



**THIRD SPACE
LEARNING**

Math Intervention Pack

Finding fractions of a whole
number

Grade 5

How to use the resources

1. Title Slide

Use this slide to activate prior knowledge needed for lesson. Students should be encouraged to initially attempt the question presented independently.

2. Let's Learn

Use this slide to introduce the concept. Tutors should work with the student to explore the concept together, usually using diagrams to support understanding.

3. Follow Me + Your Turn

The tutor should work through the follow me slide, modeling the process and explaining their thinking out loud.

Students should use the your turn slide as an opportunity to work through a question similar to the follow me questions. They should apply the method modeled by the tutor in the follow me slide. Students should be encouraged to explain their thinking out loud.

4. You Do

Students should work through a range of questions that build in complexity.

Tutors can offer support but students should initially be encouraged to attempt these questions independently.

5. Go Further

Use this slide to allow students to apply their understanding to a more challenging question in an unfamiliar context.

6. Support for Slides

The support slide is used to support students during the lesson. In the tutor notes, there will be guidance as to when to use the support slide.

7. Check Your Understanding

Tutors should use this slide to assess the student's knowledge and whether or not they have mastered the concept within the lesson.

Standard

5.NF.4a: Interpret the product $(\frac{a}{b}) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. For example, use a visual fraction model to show $(\frac{2}{3}) \times 4 = \frac{8}{3}$, and create a story context for this equation. Do the same with $(\frac{2}{3}) \times (\frac{4}{5}) = \frac{8}{15}$. (In general, $(\frac{a}{b}) \times (\frac{c}{d}) = \frac{ac}{bd}$)

Key Mathematical Ideas

1. Find the fraction of a whole number by interpreting the product as equal parts of the whole.
2. Use visual fraction model to show how to find a fraction of a whole number

Overview

Terminology

- **Equal parts:** When a whole is divided equally, and each part represents the same amount
- **Fractions:** Part of a whole number
- **Numerator:** The top number of a fraction which tells the number of equal-sized parts of the whole
- **Denominator:** The bottom number of a fraction which tells the number of equal-sized pieces in the whole
- **Bar model:** A visual model used to solve math and word problems.

Sentence Stems

- of =
- $x \div y = \dots\dots$

Overview

Common Misconceptions

Common Misconceptions	Tutoring Strategies	Checks for Understanding
When you multiply by a fraction, your product will be a fraction.	Use of visual models, such as bar models, to show students that multiplying a whole number by a fraction will result in another whole number.	How does the visual model represent finding the fraction of the whole number?

Title Slide

If stuck

- Using a fraction when multiplying might be off-putting to some students.
- Have students look at the bar model alone and ask:
 - “What is being represented by this bar model?”
 - How many equal pieces equals 24?
 - Can you think of this as a division problem?

Answers

- Using the bar model, students should be able to recognize that you will divide 24 by 3, which is 8. $\frac{2}{3} = 16$

24		
8	8	

Let's Learn

If stuck

- Have students use the bar model to recognize that multiplying a fraction by a whole is similar to division.
- Use “let’s explore this more” slide.

Questions

- What is being represented by the bar model?
- How many equal pieces is 40 divided into?
- Can you think of this as a division problem?
- What is $40 \div 5$?
- How much is each part worth?

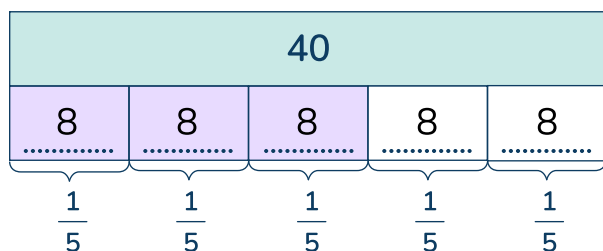
Watch out for

- Students believe that if you multiply two numbers, the product will be greater.
- Students assume when you multiply by a fraction, your product will always be a fraction.

Answers

a. 8 and 8

b. 8 and $8 = 24$



Follow Me

Modeling prompts

- We will be finding $\frac{4}{9}$ of 63.
- Let's find what $\frac{1}{9}$ of 63 is first.
- To do this, you will divide $63 \div 9$.
- $63 \div 9 = 7$
- Therefore, we know that each piece will be worth 7.
- We want 4 equal parts, or $\frac{4}{9}$ of 63.
- If one part is 7, we can multiply 7×4 to find 28.
- $7 \times 4 = 28$
- So $\frac{4}{9}$ of 63 = 28

Answers

- a. 7
- b. 7, 7 and 28

Your Turn

If stuck

- Have students use the bar model to recognize that multiplying a fraction by a whole is similar to division.

Questions

- What is being represented by the bar model?
- How many equal pieces is 56 divided into?
- Can you think of this as a division problem?
- What is $56 \div 8$?
- How much is each part worth?
- $\frac{1}{8} = ?$
- And $\frac{5}{8} = ?$

Watch out for

- Students believe that if you multiply two numbers, the product will be greater.
- Students assume when you multiply by a fraction, your product will always be a fraction.

Answers

a. 7

b. 7, 7 and 35

You Do

If stuck

- Have students use the bar model to recognize that multiplying a fraction by a whole is similar to division.

Questions

- What is being represented by the bar model?
- How many equal pieces is divided into?
- Can you think of this as a division problem?
- What is \div ?
- How much is each part worth?

Watch out for

- Students believe that if you multiply two numbers, the product will be greater.
- Students assume when you multiply by a fraction, your product will always be a fraction.

Answers

- a. 12
- b. 16
- c. 28
- d. 35

Go Further

If stuck

- Have students use the bar model to recognize that multiplying a fraction by a whole is similar to division.

Questions

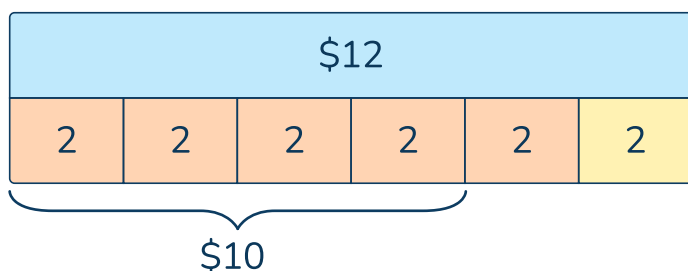
- Can you draw a bar model to represent this problem?
- What is $\frac{1}{6}$ of 12?
- $5 \times 2 = ?$
- $\frac{5}{6}$ of 12 = ?

Watch out for

- Students believe that if you multiply two numbers, the product will be greater.
- Students assume when you multiply by a fraction, your product will always be a fraction.

Answers

- \$10



Support for Slide(s)

This slide supports the Let's Learn slide.

If stuck

- The use of base-ten blocks provides students with an even simpler way to view the problem.

Questions

- How many units are in each group?
- What is $\frac{1}{5}$ of 40?
- What is $\frac{3}{5}$ of 40?

Answers

- a. 8
- b. 8
- c. 24

Check Your Understanding

Correct answers

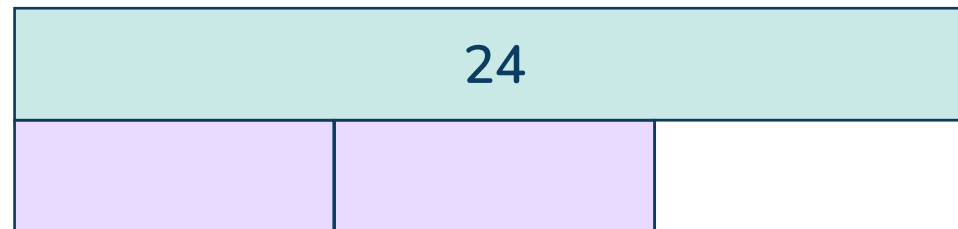
- b. 18
- a. Students may answer a if they divide 48 by the numerator 3 instead of the denominator 8, and then multiply the quotient to 8.
- b. B is the correct answer. Students get this answer by dividing the whole number 48 by the denominator 8 and multiplying the quotient by the numerator 3.
- c. Students may answer c if they get the wrong answer when dividing 48 by 8 (in this case they got 7 instead of 6) and multiplied their wrong answer by 3.
- d. Students may answer d if they divide the whole number 48 by the denominator 8 but forget to multiply the quotient by the numerator 3.

Today you will learn about

Finding fractions of a whole number

Warm-up question

Find $\frac{2}{3}$ of 24 using the bar model to help you.



Let's learn

When finding a fraction of a quantity, we need to divide the whole into **equal parts**.

Find $\frac{3}{5}$ of 40

First, the whole quantity needs to be divided into equal parts.

a As the denominator is 5, we divide 40 by 5.

$$40 \div 5 =$$

.....

Each part is worth

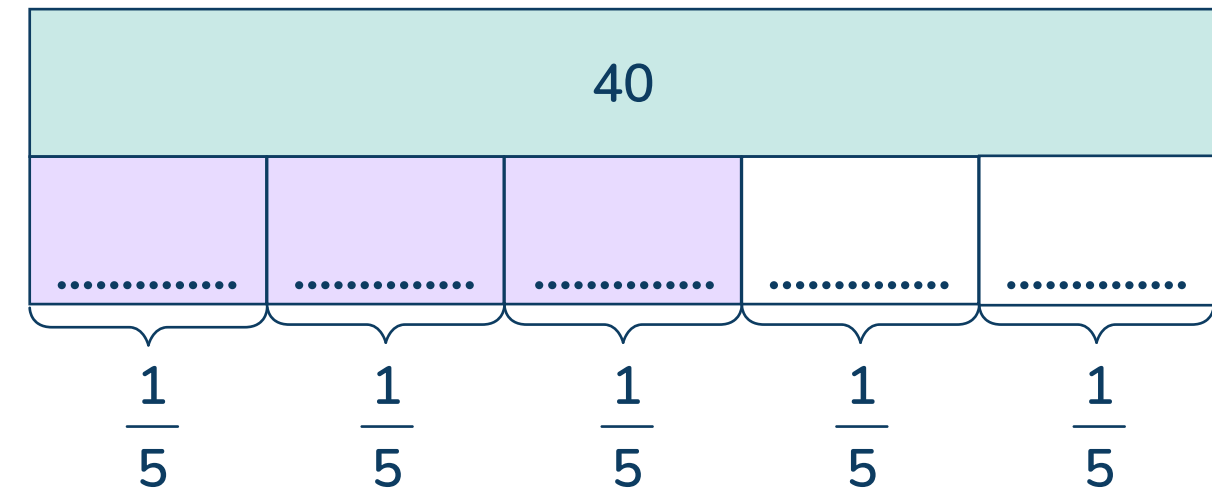
.....

b Each part of the bar model is $\frac{1}{5}$ of the whole.

$$\frac{1}{5} \text{ of } 40 =$$

.....

$$\text{So } \frac{3}{5} \text{ of } 40 = 3 \times \text{.....} = \text{.....}$$



The **denominator** shows how many equal parts to divide the whole into.

Follow me



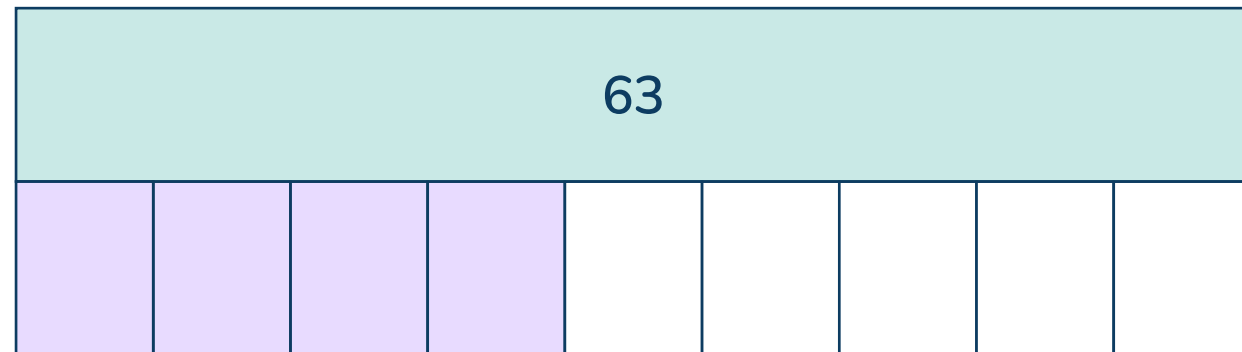
Let's look at this example.

$$\frac{4}{9} \text{ of } 63$$

a Find $\frac{1}{9}$ of 63 by dividing 63 by 9

$$63 \div 9 =$$

.....



b We want 4 equal parts or $\frac{4}{9}$ of 63

$$\frac{1}{9} \text{ of } 63 =$$

.....

$$\text{So } \frac{4}{9} \text{ of } 63 = \text{.....} \times 4 = \text{.....}$$

Your turn



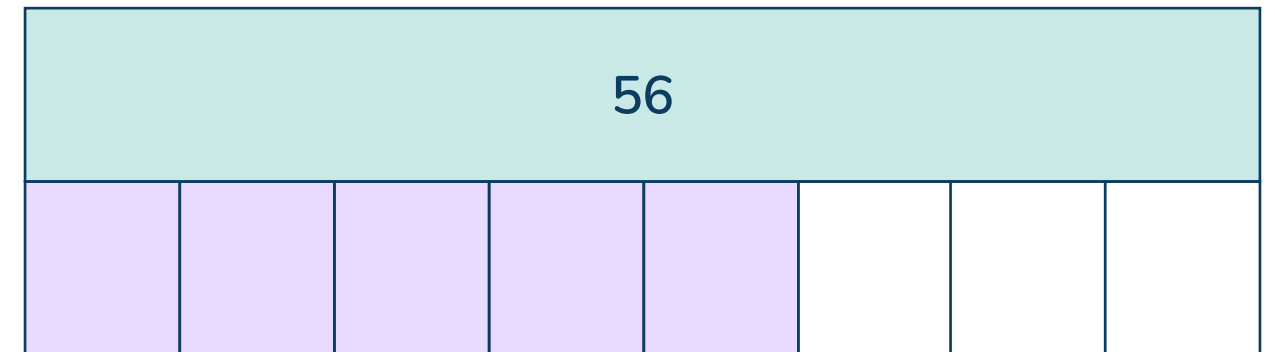
Now try this one.

$$\frac{5}{8} \text{ of } 56$$

a Find $\frac{1}{8}$ of 56 by dividing 56 by 8

$$56 \div 8 =$$

.....



b We want 5 equal parts or $\frac{5}{8}$ of 56

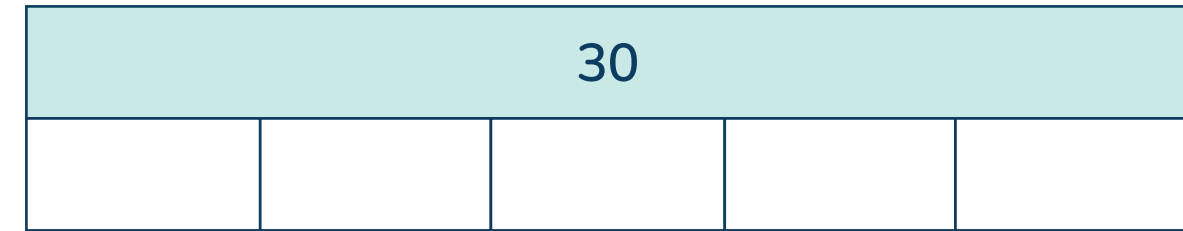
$$\frac{1}{8} \text{ of } 56 =$$

.....

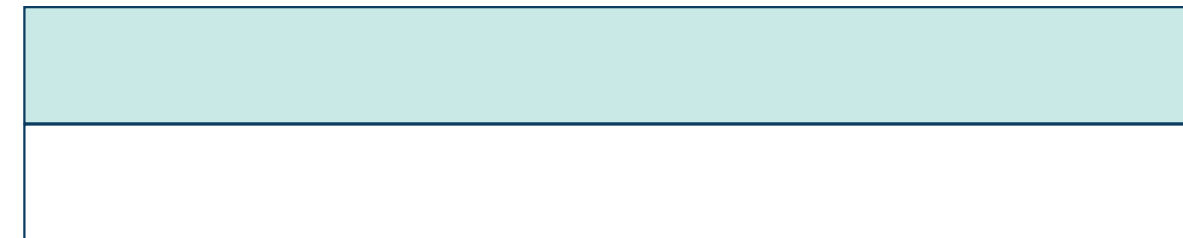
$$\text{So } \frac{5}{8} \text{ of } 56 = \text{.....} \times 5 = \text{.....}$$

Solve these problems, using the bar models if you get stuck.

a Find $\frac{2}{5}$ of 30 =



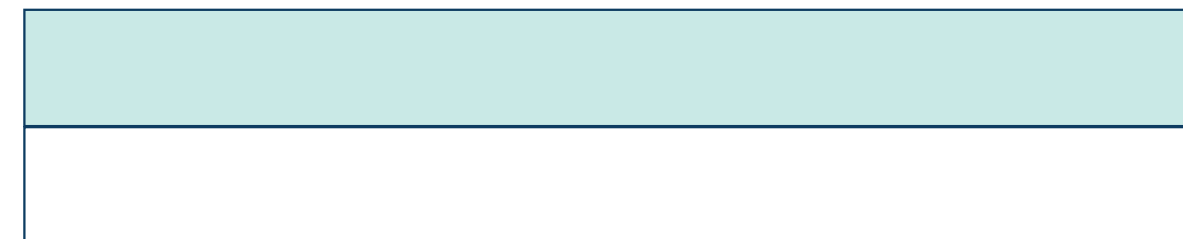
b Find $\frac{4}{7}$ of 28 =



c Find $\frac{7}{10}$ of 40 =



d Find $\frac{5}{6}$ of 42 =



Janice has \$12.

She spends $\frac{5}{6}$ of her money.

How much has she spent?

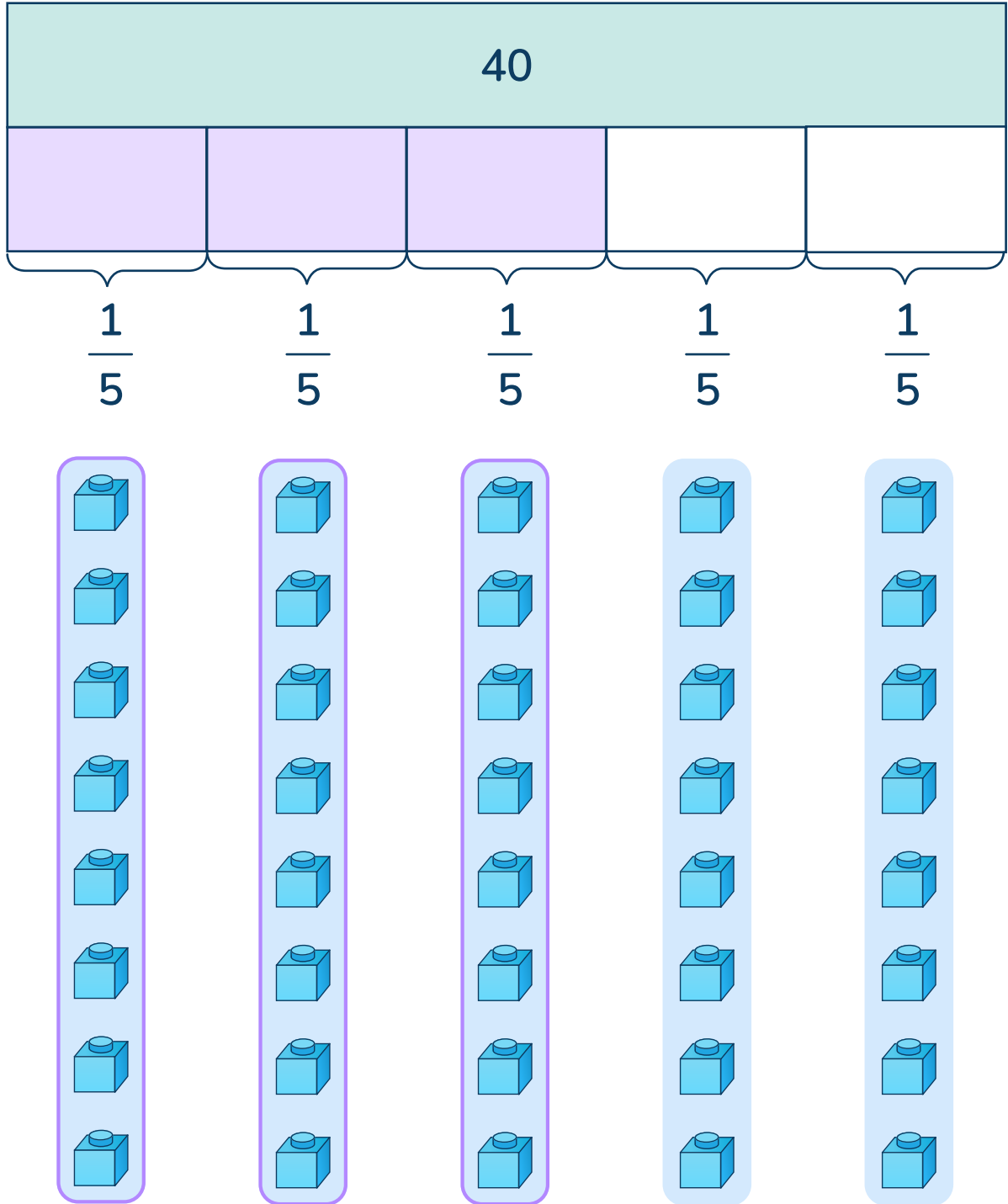
Let's look at finding $\frac{3}{5}$ of 40 using objects.

To find one fifth of 40, we need to divide 40 into 5 equal groups.

a There are cubes in each group.

b $\frac{1}{5}$ of 40 is

c $\frac{3}{5}$ of 40 is



Check your understanding

Find $\frac{3}{8}$ of 48

a

128

b

18

c

21

d

6

Why do I need to try this question on my own first?

- To show your tutor what you understand
- To give you more practice
- To show your teacher how you are doing



Do you have a group of students who need a boost in math?

Each student could receive personalized lessons every week from our specialist one-on-one math tutors.




- ✓ Differentiated instruction for each student
- ✓ Aligned to your state's standards
- ✓ Scaffolded learning to close gaps

“We just had our first session and it went great! The kids really liked it and felt like they were learning! One even said he finally felt like math was making sense.”



Michelle Craig, Instructional Coach,
Sherwood Forest Elementary, Washington

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