Lesson - Multiplication and division: groups, doubling and sharing

Year: Year 1

Hello, I am Otto! Today we learn three clever ideas: making equal groups, doubling and halving, and sharing. These ideas are the start of multiplication and division. You will find them everywhere, from sharing a pizza to packing eggs.

Starter activity

Get 12 counters. Make groups of 2. How many groups do you make? Now make groups of 3 with the same 12 counters. How many groups now? Finally share the counters between 4 friends so that each gets the same number. How many does each friend get?

Equal groups

Definition: equal groups

Equal groups have the same number of things in each group. If there are 3 bags with 4 apples in each bag, there are 3 equal groups of 4.



3 groups of 4. We count in fours: 4, 8, 12. There are **12** dots in all.

Rule: adding equal groups

When groups are equal, you can add the same number again and again. 3 groups of 4 means 4 + 4 + 4 = 12. This is the same as counting in steps of 4. Later you will write this as 3 × 4 = 12. We say "3 times 4 equals 12".

Example 1

There are 5 plates. Each plate has 2 cakes. How many cakes are there?



Count in twos: 2, 4, 6, 8, 10. There are **10** cakes.

Counting in steps

Counting in steps helps with equal groups. Count in 2s for pairs, such as socks or shoes. Count in 5s for fingers on hands. Count in 10s for tens. Say the numbers out loud and keep a count of the steps on your fingers.

Counting in	Numbers
2s	2, 4, 6, 8, 10, 12, 14, 16, 18, 20
5s	5, 10, 15, 20, 25, 30, 35, 40, 45, 50
10s	10, 20, 30, 40, 50, 60, 70, 80, 90, 100

Example 2

How many fingers are on 4 hands?

Each hand has 5 fingers. Count in fives, 4 times: 5, 10, 15, 20. There are **20** fingers.

Arrays

Definition: array

An **array** is objects arranged in neat rows and columns. Each row has the same number of objects.



This array has 3 rows with 5 in each row. Count in 5s: 5, 10, 15. There are 15 dots.

Example 3

A box of chocolates has 2 rows of 6 chocolates. How many chocolates are there?



Count in 6s: 6, 12. Or add: 6 + 6 = 12. There are **12** chocolates.

Doubling

Definition: double

To **double** a number means to make it twice as big. It is the same as adding the number to itself. Double 4 is 4 + 4 = 8.

Key fact: doubles to know

- Double 1 is 2, double 2 is 4, double 3 is 6, double 4 is 8, double 5 is 10.
- Double 6 is 12, double 7 is 14, double 8 is 16, double 9 is 18, double 10 is 20.

Example 4

A ladybird has 6 spots on one wing. It has the same on its other wing. How many spots does it have in all?

Double 6 = 6 + 6 = **12** spots.

Halving and sharing

Definition: half and sharing

To **halve** a number means to share it into 2 equal groups. **Sharing** means giving the same number to each person. Half of 10 is 5, because 5 + 5 = 10.

Method: sharing equally

1. Draw the right number of plates or circles.
2. Share the objects one at a time, one for each plate.
3. Count how many are on each plate. Check that they are all the same.
4. Check that nothing is left over (unless the problem says so).

Example 5

Share 12 sweets equally between 3 children. How many does each child get?



Give one sweet to each child again and again until all 12 are gone. Each child gets **4** sweets. Check: 4 + 4 + 4 = 12.

Example 6

Half of 14 is what number?

Share 14 between 2: 7 and 7. Half of 14 is **7**. Check: 7 + 7 = 14.

Example 7: grouping

There are 15 children. They make teams of 5. How many teams are there?

Count how many 5s fit in 15: 5, 10, 15. That is 3 fives. There are **3 teams**.

Watch out

- In equal groups, every group must be the same size.
- Do not forget to count the groups as well as the objects.
- Sharing is not fair if one person gets more. Check each plate.

Did you know?

The sign for times, ×, was first used about 400 years ago. Before that, people wrote long words. Counting in twos is very old. Farmers counted sheep in pairs, and people counted in tens because we have ten fingers.

Otto's tip

Draw a picture. A drawing of the groups, the plates or the rows makes every problem easier. And remember: count in steps for speed!