Lesson - Multiplication and division problems

Year: Year 2

Hello, I am Otto! In this chapter you use multiplication, division and the equals sign to solve story problems. First read the problem carefully. Then decide: are there equal groups to put together (multiply), or are we sharing or grouping (divide)? A bar model can help you see the problem.

Starter activity

Put 20 counters on the table. Share them equally between 4 cups. How many counters are in each cup? Now put them back and make groups of 5. How many groups can you make? The same 20 counters give two different division stories: 20 ÷ 4 = 5 and 20 ÷ 5 = 4.

Multiplication: equal groups

Definition: equal groups

Equal groups have the same number of objects in each group. To find the total, multiply the number of groups by the number in each group. 4 bags with 5 apples in each bag is 4 × 5 = 20 apples.



Four equal groups of 5 dots: 4 × 5 = 20.

Method: solving a multiplication problem

1. Find out if there are equal groups.
2. Write the number of groups and the number in each group.
3. Write the multiplication, for example 4 × 5 = ?
4. Find the answer by counting in steps or using a times table, and write it in a sentence.

Worked example 1

There are 6 boxes. Each box holds 5 pencils. How many pencils are there?

There are 6 equal groups of 5. 6 × 5 = 30. There are **30 pencils**.

Division: sharing and grouping

Definition: sharing and grouping

Sharing means splitting a total into equal groups and finding how many are in each group. **Grouping** means finding how many equal groups you can make from a total. Both use division, with the sign ÷.

Worked example 2 (sharing)

20 stickers are shared equally between 4 children. How many stickers does each child get?

20 ÷ 4 = 5, because 5 × 4 = 20. Each child gets **5 stickers**.

Worked example 3 (grouping)

There are 20 children. They make teams of 5. How many teams are there?

20 ÷ 5 = 4, because 4 × 5 = 20. There are **4 teams**.

Order matters in division

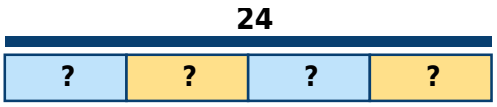
Watch out

You can multiply in any order (4 × 5 = 5 × 4), but you **cannot** divide in any order. 20 ÷ 5 = 4, but 5 ÷ 20 is not 4. In a division, the total always comes first. Also, check whether the answer is the number of groups or the number in each group.

Using a bar model

Method: drawing a bar model

1. Draw a long bar for the total.
2. Split the bar into the right number of equal parts.
3. Write what you know in the parts, and put a ? where you need to find the answer.



24 shared into 4 equal parts. Each part is 24 ÷ 4 = 6.

Worked example 4

A baker puts 24 buns equally into 4 trays. How many buns are on each tray?

The bar model shows 24 split into 4 equal parts. 24 ÷ 4 = **6 buns** on each tray.

Missing numbers and fact families

Key fact: fact families

Three numbers make a fact family. For 3, 5 and 15: 3 × 5 = 15, 5 × 3 = 15, 15 ÷ 3 = 5, 15 ÷ 5 = 3.

Worked example 5

Find the missing number: __ × 5 = 35.

Use the inverse: 35 ÷ 5 = 7. The missing number is **7**. Check: 7 × 5 = 35.

Two-step problems

Definition: two-step problem

A **two-step problem** needs two calculations. You often multiply or divide first, and then add or subtract. Write each step in a number sentence.

Worked example 6

Mia buys 3 packs of 10 stickers. She gives 8 stickers to her friend. How many stickers does she have left?

Step 1: 3 × 10 = 30. Step 2: 30 − 8 = 22. Mia has **22 stickers**.

Worked example 7

There are 30 children. 10 go to the library. The rest are put into teams of 5. How many teams are there?

Step 1: 30 − 10 = 20. Step 2: 20 ÷ 5 = 4. There are **4 teams**.

Did you know?

The sign × was first used about 400 years ago, and the sign ÷ about 450 years ago. The ÷ sign looks like a fraction: a line with a dot above for the top number and a dot below for the bottom number.

Otto's tip

Read the problem twice. Underline the numbers and circle the question. Then decide: equal groups means ×, sharing or grouping means ÷. At the end, ask yourself: "Does

my answer make sense?" Check with the inverse, for example 6 × 5 = 30, so 30 ÷ 5 = 6.