Learning Guide - ELA and Math

FOURTH GRADE
Section 1: Student Resource .......................................................pages 5-18
- Vocabulary
- Student Choice Board
- Student Answer Sheets

This section contains a list of skills that the students will be working on while reading and completing the tasks. Targeted vocabulary words have been identified. There are links to videos to provide students with the necessary background knowledge. There is a Student Choice Board in which students will select to complete 3 out of the 9 activities. Student answer sheets are provided for students to show their work.

Section 2: Student Text: Why the Sea is Salty (access in google folder)
- Text to use for Student Choice Board activities

This section provides a copy of the text to use for Shared Reading while in school and Student Choice Board activities while in school or at home (see Section1).

Section 3: Answer Key .................................................................pages 19-30
- Sample student replies

This section contains possible student replies for each activity from the Choice Board. This can be used to check the student’s work.
## Table of Contents Continued

All topics include student sheets and answer keys

- **Topic Overview: Review What You Know!** pages 32-35
- **Topic Overview: Factors** pages 36-39
- **Topic Overview: Multiples** pages 40-46
- **Topic Overview: Fraction Equivalence: Area Models and Number Lines** pages 47-54
- **Topic Overview: Generating Equivalent Fractions: Multiplication and Division** pages 55-59
- **Topic Overview: Comparing Fractions** pages 60-64
- **Topic Overview: Decomposing Fractions** pages 65-67
- **Topic Overview: Adding and Subtracting Fractions with Like Denominators** pages 68-74
- **Topic Overview: Adding and Subtracting Mixed Numbers** pages 75-85
ENGLISH LANGUAGE ARTS (ELA)
Grade: 4  Subject: English Language Arts

Topic: Why the Sea is Salty by Dot Meharry

Access the text HERE.

What Your Student is Learning:

Your student will read the fictional text, Why the Sea is Salty. While working with this text, your student will practice the following skills:

- Finding the main idea (theme) and supporting details in the text to describe setting
- Building their vocabulary knowledge in context
- Writing a summary of their reading that states and supports a theme
- Compare and contrast text to gain a deeper understanding of the theme
- Establish a situation and write to narrate

Background and Context for Parents and Guardians:

- In this unit, students read about how different cultures understand and interact with nature in different ways.
- They will learn how characters in a story interact with their surroundings through understanding setting, or where the story takes place.
- They will be asked to cite evidence (details) to describe a story's setting
- They will be asked to think about how an author compares and contrasts information within a text.
- They will also learn to use context clues to build their vocabulary around this topic.

Ways to support your student:

- Word Study- Review the vocabulary words listed below with your child. Practice using these words when talking about the text.

<table>
<thead>
<tr>
<th>wounds</th>
<th>crouching</th>
<th>wriggled</th>
</tr>
</thead>
<tbody>
<tr>
<td>tastier</td>
<td>measuring</td>
<td>chuckled</td>
</tr>
<tr>
<td>preserve</td>
<td>puzzled</td>
<td>plucked</td>
</tr>
<tr>
<td>mined</td>
<td>eagerly</td>
<td>salty</td>
</tr>
<tr>
<td>rough</td>
<td>chamber</td>
<td>ocean</td>
</tr>
<tr>
<td>giant</td>
<td>Philippines</td>
<td>sea</td>
</tr>
<tr>
<td>island</td>
<td>seasick</td>
<td>prawns</td>
</tr>
</tbody>
</table>

- Introduce the text by reading the title Why the Sea is Salty, and looking at the pictures
- Discuss what makes the story a legend or folktale (a cultural story passed on through generations)
- Read the text aloud with your child.
After reading, ask questions about the text. These questions could include:

- What did you think the text was mostly about?
- What do you think the author wanted you to know about the topic? That is an interesting point. What made you think that?
- What clues in the story tell you about the setting?
- What is the main difference between where the characters live?
- What challenges (problems) do the characters experience?
- What geographic locations are mentioned in the story?

**Online Resources for Students:**

**Video:** National Geographic- Sea Salt: Tears of the Earth
[https://www.youtube.com/watch?v=yJlYrDLHyow#action=share](https://www.youtube.com/watch?v=yJlYrDLHyow#action=share)

**Power Library:** is the online portal to all that Pennsylvania libraries offer. This is the place to find 24/7 access to newspapers, magazines, journals, historical documents and photos, online databases, and eBooks. Research a subject. Learn about your family history. Locate a title. Explore career options. It's all here at POWER Library.

Link: [https://sites.google.com/philasd.org/sdppowerlibrary/home](https://sites.google.com/philasd.org/sdppowerlibrary/home)

**Building Background Knowledge:** This article explains and provides support on why background knowledge is key to student’s being able to read with comprehension.

Link: [https://www.readingrockets.org/article/building-background-knowledge](https://www.readingrockets.org/article/building-background-knowledge)

NOTE: There is a parent/guardian-friendly answer key at the end of this packet that you can use to help your student.
**Tic-Tac-Toe Choice Board 1: Why the Sea is Salty**

**Directions:** Read the book *Why the Sea is Salty*. Choose 4 activities from the choice board below. You should complete at least one task from each row.

<table>
<thead>
<tr>
<th>Row</th>
<th>Activity 1</th>
<th>Activity 2</th>
<th>Activity 3</th>
</tr>
</thead>
</table>
| 1   | Skim and scan at the pages of *Why the Sea is Salty*  
Pay attention to the pictures and the section headings.  
Write:  
- 3 things that stood out to you  
- 3 questions you have about the book.  
- A prediction about the book. |
|     | Look at the images in the text *Why the Sea is Salty* and choose 2 that show the setting of the story  
List:  
- 3 things you notice as you look at the images.  
- 3 things you wonder about the images. |
|     | Word Study: Read the Vocabulary Chart  
1. Find the sentence where the author uses each word.  
2. Choose two of the words.  
3. Write a sentence with each word you chose |

<table>
<thead>
<tr>
<th>Row</th>
<th>Activity 4</th>
<th>Activity 5</th>
<th>Activity 6</th>
</tr>
</thead>
</table>
| 2   | Read pages **Chapter 1** of *Why the Sea is Salty*  
Complete a details web organizer explaining how the people used salt. |
|     | Read pages **Chapter 2** of *Why the Sea is Salty*  
Complete a details web graphic organizer on the giant. |
|     | Reread pages **Chapter 3** of *Why the Sea is Salty*. Pull out details from the text to discuss the villagers’ problem  
Complete a details web graphic organizer on the storm. |

<table>
<thead>
<tr>
<th>Row</th>
<th>Activity 7</th>
<th>Activity 8</th>
<th>Activity 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Read aloud <em>Why the Sea is Salty</em> to someone. Complete a Problem/Solution graphic organizer</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Think about the story events in order. Retell the story to someone at home. Use the plot summary graphic organizer to help you share the story.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Journal Writing: <em>Why the Sea is Salty</em> is a cultural story passed on from generation to generation. The author Dot Meharry retold the this legend in her own words. Think about other folktales and legends such as Paul Bunyun, John Henry, and Anansi. Write a summary that includes conclusion or lesson the reader learns from the story.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Task 1: Preview the Text

Skim and scan the pages of Why the Sea is Salty.

Pay attention to the pictures and the section headings.

<table>
<thead>
<tr>
<th>Write 3 things that stood out to you as you looked through the book:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Write 3 questions you have about the book:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Think Ahead: Write your prediction about the book:</th>
</tr>
</thead>
</table>


Task 2: Preview the Text

Starting with the cover, look at the images in *Why the Sea is Salty*. Complete a 3-2-1

<table>
<thead>
<tr>
<th>Write 3 things that you noticed while looking at the cover picture:</th>
</tr>
</thead>
<tbody>
<tr>
<td>●</td>
</tr>
<tr>
<td>●</td>
</tr>
<tr>
<td>●</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Write 2 questions you have about the picture:</th>
</tr>
</thead>
<tbody>
<tr>
<td>●</td>
</tr>
<tr>
<td>●</td>
</tr>
</tbody>
</table>

Deep Reading of an Image. Look at the picture details. Write 1 sentence about the picture clues that tell what type of story you are reading:

| ● |
Task 3: Preview the Text

**Word Study:** Practice reading the story vocabulary. Choose two words from each column. Write a complete sentence with each word you chose. Refer back to the text to check for meaning.

<table>
<thead>
<tr>
<th>Word 1:</th>
<th>Sentence:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Word 2:</td>
<td>Sentence:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Word 3:</td>
<td>Sentence:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Word 4:</td>
<td>Sentence:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Word 5:</td>
<td>Sentence:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Word 6:</td>
<td>Sentence:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Task 4: Engage with the Text

Read Chapter 1 of *Why the Sea is Salty*.

Complete a details web organizer explaining how the people used salt.
Task 5: Engage with the Text

Read Chapter 2 of *Why the Sea is Salty*.

Complete a details web graphic organizer on the giant.
Task 6: Engage with the Text

Read Chapter 3 of Why the Sea is Salty.

Complete a details web graphic organizer on the storm.
Task 7: Problem/ Solution Analysis

Reread the story aloud. Think about the how the setting presents problems for characters. As you read, make predictions and brainstorm solutions.

Using information from the Main Idea and Details Web graphic organizers, complete the Problem and Solution chart.
Task 8: Plot Summary

Title:

Author:

How does the story begin?

What is the big problem the characters have?

How do the characters try to solve the problem?

How does the story end?
Task 9: Journal Writing

Use your main idea graphic organizer(s) to write a summary of the text. Think about what makes this story a legend or tall tale.

Remember, the summary should include the most important information from each part of the text and the lesson or moral of the story.
Task 10: Extended Writing

Narrative Task: Think about other legends or folktales. Use these stories as a model. Be an author like Dot Meharry. Write your own Tall Tale.

Directions- Write a tall tale that includes:

● An element of nature
● Elements of the genre: larger-than-life characters
● A problem that is solved in a humorous way
● Exaggeration of characters and events
Extend the Learning

Explore: We are learning that stories can be told from different points of view. Reread the story *Why the Sea is Salty* and think about the main difference in setting between where the islanders live and where the giant lives? Think about how the setting impacts the story. Use a Venn Diagram graphic organizer to compare and contrast the lives of the islanders and the giant. Write how they are different and alike. Share what you learned with someone at home.
**Task 1: Preview the Text**

Skim and scan the pages of *Why the Sea is Salty*.

Pay attention to the pictures and the section headings.

<table>
<thead>
<tr>
<th>Write 3 things that stood out to you as you looked through the book:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The fish hanging from sticks on page 7.</td>
</tr>
<tr>
<td>2. The feet of the boy appear in many of the pictures.</td>
</tr>
<tr>
<td>3. The titles of the chapters mostly begin with &quot;The.&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Write 3 questions you have about the book:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Who are the characters in the story?</td>
</tr>
<tr>
<td>2. Why are the fish hanging on sticks?</td>
</tr>
<tr>
<td>3. Who is the giant in the story?</td>
</tr>
</tbody>
</table>

**Think Ahead: Write your prediction about the book:**

I think this story tells us that a giant boy made the sea salty.
Task 2: Preview the Text

Starting with the cover, look at the images in *Why the Sea is Salty*. Complete a 3-2-1

<table>
<thead>
<tr>
<th>Write 3 things that you noticed while looking at the cover picture:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• There's a boy with a basket.</td>
</tr>
<tr>
<td>• The boy is like in the sky spilling salt.</td>
</tr>
<tr>
<td>• Looks like a big eye on the back.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Write 2 questions you have about the picture:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Is the boy spilling salt?</td>
</tr>
<tr>
<td>• Is that an eye in the back?</td>
</tr>
</tbody>
</table>

Deep Reading of an Image. Look at the picture details. Write 1 sentence about the picture clues that tell what type of story you are reading:

• The type of story is fiction because the boy is on the sky. The cover shows me that the boy is spilling something and that can be the salt.
Task 3: Preview the Text

Word Study: Practice reading the story vocabulary. Choose two words from each column. Write a complete sentence with each word you chose. Refer back to the text to check for meaning.

<table>
<thead>
<tr>
<th>Word 1: rough</th>
<th>Sentence: The ride was rough because the street was damaged.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word 2: island</td>
<td>Sentence: I have family who live on an island.</td>
</tr>
<tr>
<td>Word 3: measuring</td>
<td>Sentence: The teacher was measuring the border to cut it.</td>
</tr>
<tr>
<td>Word 4: seasick</td>
<td>Sentence: My sister went on a cruise and got seasick.</td>
</tr>
<tr>
<td>Word 5: chuckled</td>
<td>Sentence: Anytime I'm with my best friend I chuckle.</td>
</tr>
<tr>
<td>Word 6:</td>
<td>Ocean</td>
</tr>
<tr>
<td>--------</td>
<td>-------</td>
</tr>
<tr>
<td>Sentence:</td>
<td>In Philadelphia we do not live near the ocean.</td>
</tr>
</tbody>
</table>
Task 4: Engage with the Text

Read Chapter 1 of *Why the Sea is Salty*.

Complete a main idea and key details graphic organizer for the section.

**Main Idea**

People needed salt for many reasons.

**Key Details**

- They needed salt to bathe their wounds.
- They used salty water to wash their mouths and clean their teeth.
- The people liked salt in their food.
Task 5: Engage with the Text

Read Chapter 2 of *Why the Sea is Salty*.

Complete a details web graphic organizer on the giant.

- He was generous.
- He wanted to help the people.
- He had a cave full of salt.
- He gave salt to the people.
Task 6: Engage with the Text

Read Chapter 3 of *Why the Sea is Salty*.

Complete a details web graphic organizer for the section.

```
Villagers went out to get salt.

A storm did not allow the villagers to leave.

A boy asked his father if he could go get salt.

The father of the boy said it was a risk to go get salt.
```
Task 7: Problem/ Solution Analysis

Reread the story aloud. Think about the how the setting presents problems for characters. As you read, make predictions and brainstorm solutions.

Using information from the Main Idea and Details Web graphic organizers, complete the Problem and Solution chart.

**Problem:**
The villagers had to go to the Giant's island by boat to get salt.

**Solution:**
The boy thought of using the giants' legs as a bridge from one island to the other.
Task 9: Journal Writing

Use your main idea graphic organizer(s) to write a summary of the text. Think about what makes this story a legend or tall tale.

Remember, the summary should include the most important information from each part of the text and the lesson or moral of the story.

In the story, Why the Sea is Salty, the people use salt for many things. They use it for health, to clean and to season food. The people got the salt from a Giant's island. The giant was generous and good.

One day, there was a storm. The people weren't able to get salt. A boy who was with his father went to get salt and the boy got seasick. The boy thought of an idea. The idea was to use the giant's legs as a bridge from one island to the other. The giant thought it was a good idea because he wanted to help the people and also get food from them. The giant was able to use his legs as a bridge and the people were able to get salt.
**Task 10: Extended Writing**

**Narrative Task:** Think about other legends or folktales. Use these stories as a model. Be an author like Dot Meharry. Write your own Tall Tale.

**Directions:** Write a tall tale that includes:
- An element of nature
- Elements of the genre: larger-than-life characters
- A problem that is solved in a humorous way
- Exaggeration of characters and events

| Once, there was a boy who lived in a farm. The boy had a giant cow that gave a lot of milk. The cow loved to eat chocolate but it was hard to find chocolate near the farm. One day a family came to visit the farm from the city. There was a girl who also loved chocolate and had a big bag full of delicious chocolate. When the girl saw the giant cow, she was very surprised and excited. The girl gave the cow a lot of chocolate. That afternoon when the boy went to milk the cow he noticed the milk was brown. He did not know the cow had eaten all that chocolate. He tried the milk and it tasted like |
chocolate. The chocolate gave chocolate milk.

Extend the Learning

Explore: We are learning that stories can be told from different points of view. Reread the story Why the Sea is Salty and think about the main difference in setting between where the islanders live and where the giant lives? Think about how the setting impacts the story. Use a Venn Diagram graphic organizer to compare and contrast the lives of the islanders and the giant. Write how they are different and alike. Share what you learned with someone at home.

Different

Giants Island
- Had a lot of salt.
- Had caves to store the salt.
- Only the giant lived there.

Alike

It is an island
- The had food.

Different

Villager's Island
- Did not have a lot of salt.
- There wasn't any caves.
- Many people lived there.
Math
**Grade: 4  Subject: Math** (from enVision Mathematics, Common Core, 2020, Grade 4)

<table>
<thead>
<tr>
<th><strong>Topic:</strong> Review What You Know!</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What Your Student is Learning:</strong> Understanding fraction equivalence, comparing fractions, and understanding addition and subtraction of fractions</td>
</tr>
</tbody>
</table>
| **Background and Context for Parents:** *How can we tell if two fractions are equal? When fractions have different numerators and denominators, how can we tell which is smaller or larger? How can we show addition and subtraction of fractions using models like number lines and fraction strips? Without models?*

These are all questions your child will be answering over the course of the next two units. In order to successfully engage with the content, students will need to have a solid understanding of the basics of fractions. The next two workbook pages ask your child to review some of those foundational concepts.

<table>
<thead>
<tr>
<th><strong>Ways to support your student:</strong> Work through the next two pages with your child.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask questions along the way that support understanding, such as,</td>
</tr>
<tr>
<td>How did you get your answer?</td>
</tr>
<tr>
<td>Does that always work?</td>
</tr>
<tr>
<td>What strategy did you use?</td>
</tr>
<tr>
<td>Can you explain what you did?</td>
</tr>
<tr>
<td>Can you draw a picture or a model to show your thinking?</td>
</tr>
<tr>
<td>Do you see a pattern?</td>
</tr>
<tr>
<td>How would you explain what you know right now?</td>
</tr>
<tr>
<td>Does your answer make sense?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Online Resources for Students:</strong> For any areas that may need extra support, there are many videos that can provide extra examples explains. Google “Khan Academy + ___________”, such as “Khan Academy unit fractions”</th>
</tr>
</thead>
</table>
Review What You Know

Vocabulary
Choose the best term from the box. Write it on the blank.

1. A symbol, such as \( \frac{2}{3} \) or \( \frac{1}{2} \), used to name part of a whole, part of a set, or a location on a number line is called a _________.

2. The number above the fraction bar in a fraction is called the _________.

3. A fraction with a numerator of 1 is called a _________.

Unit Fractions
Write a fraction for each statement.

4. 2 copies of \( \frac{1}{6} \) is _________.
5. 3 copies of \( \frac{1}{3} \) is _________.
6. 4 copies of \( \frac{1}{5} \) is _________.
7. 2 copies of \( \frac{1}{10} \) is _________.
8. 7 copies of \( \frac{1}{12} \) is _________.
9. 3 copies of \( \frac{1}{8} \) is _________.

Fraction Concepts
Write the fraction shown by each figure.

10. 
11. 
12. 

13. 
14. 
15. 

Parts of Wholes
16. Construct Arguments Is \( \frac{1}{4} \) of the figure below green? Explain.

17. This picture shows a square. Shade in \( \frac{3}{4} \) of the square.
Review What You Know

**Vocabulary**
Choose the best term from the box. Write it on the blank.

1. In $\frac{2}{3}$, 2 is the _______ of the fraction and 3 is the _______ of the fraction.

2. Fractions that name the same region or part of a segment are called ________.

**Equivalent Fractions**
Write the missing values to show pairs of equivalent fractions.

3. $\frac{2}{3} = \frac{\_}{6}$  
4. $\frac{\_}{4} = \frac{3}{12}$
5. $\frac{6}{5} = \frac{\_}{10}$
6. $\frac{1}{2} = \frac{50}{\_}$
7. $\frac{1}{5} = \frac{\_}{10}$
8. $\frac{3}{\_} = \frac{30}{100}$

**Benchmark Fractions**
Use the number line to find a benchmark fraction or whole number for each given fraction.

9. $\frac{11}{12}$ is close to _______.
10. $\frac{8}{12}$ is close to _______.
11. $\frac{2}{6}$ is close to _______.

**Problem Solving**
12. Adult admission to the dog show is $16. Children’s admission is $9. How much would it cost 3 adults and 2 children to enter the dog show?

13. Meg saved coins she found for a year. She found a total of 95 pennies, 13 nickels, 41 dimes, and 11 quarters. She would like to evenly divide the coins into 4 piggy banks. How many coins will go in each piggy bank?
Review What You Know

Vocabulary
Choose the best term from the box. Write it on the blank.

1. A symbol, such as $\frac{2}{3}$ or $\frac{1}{2}$, used to name part of a whole, part of a set, or a location on a number line is called a **fraction**.

2. The number above the fraction bar in a fraction is called the **numerator**.

3. A fraction with a numerator of 1 is called a **unit fraction**.

Unit Fractions
Write a fraction for each statement. **Sample answers given.**

4. 2 copies of $\frac{1}{6}$ is $\frac{2}{6}$.
5. 3 copies of $\frac{1}{3}$ is $\frac{3}{3}$.
6. 4 copies of $\frac{1}{5}$ is $\frac{4}{5}$.
7. 2 copies of $\frac{1}{10}$ is $\frac{2}{10}$.
8. 7 copies of $\frac{1}{12}$ is $\frac{7}{12}$.
9. 3 copies of $\frac{1}{8}$ is $\frac{3}{8}$.

Fraction Concepts
Write the fraction shown by each figure.

10. $\frac{1}{2}$
11. $\frac{3}{8}$
12. $\frac{2}{6}$
13. $\frac{1}{3}$
14. $\frac{5}{10}$
15. $\frac{2}{4}$

Parts of Wholes
16. **Construct Arguments** Is $\frac{1}{4}$ of the figure below green? Explain.

   No; Sample answer: There are 5 equal parts, so $\frac{1}{5}$ is green.

17. This picture shows a square. Shade $\frac{3}{4}$ of the square.
**What Your Student is Learning:** Factors of a number \( n \) can be shown by arranging \( n \) counters into rows with the same number of counters in each row. The number of rows and the number of counters in each row are **factors** of \( n \). Factors of a number can be found in pairs by thinking about multiplication.

**Background and Context for Parents:** Students are working to understand the meaning of factors and multiples, by building on their understanding of multiplication. They work to focus on how the concepts of prime and composite numbers are developed through an understanding of factors. Factors are numbers that are multiplied together to get a product. Visual representations such as arrays and grids help show the relationship between a number and its factors.

**Ways to support your student:**
- Using the same objects, such as pennies, say a number. Have your child show all the ways to arrange that number of objects in rectangular arrays. Record each arrangement as a multiplication expression. Talk about why some arrangements do not work. After recording all of the possible expressions, have your child look for patterns in the factors and use that pattern to identify factor pairs.
- Give your child a random number and ask them to find all of the factor pairs. Take turns being the questioner and the checker.
- Questions to ask your student as they are working:
  - How do you know when you have found all of the factors for a number?
  - How can I tell if 4 is a factor of 20? What about is 40 is a factor of 30?
  - What are two examples of factor pairs?
Online Resources for Students: https://www.ixl.com/math/grade-4/identify-factors
Vocabulary

1. Numbers multiplied together to find a product are called factors.

\[ 4 \times 6 = 24 \]
Factors

\[ 2 \times 3 \times 7 = 42 \]
Factors

The factors are _____ and _____.
The factors are _____, _____, and _____.
The product is _____.
The product is _____.

2. What are the factors of 8?

Use the arrays to help write the missing factors.

1 row of 8 \[ \underline{1} \times 8 = 8 \]
8 rows of 1 \[ \underline{8} \times 1 = 8 \]
2 rows of 4 \[ \underline{2} \times 4 = 8 \]
4 rows of 2 \[ \underline{4} \times 2 = 8 \]

There are _____ possible ways to arrange 8.
List the factors of 8.

_____  _____  _____

3. Draw all the possible arrays for 16 on the grid at the right.

There are _____ possible arrays for 16.

Use the arrays to help write the factors.

_____ row of 16 \[ \underline{1} \times \underline{16} = 16 \]
_____ rows of 1 \[ \underline{1} \times \underline{16} = 16 \]
_____ rows of 8 \[ \underline{8} \times \underline{2} = 16 \]
_____ rows of 2 \[ \underline{2} \times \underline{8} = 16 \]
_____ rows of 4 \[ \underline{4} \times \underline{4} = 16 \]

List the factors of 16.

_____  _____  _____

On the Back!

4. Find all the possible factors of 18. Use a grid to help.
1. Numbers multiplied together to find a product are called factors.

\[ 4 \times 6 = 24 \]
Factors
The factors are \(4\) and \(6\).
The product is \(24\).

\[ 2 \times 3 \times 7 = 42 \]
Factors
The factors are \(2\), \(3\), and \(7\).
The product is \(42\).

2. What are the factors of 8?

Use the arrays to help write the missing factors.

- 1 row of 8
- 8 rows of 1
- 2 rows of 4
- 4 rows of 2

There are 4 possible ways to arrange 8.

List the factors of 8.

1, 2, 4, 8

3. Draw all the possible arrays for 16 on the grid at the right.

There are 5 possible arrays for 16.

Use the arrays to help write the factors.

\[ 1 \times 16 = 16 \]
\[ 16 \times 1 = 16 \]
\[ 2 \times 8 = 16 \]
\[ 8 \times 2 = 16 \]
\[ 4 \times 4 = 16 \]

List the factors of 16.

1, 2, 4, 8, 16

On the Back!

4. Find all the possible factors of 18. Use a grid to help.

1, 2, 3, 6, 9, 18
**Topic:** Multiples

**What Your Student is Learning:** After learning about factors, students learn that a whole number is a multiple of each of its factors.

**Background and Context for Parents:** Factors and multiples are closely related. For example,

Example 1: Factors of 18: 1, 2, 3, 6, 9, 18

18 is a multiple of 1, a multiple of 2, a multiple of 3, a multiple of 6, a multiple of 9 and a multiple of 18

Example 2: Find five multiples of 7.

7 x 1 = 7  
7 x 2 = 14  
7 x 3 = 21  
7 x 4 = 28  
7 x 5 = 35

Students will use the concept of factors and multiples later to write equivalent fractions.

**Ways to support your student:**
- Ask your student to list out the first ten multiples of 3, 6, and 7. What observations can they make based on the list? What do they notice? What do they wonder?
- Tell them that people often get factors and multiples confused. Ask them, “How would they describe what a factor is? What a multiple is? How are they related?”
- Take turns practicing your multiples by skip counting (Counting by 4s, 7s, 9s, etc)
Another Look!
What are some multiples of 7?

**Step 1** Find the column (or row) for 7.

**Step 2** All the numbers in that column (or row) are multiples of 7.

In the chart, the multiples of 7 are 7, 14, 21, 28, 35, 42, 49, 56, and 63.

7, 14, 21, 28, 35, 42, 49, 56, and 63 are multiples of 7 because

1 × 7 = 7, 2 × 7 = 14, 3 × 7 = 21, and so on.

For 1–8, write five multiples of each number.

1. 12
2. 18
3. 40
4. 16

5. 100
6. 25
7. 50
8. 63

For 9–20, tell whether the first number is a multiple of the second number.

9. 21, 7
10. 28, 3
11. 17, 3
12. 20, 4

13. 55, 5
14. 15, 5
15. 26, 4
16. 32, 8

17. 48, 7
18. 60, 2
19. 79, 4
20. 81, 3
21. Is 6 a multiple or a factor of 12?

22. Is 8 a multiple or a factor of 4?

23. What number has factors of 2 and 3 and 12 and 18 as multiples?

24. What numbers have 12, 24, and 36 as multiples?

Make a list of the numbers that can be divided evenly by 2 and 3.

Make a list of the numbers that divide evenly into 12, 24, and 36.

For 25 and 26, use the table at the right.

25. Paulo’s family arrived at the reunion at 8:30 A.M. How long do they have before the trip to Scenic Lake Park?

26. How much longer is dinner than the slide show?

Suarez Family Reunion Schedule

- Trip to Scenic Lake Park: 10:15 A.M. to 2:30 P.M.
- Slide show: 4:15 P.M. to 5:10 P.M.
- Dinner: 5:30 P.M. to 7:00 P.M.
- Campfire: 7:55 P.M. to 9:30 P.M.

27. Carmen listed the multiples of 24 as 1, 2, 3, 4, 6, 8, 12, and 24. Is she correct? Explain why or why not.

28. Higher Order Thinking What is the least multiple 6 and 8 have in common? Explain.

Assessment Practice

29. Which numbers are NOT multiples of 6? Write all the numbers that are NOT multiples of 6.

30. Which multiples do 3 and 5 have in common? Write all the common multiples of 3 and 5.
**Multiples or Factors?**

Look at the numbers in each box. Circle if they are multiples or factors, and write the number.

1. Factors of ________
   Multiples
   \[
   \begin{array}{ccc}
   6 & 2 & \text{ } \\
   3 & 1 & \text{ } \\
   \end{array}
   \]

2. Factors of ________
   Multiples
   \[
   \begin{array}{ccc}
   16 & 40 & \text{ } \\
   24 & 56 & \text{ } \\
   \end{array}
   \]

3. Factors of ________
   Multiples
   \[
   \begin{array}{ccc}
   15 & 25 & 40 \\
   \end{array}
   \]

4. Factors of ________
   Multiples
   \[
   \begin{array}{cc}
   2 & 4 \\
   \end{array}
   \]

Read the label for each box.
Write at least three numbers in each box that match the description.

5. Multiples of 3
   
   

6. Factors of 9
   
   

7. Factors of 8
   
   

8. Multiples of 7
   
   


ANSWER KEY

Another Look!

What are some multiples of 7?

Step 1 Find the column (or row) for 7.

Step 2 All the numbers in that column (or row) are multiples of 7.

In the chart, the multiples of 7 are 7, 14, 21, 28, 35, 42, 49, 56, and 63.

7, 14, 21, 28, 35, 42, 49, 56, and 63 are multiples of 7 because 1 \times 7 = 7, 2 \times 7 = 14, 3 \times 7 = 21, and so on.

For 1–8, write five multiples of each number.

1. 12
   12, 24, 36, 48, 60
2. 18
   18, 36, 54, 72, 90
3. 40
   40, 80, 120, 160, 200
4. 16
   16, 32, 48, 64, 80
5. 100
   100, 200, 300, 400, 500
6. 25
   25, 50, 75, 100, 125
7. 50
   50, 100, 150, 200, 250
8. 63
   63, 126, 189, 252, 315

For 9–20, tell whether the first number is a multiple of the second number.

9. 21, 7
   Yes
10. 28, 3
    No
11. 17, 3
    No
12. 20, 4
    Yes
13. 55, 5
    Yes
14. 15, 5
    Yes
15. 26, 4
    No
16. 32, 8
    Yes
17. 48, 7
    No
18. 60, 2
    Yes
19. 79, 4
    No
20. 81, 3
    Yes
21. Is 6 a multiple or a factor of 12?
   Factor

22. Is 8 a multiple or a factor of 4?
   Multiple

23. What number has factors of 2 and 3 and 12 and 18 as multiples?
   6
   Make a list of the numbers that can be divided evenly by 2 and 3.

24. What numbers have 12, 24, and 36 as multiples?
   1, 2, 3, 4, 6, 12
   Make a list of the numbers that divide evenly into 12, 24, and 36.

For 25 and 26, use the table at the right.

25. Paulo's family arrived at the reunion at 8:30 A.M. How long do they have before the trip to Scenic Lake Park?
   1 hour and 45 minutes

26. How much longer is dinner than the slide show?
   35 minutes

27. Carmen listed the multiples of 24 as 1, 2, 3, 4, 6, 8, 12, 24. Is she correct?
   Explain why or why not.
   No; Sample answer: Carmen listed the factors of 24. The multiples of 24 are 24, 48, 72, and so on.

28. Higher Order Thinking: What is the least multiple 6 and 8 have in common? Explain.
   24; Sample answer: The first four multiples of each are: 6, 12, 18, 24
   and 8, 16, 24, 32. 24 is the least multiple in common.

29. Which numbers are NOT multiples of 6? Write all the numbers that are NOT multiples of 6.
   1, 2, 3, 6, 18, 26, 36
   NOT Multiples of 6
   1, 2, 26

30. Which multiples do 3 and 5 have in common? Write all the common multiples of 3 and 5.
   3, 5, 15, 30
   Common Multiples of 3 and 5
   15, 30
Name

Multiples or Factors?

Look at the numbers in each box.
Circle if they are multiples or factors, and write the number.

1. Factors of 6
   Multiples
   6 2
   3 1

2. Factors of 8
   Multiples
   16 40
   24 56

3. Factors of 5
   Multiples
   15 25
   40

4. Factors of 4
   Multiples
   2 4
   1

Read the label for each box.
Write at least three numbers in each box that match the description.

5. Multiples of 3
   3, 9, 15

6. Factors of 9
   1, 3, 9

7. Factors of 6
   1, 2, 4

8. Multiples of 7
   7, 21, 35

For 5, 7, and 8, sample answers are given.
**Topic:** Fraction Equivalence: Area Models and Number Lines

**What Your Student is Learning:** Using area models to recognize and generate equivalent fractions, and using a number line to locate and identify equivalent fractions

**Background and Context for Parents:**

Two fractions that represent the same part of the same whole are equivalent. They are different names for the same number. We can use area models and number lines to represent that equivalence.

![Diagram of fraction equivalence](image)

**Ways to support your student:**

- Discuss what the word equivalent means. Look at the first three letter *equ*. What other word does that sound like? Equal.
- Using the fraction strips, have your child show 3/6. After showing you, have your child find at least 2 other fractions equivalent to 3/6. Have them draw the fraction strips and label them with equations showing each pair of equivalent fractions. Discuss the results and have students show the equivalent fractions. [Sample answer: 3/6 = ½, 3/6 = 6/12] Repeat the process with ⅓.

**Online Resources for Students:** [https://toytheater.com/fraction-strips/](https://toytheater.com/fraction-strips/)
Another Look!
Use an area model to find two fractions equivalent to \(\frac{1}{2}\).

Many fractions are equivalent to \(\frac{1}{2}\).

The circle is divided into 2 equal parts. The shaded part represents \(\frac{1}{2}\).

Divide the circle into 4 equal parts. The shaded part represents \(\frac{4}{8}\).

Divide the circle into 8 equal parts. The shaded part represents \(\frac{8}{16}\).

\(\frac{1}{2}, \frac{1}{4}, \text{ and } \frac{8}{16}\) are equivalent fractions.

1. Write a fraction equivalent to \(\frac{3}{5}\).  
   \[
   \includegraphics{fraction}
   \]

2. Write two fractions equivalent to \(\frac{9}{12}\).  
   \[
   \includegraphics{area_model}
   \]

For 3–10, draw an area model or use fraction strips to solve each problem.

3. \(\frac{3}{5} = \frac{10}{12}\)
4. \(\frac{3}{6} = \frac{12}{12}\)
5. \(\frac{4}{10} = \frac{5}{10}\)
6. \(\frac{3}{4} = \frac{8}{8}\)

7. \(\frac{5}{10} = \frac{1}{2}\)
8. \(\frac{4}{6} = \frac{12}{12}\)
9. \(\frac{5}{2} = \frac{10}{10}\)
10. \(\frac{1}{2} = \frac{6}{6}\)
Another Look!
You can write equivalent fractions for a point shown on a number line.

Label the number line in two different ways.

\[ \frac{4}{6} = \frac{8}{12} \]
\[ \frac{4}{6} \text{ and } \frac{8}{12} \text{ are equivalent fractions.} \]

For 1–6, write two fractions for the point on each number line.

1. \[ \frac{1}{6} \quad \frac{2}{6} \]
2. \[ \frac{1}{6} \quad \frac{2}{6} \]
3. \[ \frac{1}{6} \quad \frac{2}{6} \]
4. \[ \frac{1}{6} \quad \frac{2}{6} \]
5. \[ \frac{1}{6} \quad \frac{2}{6} \]
6. \[ \frac{1}{6} \quad \frac{2}{6} \]

7. Are \( \frac{3}{8} \) and \( \frac{3}{4} \) equivalent fractions?
   Draw a number line to decide.

8. Draw a number line to show \( \frac{1}{4} \) and \( \frac{2}{8} \) are equivalent.
9. Mike says he can find a fraction equivalent to \( \frac{1}{10} \), even though \( \frac{1}{10} \) is a unit fraction. Is Mike correct? Explain.

10. Algebra There are 267 students and 21 adults going on a school trip. An equal number of people will ride on each bus. If there are 9 buses, how many people will ride on each bus? Write and solve equations.

11. Point X is at \( \frac{3}{5} \) on a number line. On the same number line, point Y is the same distance from 0 as point X, but has a numerator of 8. What is the denominator of the fraction at point Y? Draw a number line to model the problem.

12. Higher Order Thinking A recipe calls for \( \frac{3}{4} \) cup of flour. Carter only has a measuring cup that holds \( \frac{1}{8} \) cup. How can Carter measure the flour he needs for his recipe?

Assessment Practice

13. Monty is using a number line to find fractions equivalent to \( \frac{4}{6} \). He says he can find an equivalent fraction with a denominator greater than 6 and an equivalent fraction with a denominator less than 6.

Part A
Write to explain how Monty can use the number line to find an equivalent fraction with a denominator greater than 6.

Part B
Write to explain how Monty can use the number line to find an equivalent fraction with a denominator less than 6.
Another Look!
Use an area model to find two fractions equivalent to $\frac{1}{2}$.

Many fractions are equivalent to $\frac{1}{2}$.

The circle is divided into 2 equal parts. The shaded part represents $\frac{1}{2}$.

Divide the circle into 4 equal parts. The shaded part represents $\frac{2}{4}$.

Divide the circle into 8 equal parts. The shaded part represents $\frac{4}{8}$.

$\frac{1}{2}$, $\frac{2}{4}$, and $\frac{4}{8}$ are equivalent fractions.

1. Write a fraction equivalent to $\frac{3}{5}$

Sample answer: $\frac{6}{10}$

2. Write two fractions equivalent to $\frac{9}{12}$

Sample answer: $\frac{3}{4}$, $\frac{6}{8}$

For 3–10, draw an area model or use fraction strips to solve each problem.

3. $\frac{3}{5} = \frac{6}{10}$
4. $\frac{3}{6} = \frac{6}{12}$
5. $\frac{4}{10} = \frac{2}{5}$
6. $\frac{3}{4} = \frac{6}{8}$
7. $\frac{5}{10} = \frac{1}{2}$
8. $\frac{4}{6} = \frac{2}{12}$
9. $\frac{5}{5} = \frac{10}{10}$
10. $\frac{5}{2} = \frac{6}{12}$
Another Look!
You can write equivalent fractions for a point shown on a number line.

Label the number line in two different ways.

\[ \frac{4}{6} = \frac{8}{12} \]
\[ \frac{2}{3} = \frac{4}{6} \]

Equivalent fractions represent the same fractional amount of the same whole or same-sized wholes.

For 1–6, write two fractions for the point on each number line.

1. Sample answer: \( \frac{1}{2}, \frac{2}{4} \)
2. Sample answer: \( \frac{6}{10}, \frac{3}{5} \)
3. Sample answer: \( \frac{2}{3}, \frac{1}{3} \)
4. Sample answer: \( \frac{3}{10}, \frac{1}{5} \)
5. Sample answer: \( \frac{1}{5}, \frac{2}{10} \)
6. Sample answer: \( \frac{1}{3}, \frac{9}{12} \)

7. Are \( \frac{1}{2} \) and \( \frac{2}{3} \) equivalent fractions?
   Draw a number line to decide.
   No

8. Draw a number line to show \( \frac{1}{4} \) and \( \frac{3}{8} \) are equivalent.
9. Mike says he can find a fraction equivalent to \( \frac{1}{10} \) even though \( \frac{1}{10} \) is a unit fraction. Is Mike correct? Explain.
   Yes; Sample answer: He can divide each \( \frac{1}{10} \) interval on a number line in ten parts to find \( \frac{10}{100} \).

10. Algebra: There are 267 students and 21 adults going on a school trip. An equal number of people will ride on each bus. If there are 9 busses, how many people will ride on each bus? Write and solve equations.
   \( 32; \) Sample answer: \( 267 + 21 = r; \)
   \( r = 288; 288 \div 9 = p; p = 32 \)

11. Point \( X \) is at \( \frac{2}{3} \) on a number line. On the same number line, point \( Y \) is the same distance from 0 as point \( X \), but has a numerator of 8. What is the denominator of the fraction at point \( Y \)? Draw a number line to model the problem.
   12; Check students’ drawings.

12. Higher Order Thinking: A recipe calls for \( \frac{1}{4} \) cup of flour. Carter only has a measuring cup that holds \( \frac{1}{6} \) cup. How can Carter measure the flour he needs for his recipe?
   Sample answer: Carter could fill the \( \frac{1}{4} \) cup two times to make \( \frac{1}{2} \) cup, which is equivalent to \( \frac{1}{6} \) cup.

Assessment Practice

13. Monty is using a number line to find fractions equivalent to \( \frac{2}{5} \).
   He says he can find an equivalent fraction with a denominator greater than 6 and an equivalent fraction with a denominator less than 6.

Part A
Write to explain how Monty can use the number line to find an equivalent fraction with a denominator greater than 6.

Sample answer: Monty can divide each \( \frac{1}{6} \) section of the number line into two parts to show twelfths.
This will show \( \frac{4}{6} = \frac{8}{12} \).

Part B
Write to explain how Monty can use the number line to find an equivalent fraction with a denominator less than 6.

Sample answer: Monty can label every other tick mark on the number line to show thirds.
This will show \( \frac{4}{6} = \frac{2}{3} \).
**Topic:** Generating Equivalent Fractions: Multiplication and Division

**What Your Student is Learning:** Using multiplication and division to find equivalent fractions, common factors

**Background and Context for Parents:**

When the numerator and denominator of a fraction are multiplied by the same whole number greater than 1, it is the same as multiplying the fraction by 1. This gives an equivalent fraction because multiplying by 1 does not change the value of a number.

When the numerator and denominator of a fraction are divided by a common factor greater than 1, the result is an equivalent fraction.

**An Example:**

Find a fraction equivalent to \( \frac{4}{6} \).

**One Way: Use Multiplication**

\[
\frac{4}{6} = \frac{4 \times 2}{6 \times 2} = \frac{8}{12}
\]

So, \( \frac{4}{6} = \frac{8}{12} \).

**Another Way: Use Division**

\[
\frac{4}{6} = \frac{4 \div 2}{6 \div 2} = \frac{2}{3}
\]

So, \( \frac{4}{6} = \frac{2}{3} \).

**Ways to support your student:**

- Make sure your child is multiplying or dividing by the same number. Explain that dividing by 1, like multiplying by 1, does not change the value of a number.
- Write a fraction and have your child find 3-4 equivalent fractions. Let them pick the next fraction and you find 3-4 equivalent fractions. Discuss your reasoning as you play.

**Online Resources for Students:** [https://www.khanacademy.org/math/arithmetic/fraction-arithmetic/arithmetic/arith-review-visualizing-equiv-frac/e/visualizing-equivalent-fractions](https://www.khanacademy.org/math/arithmetic/fraction-arithmetic/arithmetic/arith-review-visualizing-equiv-frac/e/visualizing-equivalent-fractions)
Another Look!

Find two fractions that are equivalent to $\frac{3}{4}$.

Multiply the given fraction by a fraction equal to 1 to find equivalent fractions.

\[
\begin{align*}
\frac{3 \times 2}{4 \times 2} &= \frac{6}{8} \\
\frac{3 \times 3}{4 \times 3} &= \frac{9}{12}
\end{align*}
\]

$\frac{3}{4}$, $\frac{6}{8}$, and $\frac{9}{12}$ are equivalent fractions. So, $\frac{3}{4} = \frac{6}{8} = \frac{9}{12}$.

For 1–6, fill in the missing numbers to find equivalent fractions.

1. $\frac{5 \times 2}{6 \times 2} = \boxed{\quad}$
2. $\frac{2 \times 3}{2 \times 3} = \boxed{\quad}$
3. $\frac{3 \times 5}{5 \times \boxed{\quad}} = 10$
4. $\frac{1 \times \boxed{\quad}}{6 \times \boxed{\quad}} = \frac{2}{\boxed{\quad}}$
5. $\frac{1 \times \boxed{\quad}}{4 \times \boxed{\quad}} = \frac{100}{\boxed{\quad}}$
6. $\frac{2 \times \boxed{\quad}}{3 \times \boxed{\quad}} = \boxed{\quad}$

For 7–14, write an equivalent fraction for each given fraction.

7. $\frac{10}{2}$
8. $\frac{4}{5}$
9. $\frac{9}{3}$
10. $\frac{3}{10}$
11. $\frac{5}{8}$
12. $\frac{5}{4}$
13. $\frac{7}{12}$
14. $\frac{9}{5}$

For 15–18, write two equivalent fractions for each given fraction.

15. $\frac{10}{4}$
16. $\frac{2}{5}$
17. $\frac{4}{6}$
18. $\frac{3}{8}$
25. What fraction of the game spinner is dark gray? Write two equivalent fractions.

26. Solve this number riddle:
I am an odd number.
I am less than 100.
The sum of my digits is 12.
I am a multiple of 15.
What number am I?

27. It took Bob 55 minutes to clean the garage. How many seconds did it take Bob? There are 60 seconds in one minute.

28. Betty is canning 104 pears and 126 apples separately. Each jar holds 8 pears or 6 apples. How many jars does Betty need?

29. Critique Reasoning  Laurie says summer is \( \frac{1}{4} \) of the year. Maria says summer is \( \frac{3}{12} \) of the year. Who is correct? Explain.

30. Higher Order Thinking  Cindy is using division to write a fraction equivalent to \( \frac{30}{100} \). She tried to divide the numerator and denominator by 3. She got stuck. What advice would you give her?

31. Which equation is NOT true?
   - A. \( \frac{10}{12} = \frac{5}{6} \)
   - B. \( \frac{69}{100} = \frac{6}{10} \)
   - C. \( \frac{10}{5} = \frac{200}{100} \)
   - D. \( \frac{12}{4} = \frac{6}{2} \)

32. Four out of 12 pieces of fruit in the basket are apples. Select all the fractions below that are equivalent to the fraction of fruit that is apples.
   - □ \( \frac{3}{6} \)
   - □ \( \frac{1}{3} \)
   - □ \( \frac{2}{6} \)
   - □ \( \frac{1}{4} \)
   - □ \( \frac{1}{6} \)
Another Look!

Find two fractions that are equivalent to \( \frac{3}{4} \).

Multiply the given fraction by a fraction equal to 1 to find equivalent fractions.

\[
\begin{align*}
\frac{3 \times 2}{4 \times 2} &= \frac{6}{8} \\
\frac{3 \times 3}{4 \times 3} &= \frac{9}{12}
\end{align*}
\]

\( \frac{3}{4} \) and \( \frac{9}{12} \) are equivalent fractions. So, \( \frac{3}{4} = \frac{6}{8} = \frac{9}{12} \).

For 1–6, fill in the missing numbers to find equivalent fractions.

1. \( \frac{5 \times 2}{6 \times 2} = \frac{10}{12} \)
2. \( \frac{2 \times 3}{2 \times 3} = \frac{6}{6} \)
3. \( \frac{3 \times 2}{5 \times 2} = \frac{6}{10} \)
4. \( \frac{1 \times 2}{6 \times 2} = \frac{2}{12} \)
5. \( \frac{1 \times 25}{4 \times 25} = \frac{25}{100} \)
6. \( \frac{2 \times 4}{3 \times 4} = \frac{8}{12} \)

For 7–14, write an equivalent fraction for each given fraction.

7. \( \frac{10}{2} = \frac{20}{4} \)
8. \( \frac{4}{5} = \frac{8}{10} \)
9. \( \frac{9}{3} = \frac{18}{6} \)
10. \( \frac{3}{10} = \frac{30}{100} \)
11. \( \frac{5}{8} = \frac{10}{16} \)
12. \( \frac{5}{4} = \frac{10}{8} \)
13. \( \frac{7}{12} = \frac{21}{36} \)
14. \( \frac{9}{5} = \frac{18}{10} \)

For 15–18, write two equivalent fractions for each given fraction.

15. \( \frac{10}{4} = \frac{20}{8}, \frac{30}{12} \)
16. \( \frac{2}{5} = \frac{4}{10}, \frac{40}{100} \)
17. \( \frac{4}{5} = \frac{8}{12}, \frac{20}{30} \)
18. \( \frac{3}{8} = \frac{6}{16}, \frac{9}{24} \)

Sample answers given.
25. What fraction of the game spinner is dark gray? Write two equivalent fractions. \( \frac{3}{6}, \frac{8}{16} \)

26. Solve this number riddle:
I am an odd number.
I am less than 100.
The sum of my digits is 12.
I am a multiple of 15.
What number am I?
75

27. It took Bob 55 minutes to clean the garage. How many seconds did it take Bob? There are 60 seconds in one minute.
3,300 seconds

28. Betty is canning 104 pears and 126 apples separately. Each jar holds 8 pears or 6 apples. How many jars does Betty need?
34 jars

29. Critique Reasoning. Laurie says summer is \( \frac{1}{4} \) of the year. Maria says summer is \( \frac{3}{12} \) of the year. Who is correct? Explain.
Both are correct; Sample answer: Summer lasts for 3 months out of 12 months, so summer is \( \frac{3}{12} \) of the year. Laurie used division to find an equivalent fraction, \( \frac{3}{12} \) and \( \frac{1}{4} \) are equivalent fractions.

30. Higher Order Thinking. Cindy is using division to write a fraction equivalent to \( \frac{30}{100} \). She tried to divide the numerator and denominator by 3. She got stuck. What advice would you give her?
Sample answer: Choose a number that is a common factor of the numerator and denominator because it will divide evenly in both. 3 is a factor of 30, but it is not a factor of 100. You could divide by 10 to get \( \frac{3}{10} \).

31. Which equation is NOT true?
- A: \( \frac{10}{12} = \frac{5}{6} \)
- B: \( \frac{69}{100} = \frac{6}{10} \)
- C: \( \frac{10}{5} = \frac{200}{100} \)
- D: \( \frac{12}{4} = \frac{6}{2} \)

32. Four out of 12 pieces of fruit in the basket are apples. Select all the fractions below that are equivalent to the fraction of fruit that is apples.
- \( \frac{3}{6} \)
- \( \frac{1}{2} \)
- \( \frac{2}{3} \)
- \( \frac{3}{6} \)
- \( \frac{1}{6} \)
Topic: Comparing Fractions

What Your Student is Learning: Using models to compare fractions

Background and Context for Parents:

One way to compare two fractions that are parts of the same whole is by comparing each to a benchmark fraction such as ½. Students need to use benchmark fractions (commonly used fractions such as 0, ¼, ⅓, ½, ⅔, ¾, and 1) and visual models to compare fractions.

They also reason about the size of fractions with the same numerator or the same denominator.

When two fractions have the same denominator, the fraction with the greater numerator is greater. This is reasonable because each fraction represents the same size parts, but there are more of those parts when the numerator is greater.

\[
\frac{5}{6} > \frac{2}{6}
\]

When two fractions have the same numerator, the fraction with the lesser denominator is greater. This is reasonable because each fraction represents the same number of parts, but the parts are smaller when the denominator is greater.

\[
\frac{3}{8} < \frac{3}{4}
\]

Students then use multiplication to find equivalent fractions to compare fractions.

Ways to support your student:
- If your child is struggling with comparing fractions using benchmark fractions, it may help to draw out a number line and represent the fractions on there.
- Encourage your child to use comparative language (is greater than, is less than, is equal to) when describing fraction comparisons.
Another Look!

Compare $\frac{2}{3}$ and $\frac{1}{2}$.

One Way

Rename one or both fractions so they both have the same denominator.

Rename both $\frac{2}{3}$ and $\frac{1}{2}$.

$$
\frac{2}{3} = \frac{2 \times 2}{3 \times 2} = \frac{4}{6} \\
\frac{1}{2} = \frac{1 \times 3}{2 \times 3} = \frac{3}{6} \\
\frac{4}{6} > \frac{3}{6}, \text{ so } \frac{2}{3} > \frac{1}{2}.
$$

Another Way

Rename one or both fractions so they both have the same numerator.

Leave $\frac{2}{3}$ alone. Rename $\frac{1}{2}$.

$$
\frac{1}{2} = \frac{1 \times 2}{2 \times 2} = \frac{2}{4} \\
\frac{2}{3} > \frac{2}{4}, \text{ so } \frac{2}{3} > \frac{1}{2}.
$$

When two fractions have the same numerator, the one with the lesser denominator is the greater fraction.

For 1–16, find equivalent fractions to compare. Then write $>$, $<$, or $=$.

1. $\frac{5}{6} \quad \square \quad \frac{2}{3}$
2. $\frac{1}{5} \quad \square \quad \frac{2}{8}$
3. $\frac{9}{10} \quad \square \quad \frac{3}{4}$
4. $\frac{3}{4} \quad \square \quad \frac{2}{8}$
5. $\frac{7}{8} \quad \square \quad \frac{1}{2}$
6. $\frac{2}{5} \quad \square \quad \frac{2}{6}$
7. $\frac{1}{3} \quad \square \quad \frac{3}{8}$
8. $\frac{2}{10} \quad \square \quad \frac{3}{5}$
9. $\frac{8}{10} \quad \square \quad \frac{3}{4}$
10. $\frac{3}{8} \quad \square \quad \frac{9}{12}$
11. $\frac{2}{3} \quad \square \quad \frac{10}{12}$
12. $\frac{7}{8} \quad \square \quad \frac{3}{4}$
13. $\frac{3}{4} \quad \square \quad \frac{7}{8}$
14. $\frac{2}{4} \quad \square \quad \frac{4}{8}$
15. $\frac{6}{8} \quad \square \quad \frac{8}{12}$
16. $\frac{1}{3} \quad \square \quad \frac{4}{8}$

For 17–18, use the table at the right. The same number of students attended school each day.

17. Did more students buy lunch on Thursday or on Wednesday?

18. Did more students buy lunch on Monday or on Friday?

<table>
<thead>
<tr>
<th>Day</th>
<th>Fraction of Students Buying Lunch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>$\frac{1}{2}$</td>
</tr>
<tr>
<td>Tuesday</td>
<td>$\frac{2}{5}$</td>
</tr>
<tr>
<td>Wednesday</td>
<td>$\frac{3}{4}$</td>
</tr>
<tr>
<td>Thursday</td>
<td>$\frac{5}{8}$</td>
</tr>
<tr>
<td>Friday</td>
<td>$\frac{4}{6}$</td>
</tr>
</tbody>
</table>
19. **Number Sense** Explain how you know $\frac{21}{100}$ is greater than $\frac{1}{3}$.

20. **Higher Order Thinking** An orange was divided into 10 equal sections. Lily ate 4 sections. Mandy and Emma ate the remaining sections. What fraction of the orange did Mandy and Emma eat?

21. **Critique Reasoning** James says $\frac{3}{4}$ is greater than $\frac{9}{10}$. Is James correct? Explain.

22. Which is longer, $\frac{1}{4}$ of line A or $\frac{1}{4}$ of line B? Explain.

23. Write 3 fractions with unlike denominators that are greater than the fraction shown below.

24. Ann works at a store in the mall and earns a wage of $8 an hour. She earns $10 an hour if she works on the weekends. Last week she worked 24 hours during the week and 16 hours on the weekend. How much did Ann earn last week?

25. Higher Order Thinking Four friends each ordered individual pizzas at a restaurant. Suzy ate $\frac{3}{8}$ of her pizza. Ethan ate $\frac{3}{8}$ of his pizza. Tenaya ate $\frac{4}{6}$ of her pizza. Sam ate $\frac{1}{3}$ of his pizza. Who ate more than half of their pizza? less than half?

26. **Assessment Practice** Select all the correct comparisons.

27. Select all the fractions that are greater than $\frac{8}{12}$.
For 1–16, find equivalent fractions to compare. Then write $>$, $<$, or $\Rightarrow$.

1. $\frac{5}{6} \Rightarrow \frac{2}{3}$  
2. $\frac{1}{5} < \frac{2}{8}$  
3. $\frac{9}{10} > \frac{3}{4}$  
4. $\frac{3}{4} > \frac{7}{8}$  
5. $\frac{7}{8} > \frac{1}{2}$  
6. $\frac{2}{5} > \frac{2}{6}$  
7. $\frac{1}{3} < \frac{3}{8}$  
8. $\frac{2}{10} < \frac{3}{5}$  
9. $\frac{8}{10} > \frac{3}{4}$  
10. $\frac{3}{8} < \frac{9}{12}$  
11. $\frac{2}{5} < \frac{10}{12}$  
12. $\frac{7}{8} > \frac{3}{4}$  
13. $\frac{3}{4} < \frac{7}{8}$  
14. $\frac{2}{4} = \frac{4}{8}$  
15. $\frac{6}{8} > \frac{8}{12}$  
16. $\frac{1}{5} < \frac{4}{8}$

For 17–18, use the table at the right. The same number of students attended school each day.

17. Did more students buy lunch on Thursday or on Wednesday?
   Wednesday

18. Did more students buy lunch on Monday or on Friday?
   Friday
19. Number Sense Explain how you know \( \frac{21}{100} \) is greater than \( \frac{1}{5} \).
Sample answer: \( \frac{1}{5} \) is equivalent to \( \frac{20}{100} \), \( \frac{20}{100} < \frac{21}{100} \).

20. An orange was divided into 10 equal sections. Lily ate 4 sections. Manny and Emma ate the remaining sections. What fraction of the orange did Manny and Emma eat?
Sample answer: \( \frac{6}{10} \) of the orange.

21. Which is longer, \( \frac{1}{4} \) of line A or \( \frac{1}{4} \) of line B?
Explain.
\( \frac{1}{4} \) of Line B; Sample answer: Line B is a larger whole, so \( \frac{1}{4} \) of line B is longer than \( \frac{1}{4} \) of line A.

22. Critique Reasoning James says \( \frac{5}{5} \) is greater than \( \frac{9}{10} \). Is James correct? Explain.
Yes; Sample answer: \( \frac{9}{10} \) is less than 1, and \( \frac{5}{5} \) is equal to 1. So, \( \frac{5}{5} > \frac{9}{10} \).

23. Write 3 fractions with unlike denominators that are greater than the fraction shown below.
Sample answer: \( \frac{4}{6}, \frac{7}{8}, \frac{11}{12} \).

24. Ann works at a store in the mall and earns a wage of \$8 an hour. She earns \$10 an hour if she works on the weekends. Last week she worked 24 hours during the week and 16 hours on the weekend. How much did Ann earn last week?
\$352

25. Higher Order Thinking Four friends each ordered individual pizzas at a restaurant. Suzy ate \( \frac{3}{8} \) of her pizza. Ethan ate \( \frac{3}{5} \) of his pizza. Tenaya ate \( \frac{4}{5} \) of her pizza. Sam ate \( \frac{1}{3} \) of his pizza. Who ate more than half of their pizza? less than half?
Ethan and Tenaya ate more than half. Suzy and Sam ate less than half.

26. Select all the correct comparisons.

27. Select all the fractions that are greater than \( \frac{5}{12} \).
**Grade:** 4  
**Subject:** Math  
**Goes with Pages:** 34-37

**Topic:** Decomposing Fractions

**What Your Student is Learning:** Decomposing a fraction or mixed number into a sum of fractions in more than one way

**Background and Context for Parents:** A fraction $a/b$, where $a > 1$, can be decomposed into the sum of two or more fractions. Students need this skill in order to be able to add and subtract fractions later on with like denominators.

Your child should learn that fractions and mixed numbers can be decomposed in more than one way.

Write $\frac{5}{8}$ as the sum of fractions in two different ways.

$$\frac{5}{8} = \frac{1}{8} + \frac{4}{8} \quad \frac{5}{8} = \frac{2}{8} + \frac{3}{8}$$

They can also do this with mixed numbers, which they will use in later lessons to rewrite numbers.

**Another Example!**

What is one way you can decompose $3\frac{1}{8}$?

$3\frac{1}{8}$ is $1$ whole $+ 1$ whole $+ 1$ whole $+ \frac{1}{8}$

Each whole can also be shown as eight equal parts.

$$3\frac{1}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$$

Ways to support your student:

- Talk to your child about the word decomposing. What does it mean to compose something (put something together)? What does de- represent? (the opposite of). What are some things in real life that decompose? What does it mean to decompose a number?
- Practice decomposing fractions by playing “Let Me Count the Ways”
  - Round 1: Write as many representations of $5$ as you can think of (different operations, pictures, drawings, etc.) Some examples may include $2 + 2 + 1, |||||, 4 + 1, 7-2$, etc
  - Round 2: Write as many representations of $\frac{4}{6}$ as you can think of. ($\frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6}$ $+ \frac{1}{6}, \frac{1}{2}$, fraction strip, number line). See how many your child can come up with & help them think about additional representations.
  - Play more rounds with other fractions, helping them to include decompositions.
Another Look!
Shannon wants to use \( \frac{5}{8} \) of her garden space to plant petunias and marigolds. How can Shannon use the available space?

Write \( \frac{5}{8} \) as the sum of fractions in two different ways.

\[
\frac{5}{8} = \frac{1}{8} + \frac{4}{8} \quad \frac{5}{8} = \frac{2}{8} + \frac{3}{8}
\]

Shannon could use \( \frac{1}{8} \) of the space for petunias and \( \frac{4}{8} \) for marigolds, or she could use \( \frac{2}{8} \) of the space for petunias and \( \frac{3}{8} \) for marigolds.

For 1–8, decompose each fraction or mixed number in two different ways. Use a tool if needed.

1. \( \frac{4}{8} = \frac{4}{8} \)
2. \( \frac{7}{10} = \frac{7}{10} \)
3. \( \frac{4}{5} = \frac{4}{5} \)
4. \( \frac{3}{10} = \frac{3}{10} \)
5. \( 1\frac{1}{4} = 1\frac{1}{4} \)
6. \( 2\frac{2}{3} = 2\frac{2}{3} \)
7. \( 1\frac{3}{5} = 1\frac{3}{5} \)
8. \( 1\frac{1}{2} = 1\frac{1}{2} \)

Challenge yourself! Include ways that break a fraction or mixed number into more than two parts.
Another Look!

Shannon wants to use $\frac{5}{8}$ of her garden space to plant petunias and marigolds. How can Shannon use the available space?

Write $\frac{5}{8}$ as the sum of fractions in two different ways.

$\frac{5}{8} = \frac{1}{8} + \frac{4}{8} \quad \frac{5}{8} = \frac{2}{8} + \frac{3}{8}$

Shannon could use $\frac{1}{8}$ of the space for petunias and $\frac{4}{8}$ for marigolds, or she could use $\frac{2}{8}$ of the space for petunias and $\frac{3}{8}$ for marigolds.

For 1–8, decompose each fraction or mixed number in two different ways. Use a tool if needed.

1. $\frac{4}{8} = \frac{1}{8} + \frac{3}{8} \\
   \frac{4}{8} = \frac{1}{8} + \frac{1}{8} + \frac{2}{8}$

2. $\frac{7}{10} = \frac{4}{10} + \frac{3}{10} \\
   \frac{7}{10} = \frac{4}{10} + \frac{2}{10} + \frac{1}{10}$

3. $\frac{4}{5} = \frac{1}{5} + \frac{3}{5} \\
   \frac{4}{5} = \frac{2}{5} + \frac{1}{5} + \frac{1}{5}$

4. $\frac{3}{10} = \frac{2}{10} + \frac{1}{10} \\
   \frac{3}{10} = \frac{1}{10} + \frac{1}{10} + \frac{1}{10}$

5. $1\frac{1}{4} = \frac{4}{4} + \frac{1}{4} \\
   1\frac{1}{4} = \frac{1}{4} + \frac{2}{4} + \frac{2}{4}$

6. $2\frac{2}{3} = \frac{4}{3} + \frac{4}{3} \\
   2\frac{2}{3} = \frac{2}{3} + \frac{3}{3} + \frac{2}{3}$

7. $1\frac{3}{5} = \frac{5}{5} + \frac{3}{5} \\
   1\frac{3}{5} = \frac{5}{5} + \frac{2}{5} + \frac{1}{5}$

8. $1\frac{1}{2} = \frac{2}{2} + \frac{1}{2} \\
   1\frac{1}{2} = \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$

Sample answers given.

Challenge yourself! Include ways that break a fraction or mixed number into more than two parts.
**Topic:** Adding and Subtracting Fractions with Like Denominators

**What Your Student is Learning:** Joining or separating parts of the same whole by adding and subtracting fractions with *like denominators* (denominators that are the same).

**Background and Context for Parents:** Fraction addition and subtraction can be thought about as joining and separating segments on the number line. They can also be thought about as counting forward or counting backward on the number line. Your child begins building their understanding of adding and subtracting fractions by using models such as the number line and fraction strips.

<table>
<thead>
<tr>
<th>Number Line Example</th>
<th>Fraction Strip Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Number Line Example" /></td>
<td><img src="image2" alt="Fraction Strip Example" /></td>
</tr>
</tbody>
</table>

Your child can continue to use models as they progress to show their thinking, but you also want to make sure they are solid on the procedure.

To add fractions with like denominators, add the numerators and write the sum over the like denominator. For example, \( \frac{3}{12} + \frac{8}{12} = \frac{11}{12} \)

To subtract fractions with like denominators, subtract the numerators and write the sum over the like denominator. For example, \( \frac{8}{12} - \frac{3}{12} = \frac{5}{12} \)

**Ways to support your student:**
- Use this activity to work with your student on adding and subtracting fractions.
  - *Fraction Writing*
    - Step 1: Write \( \frac{1}{4}, \frac{1}{2}, \frac{2}{4}, \frac{3}{4}, \text{and} \frac{1}{12} \) on a piece of paper.
    - Step 2: Have your child name the fractions that have a common denominator and explain how to add those fractions.
  - Ask your student to explain how they know to use addition or subtraction when reading a word problem.
  - Use probing questions, such as “How do you know?” “Is there a way you can model that problem?” “How did you think about this problem?” and “How can you check?”

**Online Resources for Students:** https://tinyurl.com/y7p37xdx
Boxes of Fractions

Complete each fraction box. Start with the fraction in the circle and add or subtract.

One subtraction in Exercise 1 has been completed for you.

1. \[
\begin{array}{c}
\frac{7}{8} \\
\frac{3}{8} \\
\frac{4}{8} \\
\frac{11}{12}
\end{array}
\]

2. \[
\begin{array}{c}
\frac{9}{10} \\
\frac{11}{10} = 1 \frac{1}{10}
\end{array}
\]

3. \[
\begin{array}{c}
\frac{11}{12} \\
\frac{4}{12}
\end{array}
\]

4. \[
\begin{array}{c}
\frac{5}{6} \\
\frac{3}{6}
\end{array}
\]

\[\text{Exercise 1 has been completed.}\]
Another Look!
Katie and her friends found \( \frac{7}{8} \) of an apple pie in her kitchen. They ate \( \frac{4}{8} \) of the pie. How much of the apple pie is left?

What You Show
Find how much of the pie is left.

What You Write
Subtract to find how much of the pie is left.

\[ \frac{7}{8} - \frac{4}{8} = \frac{3}{8} \]

\( \frac{3}{8} \) of the pie is left.

For 1–4, write the equation shown by each number line.

1. [Number line]
2. [Number line]
3. [Number line]
4. [Number line]

For 5–13, add or subtract the fractions. Use a number line if needed.

5. \( \frac{2}{6} + \frac{1}{6} \)
6. \( \frac{7}{12} - \frac{2}{12} \)
7. \( \frac{1}{8} + \frac{5}{8} \)
8. \( \frac{1}{4} + \frac{3}{4} \)
9. \( \frac{9}{10} - \frac{3}{10} \)
10. \( \frac{2}{3} + \frac{3}{3} \)
11. \( \frac{4}{5} + \frac{3}{5} \)
12. \( \frac{9}{8} - \frac{6}{8} \)
13. \( \frac{1}{3} + \frac{5}{3} \)
14. Critique Reasoning  Robbie drew the number line below to find $\frac{4}{5} - \frac{1}{5}$. Explain why Robbie is incorrect.

![Number Line](image)

15. Kayla used $\frac{4}{10}$ of her allowance to buy yogurt and $\frac{5}{10}$ to go skating. What fraction of her allowance does Kayla have left? Explain.

16. Which child drank the most juice? How much juice did that child drink?

![Bar Graph](image)

17. Higher Order Thinking  Sofia bought bananas, cereal, and milk at the store. She spent all of her money. She spent $\frac{3}{10}$ of her money on bananas and $\frac{4}{10}$ on cereal. What fraction of her money did Sofia spend on milk? Write and solve equations.

18. Use each fraction from the box once. Fill in the missing numbers on the number line to show $\frac{7}{10} + \frac{2}{10}$.

![Number Line](image)

19. Use each fraction from the box once. Fill in the missing numbers on the number line to show $\frac{5}{6} - \frac{3}{6}$.

![Number Line](image)
Boxes of Fractions

Complete each fraction box. Start with the fraction in the circle and add or subtract.

One subtraction in Exercise 1 has been completed for you.

1. \( \frac{2}{5} + \frac{3}{8} = \frac{13}{8} = 1 \frac{5}{8} \)
   \[ \frac{7}{8} + \frac{3}{8} - \frac{5}{8} + \frac{6}{8} = \frac{10}{8} = 1 \frac{2}{8} \]

2. \( \frac{5}{10} + \frac{4}{10} = \frac{9}{10} \)
   \[ \frac{6}{10} - \frac{2}{10} + \frac{2}{10} = \frac{11}{10} = 1 \frac{1}{10} \]

3. \( \frac{9}{12} - \frac{2}{12} = \frac{6}{12} \)
   \[ \frac{11}{12} - \frac{2}{12} = 0 - \frac{4}{12} = \frac{7}{12} \]

4. \( \frac{8}{6} = \frac{1\frac{2}{6}}{6} \)
   \[ \frac{1}{6} - \frac{4}{6} + \frac{3}{6} = \frac{5}{6} \]
   \[ \frac{5}{6} - \frac{2}{6} + \frac{1}{6} = \frac{6}{6} = 1 \]
Additional Practice 9-6
Add and Subtract Fractions with Like Denominators

Another Look!
Katie and her friends found \( \frac{7}{8} \) of an apple pie in her kitchen. They ate \( \frac{4}{8} \) of the pie. How much of the apple pie is left?

What You Show
What You Write
\[
\begin{align*}
\text{Subtract to find how much of the pie is left.} \\
\frac{7}{8} - \frac{4}{8} &= \frac{3}{8} \\
\frac{3}{8} \text{ of the pie is left.}
\end{align*}
\]

For 1-4, write the equation shown by each number line.

1. \[
\frac{5}{8} - \frac{3}{8} = \frac{2}{8}
\]

2. \[
\frac{2}{8} + \frac{4}{8} = \frac{6}{8}
\]

3. \[
\frac{4}{6} - \frac{3}{6} = \frac{1}{6}
\]

4. \[
\frac{4}{5} + \frac{2}{5} = \frac{6}{5} \text{ or } 1 \frac{1}{5}
\]

For 5-13, add or subtract the fractions. Use a number line if needed.

5. \[
\frac{2}{6} + \frac{1}{6} = \frac{3}{6}
\]

6. \[
\frac{7}{12} - \frac{2}{12} = \frac{5}{12}
\]

7. \[
\frac{1}{8} + \frac{5}{8} = \frac{6}{8}
\]

8. \[
\frac{1}{4} + \frac{3}{4} = 1
\]

9. \[
\frac{9}{10} - \frac{3}{10} = \frac{6}{10}
\]

10. \[
\frac{2}{3} + \frac{3}{3} = \frac{5}{3} \text{ or } 1 \frac{2}{3}
\]

11. \[
\frac{4}{5} + \frac{3}{5} = \frac{7}{5} \text{ or } 1 \frac{2}{5}
\]

12. \[
\frac{9}{8} - \frac{6}{8} = \frac{3}{8}
\]

13. \[
\frac{1}{3} + \frac{5}{3} = \frac{6}{3} \text{ or } 2
\]
14. Critique Reasoning  Robbie drew the number line below to find $\frac{5}{5} - \frac{1}{5}$. Explain why Robbie is incorrect.

Sample answer: The arrow goes to the right, which shows addition. It should go to the left to show subtraction.

15. Kayla used $\frac{4}{10}$ of her allowance to buy yogurt and $\frac{5}{10}$ to go skating. What fraction of her allowance does Kayla have left? Explain.

Kayla has $\frac{1}{10}$ of her allowance left.
Her total allowance is $\frac{10}{10}$. She spent $\frac{4}{10} + \frac{5}{10} = \frac{9}{10}$.

17. Higher Order Thinking  Sofia bought bananas, cereal, and milk at the store. She spent all of her money. She spent $\frac{3}{10}$ of her money on bananas and $\frac{4}{10}$ on cereal. What fraction of her money did Sofia spend on milk? Write and solve equations.

Sofia spent $\frac{3}{10}$ of her money on milk.
\[ \frac{3}{10} + \frac{4}{10} = \frac{7}{10} \]

18. Use each fraction from the box once. Fill in the missing numbers on the number line to show $\frac{7}{10} + \frac{2}{10}$.

19. Use each fraction from the box once. Fill in the missing numbers on the number line to show $\frac{5}{6} - \frac{3}{6}$.
**Topic:** Adding and Subtracting Mixed Numbers

**What Your Student is Learning:** Adding and subtracting mixed numbers is an extension of the ideas and procedures for adding and subtracting fractions.

**Background and Context for Parents:** Your child may continue to use a model to solve if they prefer. They are using largely the same skills as in previous lessons where they were asked to add and subtract fractions. Two models they can use to show addition and subtraction are fraction strips and number lines.

<table>
<thead>
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</tr>
</tbody>
</table>

In addition to using models, your child can also use a variety of strategies to add and subtract mixed numbers. They can:

- Subtract whole numbers and fractions separately (they may need to decompose the mixed number and rename it to find easier numbers to work with) For example:

  - Replace each mixed number with an equivalent fraction.
Ways to support your student:

- A good connection between model and non-model strategies would be to select one of their practice problems, and ask them to solve it both ways. Have a discussion about how the ways are similar and different.
- Your child may have difficulty understanding that $\frac{3}{8}$ and $\frac{4}{8}$ are equivalent. Have them show the equivalence using a model like a number line or fraction strips.
- Ask your child when they want to rename fractions. Give two problem examples such as, $\frac{9}{12} - \frac{4}{12}$ and compare it to $\frac{45}{6} - \frac{21}{6}$. Which problem would be appropriate to rename the fraction? Why?

Online Resources for Students: [https://toytheater.com/fraction-strips/](https://toytheater.com/fraction-strips/)

[https://apps.mathlearningcenter.org/number-line/](https://apps.mathlearningcenter.org/number-line/)

**Vocabulary**

1. **Whole numbers** are the numbers 0, 1, 2, 3, 4, and so on. Each **mixed number** has a whole number part and a fraction part.

   Look at the mixed numbers below. Circle the whole number in each mixed number. Draw a rectangle around the fraction part.

   \[
   10\frac{1}{2}, \quad 1\frac{2}{3}, \quad 12\frac{5}{8}, \quad 12\frac{7}{12}
   \]

2. Use the number line to find \(2\frac{5}{6} + 1\frac{5}{6}\).

   Mark \(2\frac{5}{6}\) on the number line. To add, move \(1\frac{1}{6}\) to the right.

   Write the sum.

3. Use the model to subtract \(2\frac{7}{8} - 1\frac{2}{3}\).

   Model the number you are subtracting from, \(2\frac{7}{8}\). Rename \(2\frac{7}{8}\) as \(1\frac{7}{8}\). Cross out one whole and \(\frac{2}{3}\) to show subtracting \(1\frac{2}{3}\).

   Write the difference.

**On the Back!**

4. Use number lines or fraction strips to find the sum of \(2\frac{5}{8} + 4\frac{3}{8}\) and the difference of \(3\frac{3}{10} - 1\frac{9}{10}\).
Name

Mixed Sums

1. Annie walked her dog \(2 \frac{1}{4}\) miles from her house to the dog park and \(3 \frac{3}{4}\) miles around the park. Then she walked the same distance home. How many miles did she walk in all?

2. John’s full backpack weighs \(5 \frac{1}{2}\) pounds, and Tyrone’s full backpack weighs \(6 \frac{1}{2}\) pounds. What is the total weight of both boys’ backpacks?

3. Julie has two extension cords with lengths of \(22 \frac{2}{4}\) feet and \(26 \frac{3}{4}\) feet. How long a cord can she make by attaching them together?

4. Terry weighed his two cats at the veterinarian’s office. Boots weighed \(12 \frac{9}{10}\) pounds, and Tiger weighed \(13 \frac{1}{10}\) pounds. What is the total weight of both cats?

5. David ran \(9 \frac{3}{4}\) miles on Saturday and \(7 \frac{1}{4}\) miles on Sunday. How many miles did he run on the weekend?

6. Amanda’s library books weigh \(4 \frac{3}{8}\) pounds, and her purse weighs \(1 \frac{3}{4}\) pounds. What is the total weight of her books and purse?
Mixed Differences

Answer each question.

1. Jenna bought a spool of ribbon that was $5\frac{3}{4}$ meters long. She used $3\frac{1}{4}$ meters of ribbon for a craft project. How many meters of ribbon does Jenna have left?

2. Brandon has a male puppy with a mass of $3\frac{2}{3}$ kilograms and a female puppy with a mass of $2\frac{1}{2}$ kilograms. How much greater is the male puppy’s mass than the female puppy’s mass?

3. Jeff’s sister drives 14 miles to her college. His brother only drives $5\frac{1}{2}$ miles to his college. How much farther does Jeff’s sister drive than his brother?

4. Montel bought a spool of string that was $10\frac{10}{12}$ meters long. He used $6\frac{3}{12}$ meters of string to make kites. How many meters of string does Montel have left?

5. Janet grew a pumpkin that weighs $13\frac{5}{6}$ pounds and a melon that weighs $8\frac{1}{2}$ pounds. How much heavier is the pumpkin than the melon?

6. Aidan roller-skated $3\frac{5}{12}$ miles around the lake. Josh roller-skated $2\frac{1}{2}$ miles around the park. How much farther did Aidan roller-skate than Josh?
4.NF Cynthia's Perfect Punch

Task

Cynthia is making her famous "Perfect Punch" for a party. After looking through the recipe, Cynthia knows that she needs to mix $4 \frac{5}{8}$ gallons of fruit juice concentrate with $3 \frac{7}{8}$ gallons of sparkling water.

a. Just as she is about to get started she realizes that she only has one 10-gallon container to use for mixing. Will this container be big enough to hold all the ingredients?

b. How much punch will this recipe make?
Vocabulary
1. Whole numbers are the numbers 0, 1, 2, 3, 4, and so on. Each mixed number has a whole number part and a fraction part.
   Look at the mixed numbers below. Circle the whole number in each mixed number. Draw a rectangle around the fraction part.

2. Use the number line to find $\frac{2}{5} + \frac{1}{6}$.

   Mark $\frac{2}{5}$ on the number line.

   To add, move $\frac{1}{6}$ to the right.

   Write the sum: $\frac{7}{6}$ or $4\frac{1}{6}$

3. Use the model to subtract $\frac{2}{5} - \frac{4}{5}$.

   Model the number you are subtracting from, $\frac{2}{5}$.

   Rename $\frac{2}{5}$ as $\frac{1}{5}$. Cross out one whole and $\frac{3}{5}$ to show subtracting $\frac{4}{5}$.

   Write the difference: $\frac{3}{5}$

On the Back!
4. Use number lines or fraction strips to find the sum of $\frac{5}{6} + \frac{3}{6}$ and the difference of $3\frac{3}{10} - 1\frac{5}{10}$.

   $7; 1\frac{7}{10}$
Mixed Sums

1. Annie walked her dog 2 \(\frac{1}{4}\) miles from her house to the dog park and 3 \(\frac{3}{4}\) miles around the park. Then she walked the same distance home. How many miles did she walk in all?

\[8 \frac{1}{4} \text{ miles}\]

2. John’s full backpack weighs 5 \(\frac{1}{2}\) pounds, and Tyrone’s full backpack weighs 6 \(\frac{1}{2}\) pounds. What is the total weight of both boys’ backpacks?

12 pounds

3. Julie has two extension cords with lengths of 22 \(\frac{3}{4}\) feet and 26 \(\frac{3}{4}\) feet. How long a cord can she make by attaching them together?

\[49 \frac{1}{4} \text{ feet}\]

4. Terry weighed his two cats at the veterinarian’s office. Boots weighed 12 \(\frac{9}{10}\) pounds, and Tiger weighed 13 \(\frac{1}{10}\) pounds. What is the total weight of both cats?

26 pounds

5. David ran 9 \(\frac{3}{4}\) miles on Saturday and 7 \(\frac{1}{4}\) miles on Sunday. How many miles did he run on the weekend?

17 miles

6. Amanda’s library books weigh 4 \(\frac{3}{8}\) pounds, and her purse weighs 1 \(\frac{5}{8}\) pounds. What is the total weight of her books and purse?

\[5 \frac{4}{8} \text{ pounds}\]
Mixed Differences

Answer each question.

1. Jenna bought a spool of ribbon that was $5 \frac{3}{4}$ meters long. She used $3 \frac{1}{4}$ meters of ribbon for a craft project. How many meters of ribbon does Jenna have left?
   \[ \frac{2}{4} \text{ meters} \]

2. Brandon has a male puppy with a mass of $3 \frac{3}{4}$ kilograms and a female puppy with a mass of $2 \frac{1}{4}$ kilograms. How much greater is the male puppy's mass than the female puppy's mass?
   \[ 1 \frac{1}{4} \text{ kilograms} \]

3. Jeff’s sister drives 14 miles to her college. His brother only drives $5 \frac{7}{10}$ miles to his college. How much farther does Jeff’s sister drive than his brother?
   \[ 8 \frac{3}{10} \text{ miles} \]

4. Montel bought a spool of string that was $10 \frac{10}{12}$ meters long. He used $6 \frac{9}{12}$ meters of string to make kites. How many meters of string does Montel have left?
   \[ 4 \frac{1}{12} \text{ meters} \]

5. Janet grew a pumpkin that weighs $13 \frac{3}{4}$ pounds and a melon that weighs $8 \frac{1}{4}$ pounds. How much heavier is the pumpkin than the melon?
   \[ 5 \frac{1}{4} \text{ pounds} \]

6. Aidan roller-skated $3 \frac{8}{10}$ miles around the lake. Josh roller-skated $2 \frac{7}{10}$ miles around the park. How much farther did Aidan roller-skate than Josh?
   \[ 1 \frac{8}{10} \text{ miles} \]
4.NF Cynthia's Perfect Punch

Solution

a.

The container is large enough to hold all of the ingredients. Perhaps the easiest way to see this is by observing that $4 \frac{5}{8}$ is less than 5 and $3 \frac{7}{8}$ is less than 4, so $4 \frac{5}{8} + 3 \frac{7}{8}$ is less than 9. Since there are less than 9 gallons of ingredients altogether they will certainly all fit in a 10-gallon container.

b.

To see how much total punch is made we need to add the amount of lemon lime soda to the amount of fruit juice. The picture below represents $4 \frac{5}{8} + 3 \frac{7}{8}$.

We can write the mixed numbers as a sum of a whole number and a fraction.

\[
4 \frac{5}{8} + 3 \frac{7}{8} = (4 + \frac{5}{8}) + (3 + \frac{7}{8})
\]

Since addition is commutative and associative, we can add the numbers in any order we wish. Let's add the whole numbers together and the fractions together.

\[
4 + 3 + \frac{5}{8} + \frac{7}{8} = 7 + \frac{5 + 7}{8} = 7 + \frac{12}{8}
\]

Next we can re-write $\frac{12}{8}$ as a mixed number...
$7 + \frac{12}{8} = 7 + \frac{8 + 4}{8} = \frac{7 + 8}{8} + \frac{4}{8} = 7 + 1 + \frac{4}{8}$

and add the whole numbers once again.

$7 + 1 + \frac{4}{8} = \frac{8}{8} + \frac{4}{8}$

Since $\frac{4}{8} = \frac{1}{2}$, we can write the sum as $8 \frac{1}{2}$. So we see that this recipe makes $8 \frac{1}{2}$ gallons of punch.