



**THIRD SPACE
LEARNING**

Math Intervention Pack

Understanding fractions as
parts of a whole

Grade 3

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

3.NF.1: Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$.

Key Mathematical Ideas

1. Understand a fraction as parts of a whole
2. Understand that the parts of a fraction must be equal in size
3. Determine the numerator and denominator of a fraction by a visual model.

Overview

Terminology

- **Denominator:** The number of equal-sized pieces in a whole, the number of members of a set with an identified attribute. The bottom number in a fraction.
- **Diagram:** a drawing used to describe something
- **Fraction:** A part of a whole number
- **Numerator:** The number in a fraction that indicates the number of parts of the whole that are being considered. The top number in a fraction.

Sentence Stems

- (fraction) of the shape is shaded.
- The numerator represents
- The denominator represents
- This shape (does/does not) represent a fraction.

Overview

Common Misconceptions

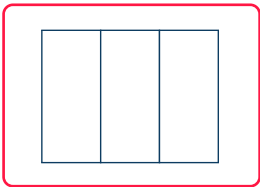
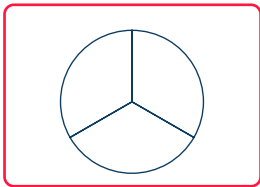
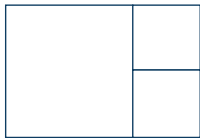
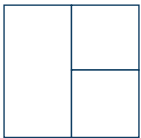
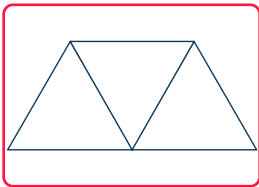
Common Misconceptions	Tutoring Strategies	Checks for Understanding
Students may think that a shape can be split anyway, but the pieces must be equal in size in order to represent a fraction.	Show students visual examples AND non-examples and compare the two.	Does this diagram represent a fraction? Why or why not?
Students may confuse numerator and denominator.	Continue to use the vocabulary throughout every slide and practice problem.	What does the numerator represent? What does the denominator represent?

Title Slide

If stuck

- Help students compare the pieces within each shape to determine if they are equal or not

Answers



Let's Learn

If stuck

- Remind students that the parts, or pieces, must be equal sized in order for the diagrams to represent the fractions.

Questions

- What is the top number of a fraction called? What does it represent?
- What is the bottom number of a fraction called? What does it represent?

Watch out for

- Make sure students understand that the pieces **MUST** be the same size in order for a diagram to represent a fraction.

Answers

- no
- yes
- no
- no

Follow Me

Modeling prompts

- This rectangle represents 1 whole.
- First, we need to determine how many parts this shape is divided, or split into. To do this, I will count the total number of pieces. (Count each piece.)
- This whole is divided into 5 equal parts.
- Now, we can count the shaded pieces.
- 3 of the parts are shaded.
- The total number of pieces is the denominator of the fraction, so I will write 5 in the pink box.
- The number of shaded pieces is the numerator of the fraction - so I will write 3 in the orange box.
- The fraction $\frac{3}{5}$ means that there are 3 one-fifths. One-fifth + one-fifth + one-fifth = three-fifths

Answers

- a. 5
- b. 3
- c. $\frac{3}{5}$
- d. $\frac{3}{5} = 3$

Your Turn

If stuck

- Encourage students to count the total number of pieces - explain that this represents the denominator of the fraction.
- Encourage students to then count the number of shaded pieces which is the numerator.

Questions

- What part of the diagram represents the numerator? What part represents the denominator?
- How is $\frac{5}{8}$ the same as 5 one-eighths?

Watch out for

- Students may confuse numerator and denominator.

Answers

a. 8

b. 5

c. $\frac{5}{8}$

d. $\frac{5}{8} = 3$

You Do

If stuck

- As needed, help students
 - Determine if there are equal pieces or not
 - Count the total number of pieces in each diagram
 - Count the number of shaded pieces in each diagram

Questions

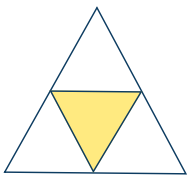
- How did you determine which shape in the first question represented the fraction? The other two shapes have 1 part shaded out of 4 parts - why don't these two shapes represent the fraction $\frac{1}{4}$?

Watch out for

- Make sure students understand that the pieces **MUST** be the same size in order for a diagram to represent a fraction.
- Students may confuse numerator and denominator.

Answers

a.



b. $\frac{1}{5}$ $\frac{5}{8}$ $\frac{5}{6}$

c.



Go Further

If stuck

- Encourage students to count the total number of window panes (including the broken windows) to find the denominator of the fraction. Then ask them to count just the broken windows to find the numerator.

Questions

- What fraction of the windows are broken?
- What fraction of the windows are not broken?

Watch out for

- Make sure students understand that the pieces **MUST** be the same size in order for a diagram to represent a fraction.
- Students may confuse numerator and denominator.

Answers

- $\frac{4}{9}$

Support for Slide(s)

This slide supports all slides.

If stuck

- Use this slide for an extra practice question

Questions

- What fraction of the paper was cut off?
- What fraction of the whole paper is left?

Answers

- $\frac{1}{4}$

Check Your Understanding

Correct answers

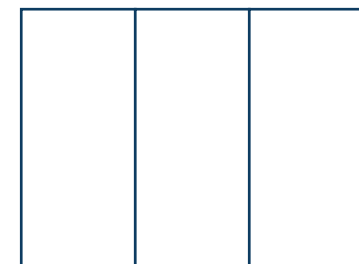
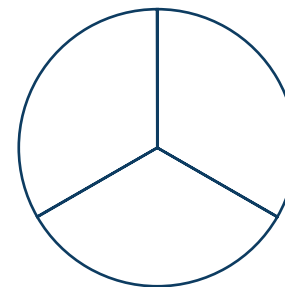
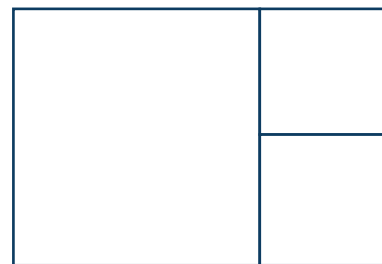
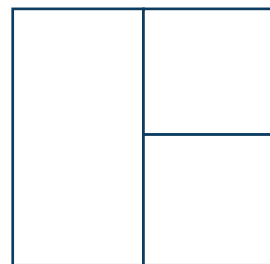
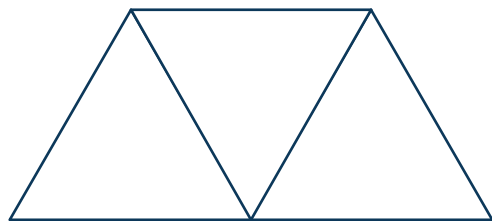
- $\frac{3}{8}$

Today you will learn about

Understanding fractions as parts of a whole

Warm up question

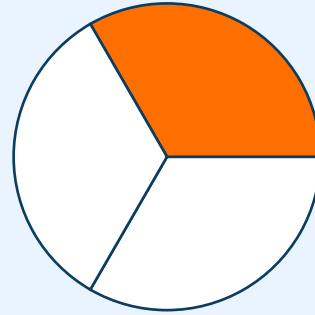
Which of these shapes have been split into 3 equal parts?



Let's learn

When showing fractions, the parts within a whole need to be **equal**.

The **whole** is divided into
3 equal parts.



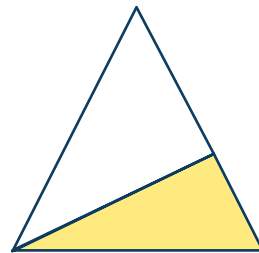
1 of these parts is shaded.

The **denominator**

$\frac{1}{3}$

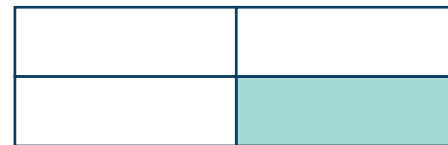
The **numerator**

a Does each diagram below show the given fraction? Write yes or no.



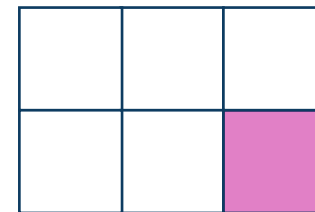
Is $\frac{1}{2}$ shaded?

.....



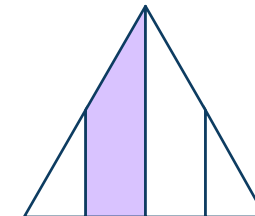
Is $\frac{1}{4}$ shaded?

.....



Is $\frac{1}{5}$ shaded?

.....



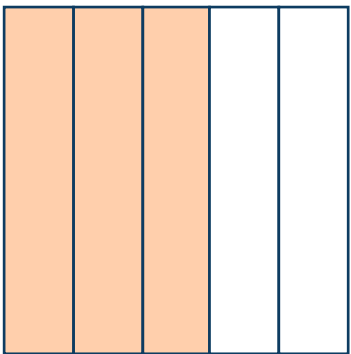
Is $\frac{1}{4}$ shaded?

.....

Follow me





Let's look at a fraction where the **numerator** is not 1.



a The whole is divided into equal parts.

b of those parts are shaded.

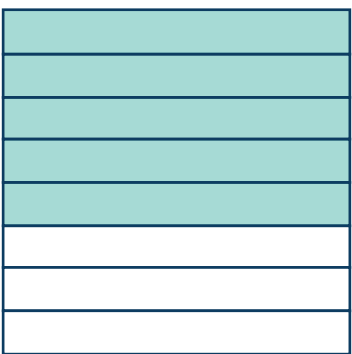
c  of the shape is shaded.

d  is one-fifths.

Your turn





Complete the sentences about the diagram.



a The whole is divided into equal parts.

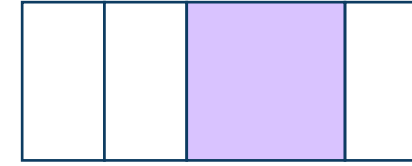
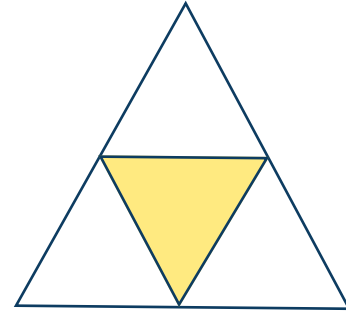
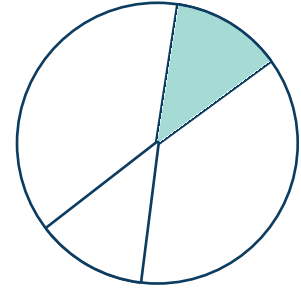
b of those parts are shaded.

c  of the shape is shaded.

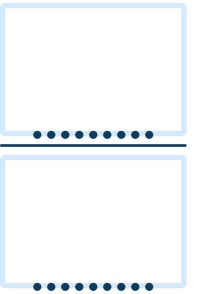
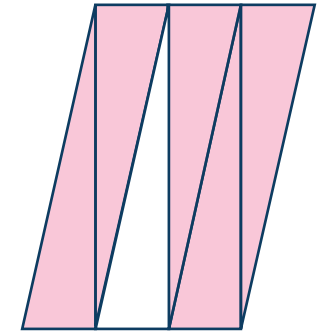
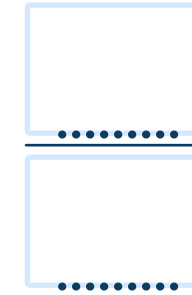
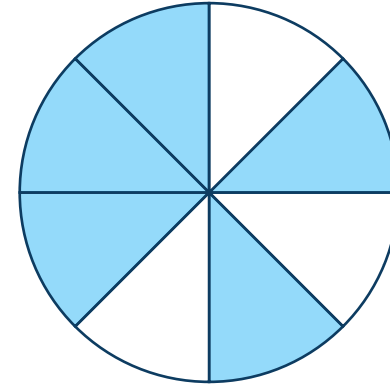
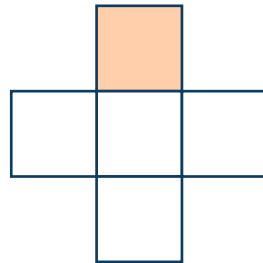
d  is one-eighths.

You do

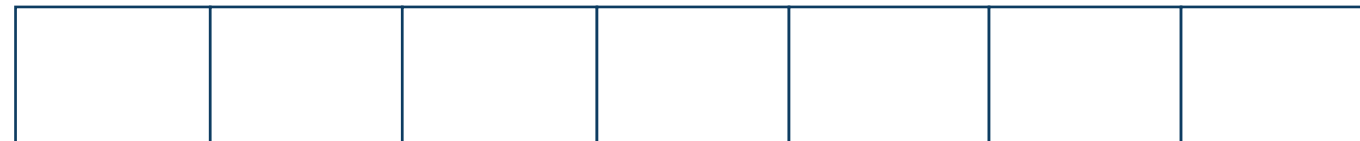
a Which shape has $\frac{1}{4}$ shaded?



b What fraction of each diagram is shaded?

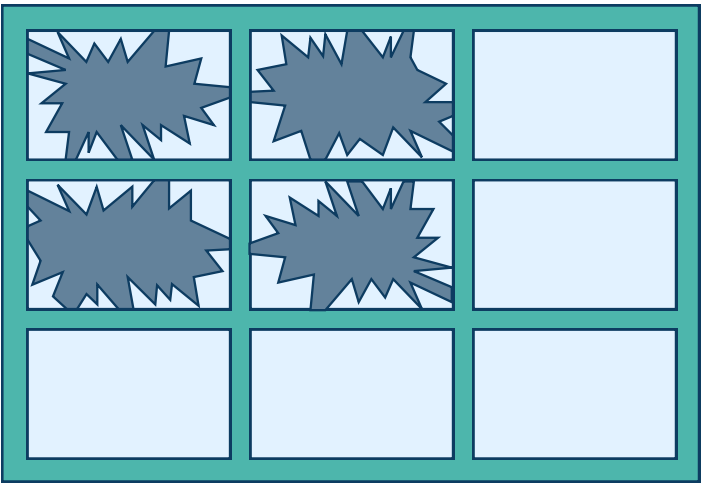


c Shade $\frac{2}{7}$ of this diagram.



Go further

Bella was playing football and accidentally broke some panes of glass in a window.



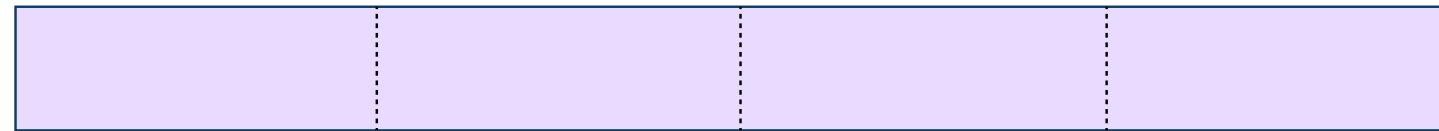
What fraction of the whole window will need new window panes?

.....

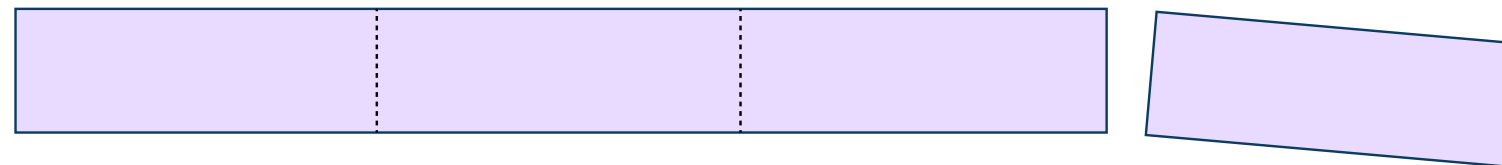
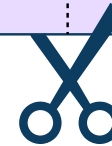
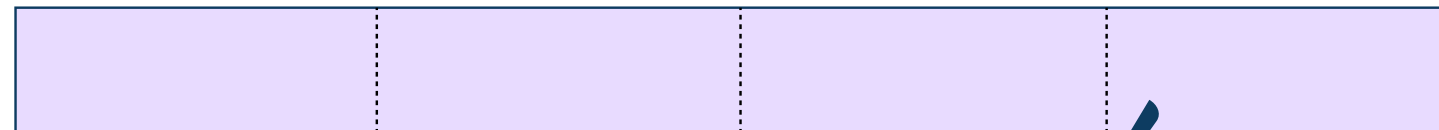
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Support

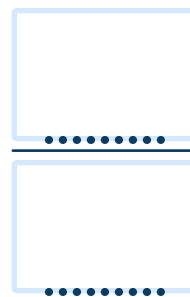
Let's look at using a strip of paper to help us understand fractions.



A strip of paper has been divided into **4 equal parts**.
Each equal part is **one-fourth** of the whole.



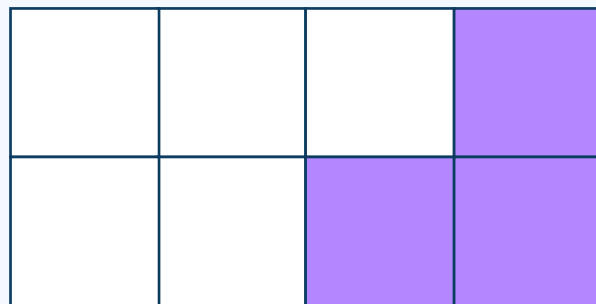
a



of the whole strip of paper has been cut off.

Check your understanding

What fraction of the diagram is shaded?






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?

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-  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

Speak to us

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