Grade 3 Mathematics | Chapter 2

Lesson 1: Equal Groups and Multiplication

Learning target

Represent equal groups with multiplication and repeated addition.

Learn

A product gives the total number in equal groups. In 4 groups of 3, the expression 4 × 3 means 3 + 3 + 3 + 3, or 12. The first factor can name the groups and the second the number in each. Both factors matter. Zero groups contain zero objects.

Worked example

Use counters to model 3 groups of 5. Write 3 × 5 = 15 and 5 + 5 + 5 = 15. Explain what each factor means.

Apply your understanding

Explain the example to a teacher. Show it with a drawing or objects. Then complete the matching workbook practice.

Advanced extension

Draw two different equal-group arrangements for 24. Explain what changes and what stays the same.

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Lesson 2: Arrays and Multiplication Strategies

Learning target

Use rows, columns, and the distributive property to find products.

Learn

An array arranges objects in equal rows and columns. An array of 3 rows with 6 in each row has 18 objects. Rotate it to see 6 rows of 3, also 18. You can split an array: $7 \times 6 = (5 \times 6) + (2 \times 6) = 30 + 12 = 42$.

Worked example

Draw 4 rows of 3 dots. Write $4 \times 3 = 12$ and $3 \times 4 = 12$. Explain why the total stays the same.

Apply your understanding

Explain the example to a teacher. Show it with a drawing or objects. Then complete the matching workbook practice.

Advanced extension

Show two ways to split 8×7 into smaller products.

Learning target

Interpret quotients and connect division to an unknown factor.

Learn

Division can mean sharing a total equally or finding how many equal groups fit. With 24 counters in 6 equal groups, each group has 4. With 24 counters grouped in fours, there are 6 groups. Because $6 \times 4 = 24$, both $24 \div 6 = 4$ and $24 \div 4 = 6$.

Worked example

Share 20 counters among 5 groups. Then group 20 counters into groups of 5. Each gives 4, but the unknown describes something different.

Apply your understanding

Explain the example to a teacher. Show it with a drawing or objects. Then complete the matching workbook practice.

Advanced extension

Write a sharing story and a grouping story for $24 \div 6$, then explain the different unknowns.

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Lesson 4: Missing Factors and Related Facts

Learning target

Solve unknown-factor equations and use fact families to verify.

Learn

In 7 × □ = 42, ask how many groups of 7 make 42, or use 42 ÷ 7 = 6. The missing factor is 6. For 6, 7 and 42 the related facts are 6 × 7 = 42, 7 × 6 = 42, 42 ÷ 6 = 7, and 42 ÷ 7 = 6. Division by zero is undefined.

Worked example

Solve □ × 8 = 40 by asking 40 ÷ 8. Check 5 × 8 = 40.

Apply your understanding

Explain the example to a teacher. Show it with a drawing or objects. Then complete the matching workbook practice.

Advanced extension

Create the complete related fact family for 4, 9 and 36.

Learning target

Model one- and two-step situations using appropriate operations and units.

Learn

Read what the problem asks and decide what is known. Equal groups can be modeled with multiplication; sharing or finding the number of groups can use division. In a two-step problem, label the intermediate quantity. For 4 boxes of 6 crayons with 5 used, $(4 \times 6) - 5 = 19$ crayons remain.

Worked example

There are 3 trays of 8 cups. If 7 cups are used, $3 \times 8 = 24$ and $24 - 7 = 17$ cups remain.

Apply your understanding

Explain the example to a teacher. Show it with a drawing or objects. Then complete the matching workbook practice.

Advanced extension

Write your own two-step equal-groups story, solve it and explain the units.