

Unit 6: Multiplication and division (2)

Making equal groups

→ pages 6–8

- Children should have completed the number line by continuing to jump back in 5s. $20 \div 5 = 4$. Jo can make 4 towers of 5 blocks.
- a) $10 \div 5 = 2$
b) $16 \div 2 = 8$

- I think the second child is right. Children could have described their reasoning in different ways, e.g.

The first child made a mistake about the number of tennis balls in each group because the picture shows the tennis balls grouped in 3s.

- $20 \div 2$ makes the most groups. Children could have described their reasoning in different ways, e.g.
This is because the answer is 10, which is greater than 4 or 2. This is because you are arranging 20 into groups of the smallest size. This will give the greatest number of groups.

Reflect

$15 \div 5 = 3$. Children should have drawn three jumps of 5 on a number line backwards from 15 to 0.

Sharing and grouping

→ pages 9–11

- $15 \div 5 = 3$. There are 3 flowers in each vase.
- $15 \div 3 = 5$. Each wheelbarrow carries 5 bricks.
- a) $4 \div 4 = 1$. Each class gets 1 hockey stick.
b) $12 \div 4 = 3$. Each class gets 3 balls.
- The 10 represents the total number of carrots. The 2 represents the number of rabbits. The 5 represents the number of carrots each rabbit will get when the carrots are shared into 2 equal sets.
- Children should have joined the sentences as follows:
I shared the ice lollies between 4 people. → Each person had 5.
I shared the ice lollies between 2 people. → Each person had 10.
 $20 \div 4 = 5$
 $20 \div 2 = 10$

Reflect

Children should have drawn 10 marbles shared between 5 people so each person will have 2 marbles.

$$10 \div 5 = 2.$$

Children should have identified that the 10 represents the total number of marbles. The 5 represents the number of people. The 2 represents the number of marbles each person will get when the marbles are shared into five equal sets.

Dividing by 2

→ pages 12–14

- $8 \div 2 = 4$. There are 4 pairs of swans.
- $14 \div 2 = 7$. 7 pictures can be hung up.
- | | |
|------------------|-------------------|
| $3 \times 2 = 6$ | $8 \times 2 = 16$ |
| $6 \div 2 = 3$ | $16 \div 2 = 8$ |
- | | |
|-------------------|-------------------|
| $4 \times 2 = 8$ | $6 \times 2 = 12$ |
| $8 \div 2 = 4$ | $12 \div 2 = 6$ |
| $5 \times 2 = 10$ | $7 \times 2 = 14$ |
| $10 \div 2 = 5$ | $14 \div 2 = 7$ |
- Children should have matched times-table facts to completed divisions as follows:
 $1 \times 2 = 2 \rightarrow 2 \div 2 = 1$
 $2 \times 2 = 4 \rightarrow 4 \div 2 = 2$
 $3 \times 2 = 6$ (no matching division number sentence, children could have written in $6 \div 2 = 3$)
 $4 \times 2 = 8 \rightarrow 8 \div 2 = 4$
 $5 \times 2 = 10 \rightarrow 10 \div 2 = 5$
 $6 \times 2 = 12$ (no matching division number sentence, children could have written in $12 \div 2 = 6$)
 $7 \times 2 = 14 \rightarrow 14 \div 2 = 7$
 $8 \times 2 = 16 \rightarrow 16 \div 2 = 8$

Reflect

Children may have given different reasoning, e.g.

So I know that $10 \div 2 = 5$ because 10 is 5 groups of 2.

So I know that $10 \div 2 = 5$ because division is the inverse of multiplication.

So I know that $10 \div 2 = 5$ because 5 is half of 10.

Odd and even numbers

→ pages 15–17

- There are 8 children. There will be 0 on their own.
So 8 is an even number.
There are 9 children. There will be 1 on their own.
So 9 is an odd number.
- 11 is an odd number.
19 is an odd number.
14 is an even number.
- Children should have ticked the picture of 7 straws.
- The following answers are possible: 4 and 9, 6 and 11, 14 and 9, 16 and 11.

Reflect

Children should have recognised that Jamal cannot make groups of two because he has 9 stars and 9 is an odd number.

Dividing by 5

→ pages 18–20

- Children should have completed the number line to show three jumps of 5 backwards from 15 to 0.
 $15 \div 5 = 3$.
- Children should have completed the number line to show six jumps of 5 backwards from 30 to 0.
 $30 \div 5 = 6$. Tao can make 6 house shapes.
- $10 \div 5 = 2$ $20 \div 5 = 4$
 $5 \times 5 = 25$ $7 \times 5 = 35$
 $25 \div 5 = 5$ $35 \div 5 = 7$
- $20 \div 5 = 4$ $40 \div 5 = 8$
 $25 \div 5 = 5$ $35 \div 5 = 7$
- Malik could have chosen 10, 20, 30 or 40. Lily could have chosen 5, 15, 25, 35 or 45. Children could have described what they noticed in different ways, e.g.
Malik's numbers all end in 0. Malik's numbers and in the 10 times-table.
Lily's numbers all end in 5. Lily's numbers are in the 5 times-table but not in the 10 times-table.

Reflect

Each friend gets 7 grapes. Children could have explained different methods, e.g.

I shared 35 counters into 5 equal sets and each set had 7 counters in so I knew the answer was 7.

I know that $7 \times 5 = 35$, so I know that $35 \div 5 = 7$.

Dividing by 10

→ pages 21–23

- $40 \div 10 = 4$. She plants 4 rows.
- $60 \div 10 = 6$
 $30 \div 10 = 3$
 $50 \div 10 = 5$
- Children should have completed and matched the number sentences as follows:
I know $3 \times 10 = 30 \rightarrow$ so $30 \div 10 = 3$
I know $7 \times 10 = 70 \rightarrow$ so $70 \div 10 = 7$
I know $4 \times 10 = 40 \rightarrow$ so $40 \div 10 = 4$
I know $9 \times 10 = 90 \rightarrow$ so $90 \div 10 = 9$
- Missing number from top to bottom as follows:
Left-hand column: 4, 6, 8, 7, 90, 2, 10, 3
Right-hand column: 1, 10, 30, 5, 60, 7, 10
- a) square = 3, triangle = 97
b) square = 7, triangle = 3

Reflect

Children should have been able to use the 10 times-table to write related division sentences, e.g.

$10 \div 10 = 1$, $20 \div 10 = 2$, $30 \div 10 = 3$... $100 \div 10 = 10$.

Some children may have written other facts, e.g.
 $110 \div 10 = 11$

Bar modelling – grouping

→ pages 24–26

- 14, $14 \div 2 = 7$. There are 7 pairs.
- $40 \div 5 = 8$. Jamal can make 8 patterns.
- $40 \div 10 = 4$. 40 is 4 groups of 10.
 $10 \div 2 = 5$. 10 is 5 groups of 2.
- Children should have matched the pictures, bar models and number sentences as follows:
sets of stars \rightarrow 4 groups of 4 (16) $\rightarrow 16 \div 4 = 4$
array of counters \rightarrow 4 groups of 3 (12) $\rightarrow 12 \div 3 = 4$
towers of cubes \rightarrow 3 groups of 5 (15) $\rightarrow 15 \div 5 = 3$
- Different answers are possible. The circle could be any multiple of 10.

Reflect

Children could have written many different division problems to represent the bar model. All stories should match the bar diagram which shows 20 as four groups of 5, e.g.

Chocolate bars come in packs of 5. How many packs do I need if I want 20 chocolate bars for a party?

I have 20 straws. I need 5 straws to make a pentagon. How many pentagons can I make?

Bar modelling – sharing

→ pages 27–29

- Children should have drawn 5 counters, or written the number 5, in each part of the bar model.
 $15 \div 3 = 5$. Each child carries 5 books.
- Children should have completed the table as follows:
Top row: 5, 5, 5, 5, 5
Middle row: 4, 4, 4, 4, 4
Bottom row: 2, 2, 2, 2, 2
- Children should have completed the number sentences and bar models as follows:
 $12 \div 4 = 3$ Equal parts on bar model: 3, 3, 3, 3
Each guinea pig gets 3 treats.
 $12 \div 6 = 2$ Equal parts on bar model: 2, 2, 2, 2, 2, 2
Each rabbit gets 2 treats.
 $12 \div 3 = 4$ Equal parts on bar model: 4, 4, 4
Each cat gets 4 treats.
- $30 \div 5 = 6$. Children should have drawn a bar model where the whole is 30 and the bar is divided into 5 equal parts, so each part has a value of 6.

Reflect

Children could have used different words to explain the models, e.g.

Sharing 30 between 5: The whole bar represents 30. It needs to be divided into 5 equal parts. This means the value of each part is 6.

Making groups of 5 from 30: Equal parts of 5 need to be drawn until the total value is 30. 6 parts of 5 will be needed.

Solving word problems – division

→ pages 30–32

- a) $50 \div 10 = 5$. Meg should buy 5 packs.
b) $20 \div 2 = 10$. Malik buys 10 boxes of pins.
- $35 \div 5 = 7$. She needs 7 counters.
- Each person will get £5.
- The possible solutions are 10, 30 and 50.

Reflect

Children could have written any word problem that can be represented by the number sentence $35 \div 5 = 7$, e.g.

There are 35 children in a class. They sit at table so that there are 5 children at each table. How many tables are there?

There are 35 children in a class. There are 5 big tables in the classroom and the same number of children sit at each table. How many children sit at each table?

End of unit check

→ pages 33–34

My journal

Children should articulate that numbers ending in 0 are even and numbers ending in 5 are odd, using words from the word bank, e.g.

The pattern for blue is numbers that end in 5 because they are odd already and so give an odd answer

For the next pattern, children should realise that all multiples of 10 are even. However, these numbers have either an odd or even number of tens. If the multiple of ten has an odd number of tens and is divided by 10, the answer will be odd. E.g.

The tens have to be odd so the answer will be odd. If the tens are even the answer will be even.

Power puzzle

Children should identify a number less than 50 that is a common multiple of 2, 3 and 4 when 1 is taken away from it, giving four possible solutions of 13, 25, 37 and 49.