unit.

Objectives

Day 1

Dividing by 5 using multiplication facts, with remainders

Divide numbers above the 10th multiple using chunking

Day 2

Dividing using multiplication facts, with remainders

Divide numbers above the 10th multiple using chunking

Day 3

Dividing using multiplication facts, with remainders

Divide numbers above the 10th multiple using chunking or a written method

Day 4

Dividing using multiplication facts, with remainders

Divide numbers above the 10th multiple using chunking or a written method

Problem solving and reasoning questions

Year 3

What is the remainder when 34 divides by 4?

Divide 29 by 2 then by 3, then by 4, then by 5. What will the remainder be if you divide it by 10?

What number will divide 34 and leave a remainder of 4?

Which number between 30 and 40 can be divided by the most numbers leaving no remainders?

Problem solving and reasoning answers

Year 3

What is the remainder when 34 divides by 4? Since $8 \times 4 = 32$, $34 \div 4 = 8 \text{ r } 2$

Divide 29 by 2 then by 3, then by 4, then by 5. $29 \div 2 = 14 \text{ r } 1$.

$29 \div 3 = 9 \text{ r } 2$. $29 \div 4 = 7 \text{ r } 1$. $29 \div 5 = 5 \text{ r } 4$.

What will the remainder be if you divide it by 10? $29 \div 10$ gives a remainder of 9.

What number will divide 34 and leave a remainder of 4? Either 5, 6 or 10 since 6×5 (or 5×6) and $3 \times 10 = 30$.

Which number between 30 and 40 can be divided by the most numbers leaving no remainders? 36 since it has 9 factors. It can be divided exactly by 1, 2, 3, 4, 6, 9, 12, 18 and 36.

32 has 6 possibilities: 1, 2, 4, 8, 16 and 32.

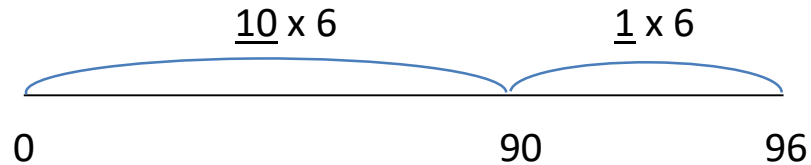
How systematically do children set about solving this problem? Do they start with the largest number, 39, or do they realise that even numbers usually have more exact divisors? Do they include dividing by 1 and by the number itself as one of the answers?

Problem solving and reasoning questions

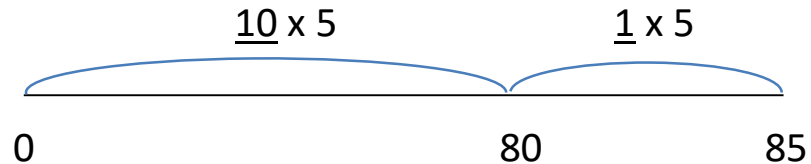
Year 4

Correct Amit's number line divisions. He has made the same mistake twice. Explain what the mistake is. Show the correct calculations.

$$96 \div 6 = 11$$



$$85 \div 5 = 11$$



What is similar about these two calculations:

$$57 \div 3 = ?$$

$$76 \div 4 = ?$$

Challenge! Write a similar calculation where we divide by 5.

Problem solving and reasoning answers

Year 4

Correct Amit's number line divisions. He has made the same mistake twice.

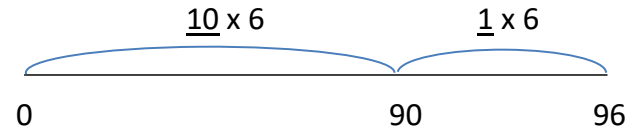
Explain what the mistake is. Show the correct calculations.

In each case he has written the wrong multiple of 10 for the first jump – he has jumped to the multiple of 10 before the target number.

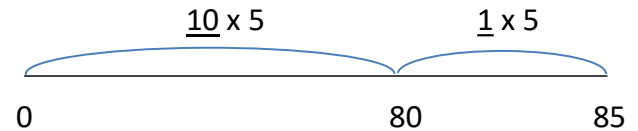
In the first question he should jump to **60** (10×6) then a further jump of 36 (6×6), giving an answer of $96 \div 6 = 16$.

In the second question he should jump to **50** (10×5) then a further jump of 35 (7×5), giving an answer of $85 \div 5 = 17$.

$$96 \div 6 = 11$$



$$85 \div 5 = 11$$



What is similar about these two calculations:

$$57 \div 3 = ? \quad 76 \div 4 = ?$$

The answer to each is 19.

Challenge! Write a similar calculation where we divide by 5. e.g. $95 \div 5$