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PART 3

UNIT
5

UNDERSTANDING

MULTIPLICATION AND DIVISION

Unit 5
• SESSION 1 •

TOTAL TIME

30
MINUTES

| OBJECTIVES | VOCABULARY | RESOURCES | HOMEWORK |
|---|---|--|---------------------------|
| <ul style="list-style-type: none"> Understand division as grouping. Read and begin to write the related vocabulary. Know by heart the facts of the 2-, 5- and 10- times tables. | divided by how many...in...? count on in fives | counting stick; demonstration number line that includes 0–20; unnumbered lines (resource sheet 8); 1–100 number grids (resource sheet 6, Unit 4) | Play <i>Four in a Row</i> |

STARTER

5
MINUTES

Rehearse counting in tens and fives using a counting stick. Ask questions such as 'How many fives do we count to get to here (pointing to where 30 is on the stick)?' and 'How many tens do we count to get to here (pointing to where 70 is on the stick)?'

KEY QUESTIONS

How can we work out how many fives are in 25? How many tens are in 70?

MAIN ACTIVITY

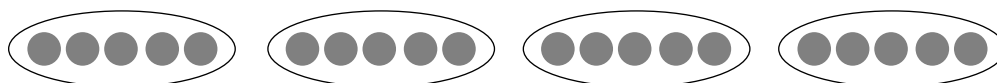
20
MINUTES

Either draw 20 spots randomly on the board or stick 20 counters on to a white board. Say that these are one-penny coins and we want to exchange them for five-pence coins. *How many five-pence coins will we get?*



Either draw loops around groups of five, or move groups of counters, counting how many groups of five as you do so. Explain that we can write this as $20 \div 5 = 4$. Stress that this can mean 'How many fives are in twenty?'

Now draw 20 pennies in a line. Draw a loop around each group of five, pointing out that it was easier this time.



Now point to 20 on a number line (with all numbers marked on it) and ask how many fives we would count to get there. Demonstrate.



Use the counting stick to count in fives to 20 and ask how many fives were counted.

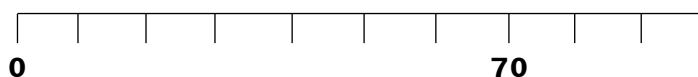
Tell everyone to count in fives on their blank number lines to 20, and then to count how many fives that would be. Check that they all understand.



They now count to 15 and write 15 on the line. Ask how many jumps of five there were. Record this on the board as $15 \div 5 = 3$, reading it as 'How many fives are in 15?' Repeat for other multiples of five.

Look at the 1–100 number grid and ask how many lines of ten there are in 50. Count the lines to ensure that all the children understand.

How could we mark our number line to find out how many tens there are in 70? Count in tens to 70, mark on 70 and then count how many tens are counted on the way.



If we had 70 pennies how many 10p pieces could we get?

Explain Activity Sheet 5.1, which the children will have to complete before the next session. Introduce the *Four in a Row* game for homework.

KEY QUESTIONS

- How can we rewrite 'How many tens are in 70?' using mathematical symbols?
- How did you work out the answer (perhaps they counted in tens, or used a known fact from their tables)?

PLENARY

5
MINUTES

For a party, we need 40 balloons. They come in packs of ten. How many packets do we need? Ask a child to explain how to tackle this problem. If they came in packets of five, how many would we need then? Would we need more packets or fewer packets? Why?

Emphasise that in this session you have been asking everyone to work out how many equal groups there are in a given number. Say that we often talk about a number of groups when we are multiplying and that there is a link between multiplication and division as there is between addition (counting on) and subtraction (counting back). Say that you will look at this link in the next session.

Unit 5

SESSION 2

TOTAL TIME

30
MINUTES

OBJECTIVES

- Understand division as grouping or sharing. Read and begin to write the related vocabulary.
- Recognise that division is the inverse of multiplication and that halving is the inverse of doubling.
- Know by heart the facts of the 2-, 5- and 10- times tables.

VOCABULARY

halve
double
multiplication
multiply by
division
divide by
inverse

RESOURCES

place value cards (resource sheet 2, Unit 1);
you're great at maths stickers (resource sheet 9)

STARTER

5
MINUTES

Show the children the number 14 using place value cards. Partition the number into 10 and 4, giving each part to a different child. Ask everyone to double 10 and help the child to pick up the right card, 20. Everyone now doubles 4. Help the child to find the right card, 8. Recombine these two cards to make the number 28. Explain that double 14 is 28, but if they forget this, they can partition the number and double each part before recombining.

Ask the children other doubles from 11 to 20. They respond by holding up place value cards. Demonstrate the partitioning for any that they find difficult.

Show everyone the number 14 again, partition it, and ask them what half of 10 is? *What is half of 4?* They now add 5 and 2 to make 7. Explain that half of 14 is therefore 7. Stress that partitioning can help them to find the answer if they cannot remember this fact. Ask them to give half of 12, 16, and 18, using place value cards to answer. Demonstrate by partitioning for any that they find difficult.

KEY QUESTION

■ Doubling is the same as multiplying by what?

MAIN ACTIVITY

20
MINUTES

Hold up the sheet of stickers from Resource Sheet 9. *How many stickers are on it?* (There are 24). Fold the sheet so that half of the stickers are showing. *How many can you see now?* Write on the board: half of 24 = 12.



Open out the sheet again. *How many stickers can you see now?* Write on the board: $\text{double } 12 = 24$. Point out that when you doubled 12, you got back to the number you started with before you halved it. Explain that doubling is the opposite of halving, so if you halve a number and then double that answer you get back to what you started with. Explain that we say that doubling is the inverse of halving. Do they know of another way of saying doubling? Explain that multiplied by 2 means we have two lots of what we started with or, in other words, double. Do they know of another way of saying halving? Dividing into two equal groups. Explain that division is the opposite of multiplication. We say that one is the inverse of the other.

Ask the children to imagine a sheet of 8 stickers. Ask a child to draw on the board how they are arranged. It might be like this:



Ask them to close their eyes and imagine the sheet being folded so that they can see half of the stickers. *How many can you see now?* They then imagine it being opened up again. *How many can you see now?* Ask the children to help you write on the board some halving and doubling facts about this sheet of stickers, such as half of 8 is 4, double 4 is 8, $8 \div 2 = 4$, $4 \times 2 = 8$. Repeat this process for other numbers of stickers, such as 10, 16, 20.

Go through a couple of questions orally from each section on Activity Sheet 5.2, which the children will have to complete before the next session.

KEY QUESTION

- Doubling is the same as multiplying by two. What is halving the same as?

PLENARY

5
MINUTES

Ask the children to close their eyes and imagine a 1–100 number grid. Ask them to imagine it being cut in half. How many squares would it have now? What is double 50?

Now ask them to imagine a domino with 6 spots on one side. It is a double and so has 6 spots on the other. *What is double 6?* Can they think of a corresponding halving fact to go with this?

What if the domino had 20 spots on one side? *How many spots would there be altogether?* Can the children think of a halving fact to go with this? *If a doubles domino has 20 spots altogether, how many are on each half?* Can the children think of a doubling fact to go with this?

Name

Date

Dear Parents/Carers,

In our mathematics lessons, we have been learning how to find out how many fives there are in a particular number. Please help your child to practise this by playing the game below.

Thank you for your help.

Your child's teacher

Four in a Row

- Players take it in turns to choose a number from the grid and say how many fives there are in it. Count 5p coins to check (saying, for example, 5, 10, 15, 20, that's four lots of 5 in 20). If the player is right, he or she should put a coin or counter on the square to claim it.

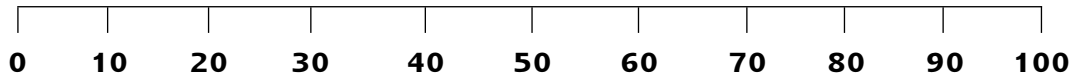
| | | | | |
|----|----|----|----|----|
| 30 | 40 | 50 | 25 | 60 |
| 55 | 5 | 15 | 35 | 25 |
| 35 | 45 | 10 | 40 | 50 |
| 10 | 20 | 25 | 15 | 45 |

- The winner is the first player to get four counters in a row, up \uparrow , along \rightarrow , or diagonally \searrow \swarrow .

Name

Date

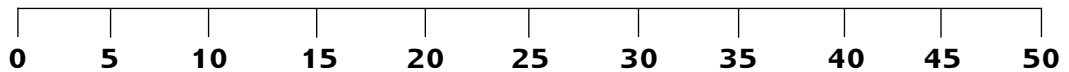
Activity sheet 5.1



1. CDs are packed in boxes. Each box holds 10 CDs. Work out how many boxes you need for these CDs.

| CDs | boxes |
|-----|-------|
| 40 | |
| 60 | |
| 100 | |

| CDs | boxes |
|-----|-------|
| 50 | |
| 70 | |
| 40 | |



2. Drivers get a free glass for every £5 they spend on petrol. Work out how many glasses the petrol station gave away or how much money the driver spent.



| amount spent | number of free glasses |
|--------------|------------------------|
| £10 | |
| | 3 |
| £50 | |
| £35 | |
| | 5 |

| amount spent | number of free glasses |
|--------------|------------------------|
| £5 | |
| | 4 |
| £45 | |
| £30 | |

Name

Date

Activity sheet **5.2**

1. Double these numbers and write a number sentence for each.

20 $20 \times 2 = 40$

40

25

11

14

19

2. Halve these numbers and write a number sentence for each.

20 $20 \div 2 = 10$

100

30

16

24

18

3. Work out the answers to these.

$2 \times 21 =$

$2 \times 15 =$

double 21 =

double 15 =

$2 \times 4 =$

$2 \times 12 =$

double 4 =

double 12 =

$14 \div 2 =$

$80 \div 2 =$

half of 14 =

half of 80 =

$18 \div 2 =$

$50 \div 2 =$

half of 18 =

half of 50 =

Unit 5

RESOURCE SHEET 8

A writing grid consisting of 24 vertical lines arranged in four groups of three. Each group is separated by a larger gap. Each vertical line has 20 horizontal tick marks, creating a series of boxes for writing.

