

Multiplication and Fair Shares

Grade: 3 **Subject:** Mathematics **Time:** ~45 min core + ~15 min extension **Work mode:** Independent · pencil + packet Math

Start Here

This is a **paper math packet** about **equal groups** and **fair shares**. Work by yourself with a pencil. **You do not need a calculator**, but a basic calculator is allowed if you have one. **Show your work** — you may draw dots, circles, or arrays to help you. Everything you need is printed right here, including a picture that shows how it works. If a problem is hard, skip it and come back. Circle your final answer.

Start Warm-Up 5 min

Get your brain ready. These are easy on purpose.

1**Skip-count by 5.** Fill in the two missing numbers on the line.

5, 10, 15, _____, _____

2**How many in all?** Here are 3 **groups**. Each group has 4 **dots**. Count all the dots and write how many there are in all.

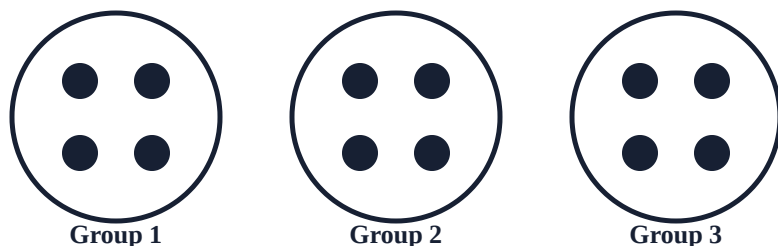


Figure 1. Three groups of four dots.

Build Study the Math 5–10 min

What you need to know

Equal groups. When every group has the **same number** in it, you can multiply. "4 groups of 3" means 4 groups that each hold 3. You can add ($3 + 3 + 3 + 3$) or you can **multiply** (4×3). Both give 12.

What $\times$ means. In $4 \times 3 = 12$, the 4 is how many groups, and the 3 is how many in each group. The answer, 12, is how many **in all**. Careful: the groups must be **equal** to multiply.

Arrays. An **array** lines things up in **rows** and **columns** (a rectangle of dots). You multiply **rows $\times$ columns**. A 3-by-4 array has 3 rows and 4 in each row, so $3 \times 4 = 12$.

What $\div$ means (fair shares). **Division** shares things into equal groups. "Share 12 into 3 equal groups" is $12 \div 3 = 4$ — each group gets 4. Division and multiplication are opposites: $3 \times 4 = 12$, so $12 \div 3 = 4$.

Watch out: multiplying is **not** the same as adding one time. And groups must be **equal** — if they are not, you cannot just multiply.

Worked Example — equal groups and an array

Find 4×3 (4 groups of 3).

Step 1 — draw the groups: Make 4 groups. Put 3 dots in each group.

Step 2 — count in all: $3 + 3 + 3 + 3 = 12$. So $4 \times 3 = 12$.

Step 3 — see it as an array: The same 12 dots can line up in **3 rows of 4**. That is $3 \times 4 = 12$. The picture below shows the array.

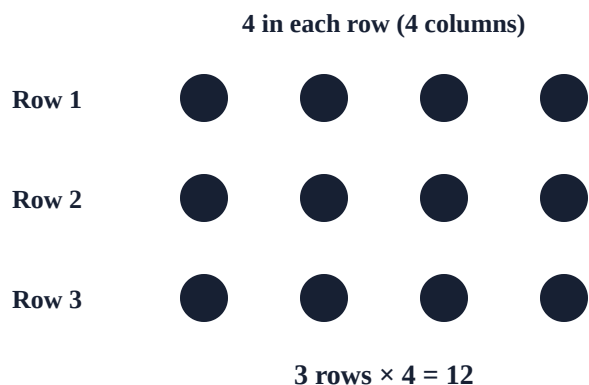


Figure 2. A 3×4 array: 3 rows with 4 dots in each row make 12 in all. Drawn in black so it reads clearly in grayscale.

3Using the worked example as your guide, find 5×2 (5 groups of 2). You may **draw the 5 groups** and then count. Show how you found the answer.

Apply Use What You Know 20–25 min

Show your work in every item. You may draw dots or an array to help.

4**Equal groups story.** There are **5 bags**. Each bag has **4 apples**. How many apples are there **in all**? Write a multiplication sentence and find the answer.

5**Array match.** Look at the array below. Write the number of **rows**, the number in **each row**, and the multiplication sentence with the answer.

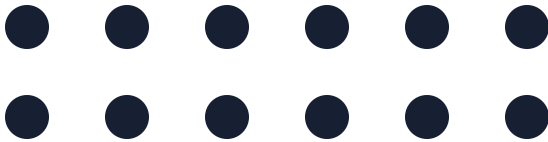


Figure 3. An array of dots.

Rows: _____ In each row: _____ Multiplication sentence: _____ $\times$ _____ = _____

6**Fair-share story (division).** Mia has **15 crayons**. She shares them **equally** among **3 friends**. How many crayons does **each friend** get? Write a division sentence and find the answer. You may draw 3 groups and share the crayons one at a time.

7**Find and fix the mistake.** A student counted the picture below and said the groups show $3 \times 4 = 12$. But look carefully — the groups are **not equal**. Tell what is wrong, and write the correct number of dots **in all**.

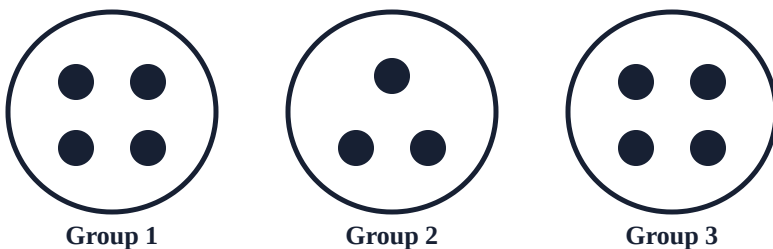


Figure 4. Three groups — look closely at how many are in each one.

What is wrong, and how many dots are there in all?

Explain Tell How You Know 5–10 min

Question 8. In problem 6, Mia shared 15 crayons among 3 friends. Explain how you know each friend gets a fair share. Use the boxes below: write your **Answer**, a **Picture or numbers** that shows it, and **Why** it is fair.

Sentence starters you may use: "Each friend gets ____ crayons." · "I drew 3 groups and put ____ in each." · "It is fair because every group has the ____ number." · "I know because $___ \times 3 = 15$."

Answer (how many each friend gets)

Picture or numbers

Why it is a fair share

Close ACE Wrap-Up 5 min

Articulate

In your own words, tell what **equal groups** means.

Connect

Point to one item in this packet where you **multiplied**. Write its number.

Extend

Write your own multiplication fact using equal groups that was **not** in this packet (for example, 2 groups of 5).

Continue Early Finisher optional · ~15 min

If you finish early (no new materials needed):

Draw the groups. On the back of this page, show 6×2 (6 groups of 2). Draw 6 groups, put 2 dots in each, and write how many there are **in all**. Then draw the same dots as an **array** (2 rows of 6) and write that multiplication sentence too.

Turn in: Hand in this whole packet with your name, class, and date filled in. Make sure questions 1–8 and the ACE box are answered **with your work shown**. The early-finisher challenge is optional, but turn it in too if you did it.

G03_MATH_MultiplicationShares_01 — Multiplication and Fair Shares Student Packet