The way we taught students in the past simply does not prepare them for the higher demands of college and careers today and in the future. Your school and schools throughout the country are working to improve teaching and learning to ensure that all children will graduate high school with the skills they need to be successful.

In mathematics, this means three major changes. Teachers will concentrate on teaching a more focused set of major math concepts and skills. This will allow students time to master important ideas and skills in a more organized way throughout the year and from one grade to the next. It will also call for teachers to use rich and challenging math content and to engage students in solving real-world problems in order to inspire greater interest in mathematics.
In grade four, your child will use addition, subtraction, multiplication, and division to solve word problems, including problems involving measurement of volume, mass, and time. Students will continue to build their understanding of fractions—creating equal fractions, comparing the size of fractions, adding and subtracting fractions, and multiplying fractions by whole numbers. They will also start to understand the relationship between fractions and decimals. Activities in these areas will include:

- Adding and subtracting whole numbers up to 1 million quickly and accurately
- Solving multi-step word problems, including problems involving measurement and converting measurements from larger to smaller units
- Multiplying and dividing multi-digit numbers
- Extending understanding of fractions by comparing the size of two fractions with different numerators (top numbers) and different denominators (bottom numbers)
- Creating equal fractions \( \frac{3}{4} = \frac{3\times2}{4\times2} = \frac{6}{8} \)
- Adding and subtracting fractions with the same denominator
- Building fractions from smaller fractions \( \frac{1}{6} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8} \)
- Connecting addition and subtraction of whole numbers to multiplying fractions by whole numbers
- Connecting addition of fractions to the concept of angle measurement
- Representing and interpreting data
- Converting fractions with denominators of 10 or 100 into decimals
- Locating decimals on a number line
- Comparing decimals and fractions using the symbols > (more than), = (equal to), and < (less than)

Don’t be afraid to reach out to your child’s teacher—you are an important part of your child’s education. Ask to see a sample of your child’s work or bring a sample with you. Ask the teacher questions like:

- Is my child at the level where he/she should be at this point of the school year?
- Where is my child excelling? How can I support this success?
- What do you think is giving my child the most trouble? How can I help my child improve in this area?
- What can I do to help my child with upcoming work?
To find the area of this rectangle, students can first break it down into three parts. The length of each part can then be multiplied by the width of 18. 

\[18(600 + 40 + 9) = 18 \times 600 + 18 \times 40 + 18 \times 9.\]

Here are just a few examples of how students will develop and use their understanding of place value in grade four.

**Grade Three Mathematics**
- Use place value understanding to round whole numbers to the nearest 10 or 100
- Quickly and accurately add and subtract numbers through 1000 using knowledge of place value
- Use place value understanding to multiply and divide numbers up through 100
- Multiply one-digit whole numbers by multiples of 10 between 10 and 90. For example, 9×80 or 5×60

**Grade Four Mathematics**
- Use place value understanding to round multi-digit whole numbers to any place
- Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right
- Use place value understanding to find the product of two multi-digit numbers
- Compare two multi-digit numbers based on meanings of the digits in each place, using the symbols > (more than), = (equal to), and < (less than)

**Grade Five Mathematics**
- Use place value understanding to round decimals to any place
- Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and \(\frac{1}{10}\) of what it represents in the place to its left
- Read, write, and compare decimals based on the meanings of the digits in the tenths, hundredths, and thousandths place, using the symbols >, =, and <

To find the area of this rectangle, students can first break it down into three parts. The length of each part can then be multiplied by the width of 18. 

\[18 \times 600 = 10,800\]
\[18 \times 40 = 720\]
\[18 \times 9 = 162\]

Students learn that 
\[649 \times 18 \text{ is also equal to } (649 \times 10) + (649 \times 8).\]

Students use the concepts of area and place value as strategies to multiply multi-digit numbers. Students will explore a variety of strategies to deepen their understanding of multiplication.
Here are just a few examples of how students will learn about and work with fractions in grade four.

<table>
<thead>
<tr>
<th>Grade Three Mathematics</th>
<th>Grade four Mathematics</th>
<th>Grade Five Mathematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Determine a fraction’s place on a number line by defining the length from 0 to 1 as the whole and “cutting it” into equal parts</td>
<td>• Break down a fraction into smaller fractions with the same denominator, or bottom number, in more than one way ($\frac{1}{6} = \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{3}{6} + \frac{1}{6}$)</td>
<td>• Interpret a fraction as division of the numerator (the top number) by the denominator (the bottom number)</td>
</tr>
<tr>
<td>• Understand two fractions as equal if they are the same size or at the same point on a number line</td>
<td>• Explain why a fraction is equal to another fraction</td>
<td>• Add and subtract fractions with different denominators</td>
</tr>
<tr>
<td>• Compare the size of two different fractions of the same size object. For example, which is bigger: $\frac{1}{6}$ of a pizza or $\frac{1}{4}$ of that same pizza?</td>
<td>• Add and subtract mixed numbers (whole numbers mixed with fractions, such as 1$\frac{1}{2}$) with the same denominators</td>
<td>• Multiply a fraction by a whole number</td>
</tr>
<tr>
<td></td>
<td>• Multiply a fraction by a whole number</td>
<td>• Divide fractions by whole numbers and whole numbers by fractions</td>
</tr>
</tbody>
</table>

Students will use the number line to break fractions into smaller fractions and to show that $\frac{1}{6} = \frac{1}{3}$.

Understanding and creating equal fractions will prepare students for the next step: adding and subtracting fractions with different denominators.
Helping your child learn outside of school

1. Use everyday objects to allow your child to explore the concept of fractions. For example, use measuring cups so students see how many times you have to refill a \( \frac{1}{4} \) cup to equal a \( \frac{1}{2} \) cup or how many \( \frac{1}{3} \)'s are in two cups. Have students describe two fractions that are equal using a measuring cup (filling a \( \frac{1}{4} \) measuring cup twice is the same as filling one \( \frac{1}{2} \) measuring cup).

2. Have your child write or describe fractions in different ways. For example, what are some different ways to make \( \frac{3}{4} \)? Answers could include \( \frac{1}{4} + \frac{1}{4} + \frac{1}{4} \) or \( 3 \times \frac{1}{4} \)

3. Ask your child create and describe equal fractions. For example, have students take a sheet of paper, fold the paper in half, and then unfold and shade \( \frac{1}{2} \). Then have students take the same sheet of paper and fold the paper in half again. Unfold the paper and have students discuss the number of parts that are now shaded. Encourage your child to talk about ways to show that \( \frac{1}{2} = \frac{2}{4} \). (Students may continue this process creating other equal fractions.)

4. Encourage your child to stick with it whenever a problem seems difficult. This will help your child see that everyone can learn math.

5. Praise your child when he or she makes an effort and share in the excitement when he or she solves a problem or understands something for the first time.

Additional Resources

For more information on the Common Core State Standards for mathematics, go to http://www.corestandards.org/Math/ or http://www.commoncoreworks.org.

For more information on the standards in mathematics related to place value (Number and Operations in Base Ten) or fractions, go to http://commoncoretools.me/category/progressions/.

For more information on helping your child learn mathematics (with activities from pre-school to grade five), go to http://www2.ed.gov/parents/academic/help/math/index.html.
KEY CONCEPT OVERVIEW

Lessons 1 through 4 focus on understanding **place value** and representing numbers up to 1 million in different forms, including on a **place value chart**. The lessons emphasize that each place value is 10 times as much as the value of the place to its right.

You can expect to see homework that asks your child to do the following:

- Label place value charts (up to millions), draw disks, and show regroupings (as shown in the sample problem below).
- Multiply and divide by 10 using the place value chart.
- Write numbers in the following forms:
  - Unit form (e.g., 4 thousands 3 hundreds 2 ones),
  - Standard form (e.g., 4,302),
  - Expanded form (e.g., 4,000 + 300 + 2), and
  - Word form (e.g., four thousand, three hundred two).

**SAMPLE PROBLEM** *(From Lesson 1)*

Label the place value chart. Fill in the blanks to make the **equation** true. Draw disks in the place value chart to show how you got your answer, using arrows to show any regrouping.

5 hundreds × 10 = **50** hundreds = **5** thousands

---

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.

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For more resources, visit » Eureka.support
HOW YOU CAN HELP AT HOME

- Support your child as he draws and labels a place value chart (up to millions). Ask him to say a large number (up to 1 million). Represent the number on the place value chart using cereal pieces for disks. Challenge each other to say the name of the number that was created, using the number forms previously listed.

- Ask your child to think of a number less than 1 million. See how many different ways she can represent the number in unit form (e.g., 2,345 as 23 hundreds 4 tens 5 ones; 2,345 ones; or 234 tens 5 ones). Writing the number within a place value chart might be helpful in this process.

- Challenge your child (and the rest of the family!) to skip-counting contests, going forward and backward, by threes, fours, sixes, sevens, eights, and nines (e.g., 0, 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 32, 24, 21, 18, 15, 12, 9, 6, 3, 0). Take turns saying the numbers. First, you give a number. Then your child gives a number. Help each other to stay on track!

TERMS

**Equation:** A statement that two expressions are equal. For example, \(2,349 + 32,401 = \_\_\_\_\_\_\_\_\_\_\_\_\) or \(2,349 + 32,401 = 34,750\).

**Place value:** The value of a given digit based on its position in a number. For example, the place value of the digit 2 in 235 is 200 (i.e., 2 hundreds).

MODELS

**Place Value Chart**

<table>
<thead>
<tr>
<th>millions</th>
<th>hundred thousands</th>
<th>ten thousands</th>
<th>thousands</th>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
KEY CONCEPT OVERVIEW

Lessons 5 and 6 emphasize **place value**. Students compare numbers and find 1, 10, and 100 thousand more and less than a number.

You can expect to see homework that asks your child to do the following:

- Use a **place value chart** to represent and compare two numbers.
- Compare numbers written in different forms using the symbols for less than (<), greater than (>), or equal to (=).
- Arrange numbers from least to greatest and from greatest to least.
- Find 1, 10, and 100 thousand more and less than a given number.

SAMPLE PROBLEM  *(From Lesson 5)*

Label the units in the place value chart. Draw place value disks to represent each number in the place value chart. Use <, >, or = to compare the two numbers. Write the correct symbol in the circle.

703,421 < 763,213

<table>
<thead>
<tr>
<th>millions</th>
<th>hundred thousands</th>
<th>ten thousands</th>
<th>thousands</th>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
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</thead>
<tbody>
<tr>
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</tbody>
</table>

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.
HOW YOU CAN HELP AT HOME

- Play the “Build a Number” game with your child. The objective of the game is to build a larger number than your opponent.
  1. Each player draws and labels a place value chart that extends to the hundred thousands.
  2. Players take turns rolling a die.
  3. Each time a player rolls, he chooses a place in his place value chart to draw disks to represent the number rolled. Only one number can be represented in each place.
  4. Play continues until each player has filled all of the places on his chart. Compare the numbers. The player with the larger number wins. (Variation: Build a smaller number.)

Be sure to talk to your child about strategy. For example, ask your child where he would draw the disks if he rolled the number 6 and the objective was to build the largest possible number. Listen for him to say that he would draw the disks in the empty space with the largest place value (i.e., hundred thousands or the next largest place value if hundred thousands is already taken).

- Write a 4, 5, or 6-digit number on a piece of paper. On another piece of paper, write a number that is 1, 10, or 100 thousand more or less than the first number. Give the second number to your child. Ask her: What do you need to add/subtract to/from your number so that it will equal my number?

TERMS

**Place value:** The value of a given digit based on its position in a number. For example, the place value of the digit 2 in 235 is 200 (i.e., 2 hundreds).

MODELS

**Place Value Chart**

<table>
<thead>
<tr>
<th>millions</th>
<th>hundred thousands</th>
<th>ten thousands</th>
<th>thousands</th>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
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</tbody>
</table>
**KEY CONCEPT OVERVIEW**

Lessons 7 through 10 focus on rounding numbers to the nearest hundred, thousand, ten thousand, and/or hundred thousand and using rounding skills to make estimates when solving word problems.

You can expect to see homework that asks your child to do the following:

- Round a number to a given place value with and without the use of a **vertical number line**.
- Estimate a **sum** by rounding (e.g., \(505,341 + 193,841 \approx 500,000 + 200,000\)).
- Solve word problems that involve estimating an answer.

**SAMPLE PROBLEM** *(From Lesson 8)*

Complete the statement by rounding the number to the given place value. Use the number line to show your work. Explain how you found your answer.

541,899 rounded to the nearest ten thousand is **540,000**.

\[541,899\]

**I know that there are 54 ten thousands in 541,899. That means that 541,899 comes between 540,000 and 550,000. 545,000 is the halfway point. I know that 541,899 is less than 545,000. That means it is closer to 540,000.**

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.
**HOW YOU CAN HELP AT HOME**

- Talk to your child about times that you use rounding, such as estimating how many grocery items you can buy with a $20 bill or how many errands you can get done in 60 minutes. Explain your thinking. Have a discussion about times when it makes sense to round and times when it is important to find an exact answer.

- Write a 6-digit number on a piece of paper. Ask your child to round the number to the nearest hundred, nearest thousand, nearest ten thousand, and nearest hundred thousand.

**TERMS**

*Sum:* The result of adding two or more numbers (e.g., in $3 + 2 = 5$, the number 5 is the sum).

**MODELS**

*Vertical Number Line*

```
  4,000
  
  3,500
  
  3,000
```

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KEY CONCEPT OVERVIEW

In Lessons 11 and 12, students add multi-digit numbers and solve multi-step word problems.

You can expect to see homework that asks your child to do the following:

- Solve addition problems using the **standard algorithm**.
- Solve word problems using variables to represent the unknown numbers and **tape diagrams** as models.
- Use rounding to check if the answers make sense.

SAMPLE PROBLEM  *(From Lesson 12)*

Model the problem with a tape diagram. Estimate and then solve. Explain if your answer is reasonable.

There were 5,416 more visitors to the museum in the month of June than in the month of December. December had 4,882 visitors. How many visitors did the museum have during both months?

\[ V = 15,180 \]

a. About how many visitors did the museum have during June and December?

\[ 5,000 + 5,000 + 5,000 = 15,000 \]

**The museum had about 15,000 visitors during June and December.**

b. Exactly how many visitors did the museum have during June and December?

**The museum had exactly 15,180 visitors during June and December.**

\[
\begin{array}{c}
4,882 \\
+5,416 \\
\hline
15,180
\end{array}
\]

c. Is your answer reasonable? Compare your estimate to the answer. Write a sentence to explain your reasoning.

**My answer is reasonable because my estimate of 15,000 is only about 200 less than the actual answer of 15,180. My estimate is close because two addends rounded up and one rounded down.**

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.

For more resources, visit » Eureka.support
HOW YOU CAN HELP AT HOME

- Provide opportunities for your child to practice multi-digit addition. Ask her to look in a magazine or newspaper for numbers greater than one thousand. Tell her to choose two of the numbers and to add them together. Ask her to explain each step.

- Pose word problems to your child and ask him to solve them. For example, Mark typed 2,345 words on Monday and 3,867 words on Tuesday. How many words did Mark type altogether on Monday and Tuesday? Encourage your child to draw a tape diagram, to round to estimate an answer, and then to find the exact answer. Answers should be written as statements. Ask your child to assess the reasonableness of his answer. Does the answer make sense?

- Look at a school calendar. Prompt your child to count how many days of school there have been so far. Then, ask her to count how many days of school there are left. Ask her to calculate the total number of days in the school year, first by estimating and then by using the exact numbers. Have her draw a tape diagram to represent the problem.

TERMS

Standard algorithm: A standard step-by-step procedure to solve a particular type of problem (e.g., the process of adding vertically with regrouping is a standard algorithm).

MODELS

Tape Diagram

![Tape Diagram](image)

C

3,907

2,568

Tape Diagram

![Tape Diagram](image)

June

6,782

July

4,806

V

For more resources, visit Eureka.support

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KEY CONCEPT OVERVIEW

In Lessons 13 through 16, students subtract multi-digit numbers and solve word problems.

You can expect to see homework that asks your child to do the following:

- Solve subtraction problems using the **standard algorithm** and check answers using addition.
- Solve word problems using **tape diagrams** as models and **variables** to represent the unknown numbers.
- Use rounding to check if the answers make sense.

SAMPLE PROBLEM  *(From Lesson 13)*

Draw a tape diagram to represent the following problem. Use numbers to solve. Write your answer as a statement. Check your answer.

What number must be added to 1,628 to result in a sum of 8,226?

\[ V = 6,598 \]

\[ 6,598 \text{ must be added to } 1,628 \text{ to result in a sum of } 8,226. \]

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

- Provide opportunities for your child to solve multi-digit subtraction problems. For example, given that there are 365 days in a common year, ask him to count up how many days have passed so far this year and then subtract from 365 to determine the number of days left in the year. Ask him to explain each step.
- Let your child be the teacher. First, she’ll need to start by coming up with a word problem for you that involves subtraction. (For example: The ice cream stand sold 1,367 cones on Monday and 988 cones on Tuesday. Solve to find out how many more cones were sold on Monday than on Tuesday.) Next, she’ll need to ask you to solve the problem. Now it’s your turn! Draw a tape diagram, round to estimate an answer, and then find the exact answer. Your answer should be written as a statement. Ask your child, “Is my answer reasonable? How do you know?” Then ask her to check your work to see if it’s correct.

For more resources, visit » Eureka.support
**TERMS**

**Standard algorithm:** A standard step-by-step procedure to solve a particular type of problem. For example, the process of subtracting vertically with regrouping is a standard algorithm.

**Sum:** The result of adding two or more numbers. For example, in $3 + 2 = 5$, the number 5 is the sum.

**Variable:** A letter that stands for a number. For example, in $5 + 2 = V$, $V$ is the variable.

**MODELS**

Tape Diagram

![Tape Diagram](image)

3,907 2,568

**Tape Diagram**

![Tape Diagram](image)

June 7,826
July 4,806

$V$
KEY CONCEPT OVERVIEW

Lessons 17 through 19 focus on solving and creating multi-step word problems.

You can expect to see homework that asks your child to do the following:

- Represent word problems with tape diagrams, using variables for the unknown numbers.
- Solve word problems and write answers as statements.
- Use rounding to check if the answers make sense.
- Create and solve word problems based on tape diagrams.

SAMPLE PROBLEM (From Lesson 19)

Using the diagram below, create your own word problem. Solve for the value of the variable.

Eliza’s video had 24,801 shares. Tasha’s video had 23,522 more shares than Eliza’s video. How many total shares did the videos have?

```
  24,801
  23,522

  + T

  73,124
```

\[ T = 73,124 \]

The videos had 73,124 total shares.

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.
HOW YOU CAN HELP AT HOME

- Ask your child to restate each homework problem in her own words. Make sure she understands each problem before she begins to draw her tape diagram. After the tape diagram has been drawn, and before your child attempts to solve the problem, ask her to explain the tape diagram to you.

- As your child creates his own word problems, he may need help finding a context. Help him to think of realistic contexts that use large numbers (e.g., tickets to a concert, miles driven in one year, the cost of a new car, website ‘hits’, number of things made or sold).

- Let your child be the teacher. First, she should draw and label a tape diagram (using a variable for the unknown number). Next, she should prompt you to create a word problem based on the diagram. Finally, after you have created a problem and then solved it, she should check your answer.

TERMS

Variable: A letter that stands for a number. For example, in $5 + 2 = V$, $V$ is the variable.

MODELS

Tape Diagram

![Tape Diagram](image)

Tape Diagram

![Tape Diagram](image)
**KEY CONCEPT OVERVIEW**

Module 2 focuses on length, mass, and capacity in the metric system. In Lessons 1 through 3, students express larger metric units in terms of smaller metric units (e.g., 1 km = 1,000 m).

You can expect to see homework that asks your child to do the following:

- **Convert** from larger units to smaller units (find equivalent measures).
- Add and subtract amounts expressed in **mixed units** (for example, kilometers and meters) using a **simplifying strategy** or **algorithm** (an example of each is shown in the sample problem below).
- Solve word problems using **tape diagrams** as models.

**SAMPLE PROBLEM** *(From Lesson 1)*

Solve using an algorithm or a simplifying strategy.

54 m 18 cm – 9 m 63 cm

Sample Response (Algorithm):

\[
\begin{array}{c}
54 \text{ m } 18 \text{ cm} \\
- \quad 9 \text{ m } 63 \text{ cm} \\
\hline
4 \text{ m } 55 \text{ cm}
\end{array}
\]

Sample Response (Simplifying Strategy):

\[
\begin{align*}
9 \text{ m } 63 \text{ cm} & \quad + \quad 37 \text{ cm} \\
& \quad + \quad 44 \text{ m} \\
& \quad + \quad 18 \text{ cm} \\
\hline
& \quad 37 \text{ cm} + 44 \text{ m} + 18 \text{ cm} = 44 \text{ m } 55 \text{ cm}
\end{align*}
\]

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.

**HOW YOU CAN HELP AT HOME**

- Pose questions such as, “Would we measure the distance from here to the store with centimeters, meters, or kilometers?” or “Would we measure a person’s mass in grams or kilograms?” Ask your child to justify her answers.
- Practice metric conversions from a larger unit to a smaller unit. Use the units of kilometer, meter, centimeter, kilogram, gram, liter, and milliliter (e.g., 3 m = __ cm). Make a game with index cards. Write one measurement on each card (e.g., write “3 m” on one card and “300 cm” on another card). Use the cards to play a variation of a memory game or Go Fish. The objective is to make matches of equivalent measures.
- Continue to encourage your child to practice skip-counting, forward and backward, by threes, fours, sixes, sevens, eights, and nines (e.g., 0, 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 27, 24, 21, 18, 15, 12, 9, 6, 3, 0). As your child is successful, raise the level of difficulty. Challenge him to start at a number other than 0 (e.g., 18, 21, 24, 27, 30, 27, 24, ...).
**TERMS**

**Algorithm:** A step-by-step procedure to solve a particular type of problem (e.g., the process of subtracting vertically with regrouping).

**Convert:** To express a measurement in a different unit (e.g., liters expressed as milliliters).

**Metric units:** Units used in the metric system (e.g., centimeter, meter, kilometer, gram, kilogram, milliliter, and liter).

**Centimeter (cm):** Unit of measure for length.

**Meter (m):** Unit of measure for length.

**Kilometer (km):** Unit of measure for length.

**Gram (g):** Unit of measure for mass.

**Kilogram (kg):** Unit of measure for mass.

**Milliliter (mL):** Unit of measure for liquid volume.

**Liter (L):** Unit of measure for liquid volume.

**Mixed units:** Expressing a number in terms of more than one unit (e.g., 2 tens 4 ones or 2 meters 34 centimeters).

**Simplifying strategy:** A mental math or recorded method for making a problem easier to solve (e.g., adding to the next unit or using a number bond).

---

### Metric Conversions

<table>
<thead>
<tr>
<th>Unit</th>
<th>Conversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>kg</td>
<td>1,000 g</td>
</tr>
<tr>
<td>L</td>
<td>1,000 mL</td>
</tr>
<tr>
<td>km</td>
<td>1,000 m</td>
</tr>
<tr>
<td>m</td>
<td>100 cm</td>
</tr>
</tbody>
</table>

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### MODELS

**Conversion Table**

<table>
<thead>
<tr>
<th>Mass</th>
<th>kg</th>
<th>g</th>
</tr>
</thead>
<tbody>
<tr>
<td>kg</td>
<td>3</td>
<td>7,000</td>
</tr>
<tr>
<td>5</td>
<td>100,000</td>
<td></td>
</tr>
<tr>
<td>7,000</td>
<td>100,000</td>
<td></td>
</tr>
</tbody>
</table>

**Tape Diagram**

- **C**: 3.907
- **V**: 6.782
- **June**: 4.806
- **July**: 2.568
KEY CONCEPT OVERVIEW

In Lessons 4 and 5, students relate what they know about place value units as they convert, compare, place metric measurements on a number line, and solve word problems.

You can expect to see homework that asks your child to do the following:

- Convert metric units (e.g., 3 km 156 m is equal to 3,156 m).
- Compare measurements expressed in metric units (e.g., 6,225 m > 5 km 226 m).
- Place measurements on a number line (see sample problem below).
- Use a tape diagram to model word problems, and solve word problems involving length, mass, and capacity.

SAMPLE PROBLEM  (From Lesson 4)

Place the following measurements on the number line.

| 3 km 346 m | 4,100 m | 2 km 92 m | 3,709 m | 2,449 m |

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

- Together with your child, look through your kitchen cupboards. Take out several cans of food. Look at the labels to see if you can find any metric units, such as grams, that are comparable. Use the measurements to line the cans up from least to greatest. Draw a number line and then plot and label the measurements.
- Ask your child to create a word problem using the measurements from several cans of food. For example, “Susie had a can of corn, a can of potatoes, and a can of soup. The can of corn had a mass of 418 grams and the can of potatoes had a mass of 425 grams. The total mass of all three cans was 1,151 grams. What was the mass of the can of soup?” Together, draw a tape diagram to model the problem. Solve.

For more resources, visit » Eureka.support
**TERMS**

**Convert:** To express a measurement in a different unit (e.g., liters expressed as milliliters).

**Metric units:** Units used in the metric system. Centimeter, meter, kilometer, gram, kilogram, milliliter, and liter are all examples of metric units.

**Centimeter (cm):** Unit of measure for length.

**Meter (m):** Unit of measure for length.

**Kilometer (km):** Unit of measure for length.

**Gram (g):** Unit of measure for mass.

**Kilogram (kg):** Unit of measure for mass.

**Milliliter (mL):** Unit of measure for liquid volume.

**Liter (L):** Unit of measure for liquid volume.

**MODELS**

**Number Line**

```
2 km  | 3 km  | 4 km  | 5 km  | 6 km
```

**Tape Diagram**

![Tape Diagram]

**Tape Diagram**

```
June  | 0.782
July  | 0.806
```

**Metric Conversions**

<table>
<thead>
<tr>
<th>Unit (metric)</th>
<th>Conversion to Smaller Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 kg</td>
<td>1,000 g</td>
</tr>
<tr>
<td>1 L</td>
<td>1,000 mL</td>
</tr>
<tr>
<td>1 km</td>
<td>1,000 m</td>
</tr>
<tr>
<td>1 m</td>
<td>100 cm</td>
</tr>
</tbody>
</table>

For more resources, visit [Eureka.support](https://Eureka.support)
In Lessons 1 through 3, students learn about the **area** and **perimeter** of rectangles. They solve word problems by using the formulas for area and perimeter.

You can expect to see homework that asks your child to do the following:

- Use formulas to find the area, perimeter, and unknown side length(s) of a rectangle.
- Find the side length of a rectangle knowing that it is “___ times as long as” another side.
- Solve word problems by using the formulas for area and perimeter.

**SAMPLE PROBLEM**  *(From Lesson 3)*

Solve the following problem. Use pictures, numbers, or words to show your work.

The length of a rectangular rug is 5 times its width. If the rug’s width is 2 feet, what is its area?

\[
l = 5 \times w
\]

\[
l = 5 \times 2 \text{ ft} = 10 \text{ ft}
\]

\[
A = l \times w
\]

\[
A = 10 \text{ ft} \times 2 \text{ ft}
\]

\[
A = 20 \text{ square ft}
\]

*The area of the rug is 20 square feet.*
HOW YOU CAN HELP AT HOME

- With your child, identify rectangular shapes in your home (e.g., window, door, top of table, top of dresser, cookie sheet, place mat, rug). Ask your child to use a tape measure or a ruler to measure the length and the width of each rectangle to the nearest inch. Then have your child find the area and perimeter of each rectangle. Keep in mind that he might need to use a calculator if the numbers are large.

- Find two dice. Give one die to your child, and keep one for yourself. Have your child roll her die. Next, roll your die. Using the number that you rolled, prompt your child to find the number that is “___ times as many as” the number that she rolled. Switch roles, and repeat.

TERMS

**Area**: The amount of space inside a two-dimensional shape. For example, in rectangles, \( \text{Area} = \text{length} \times \text{width} \).

**Perimeter**: The sum of the side lengths of a closed shape. For example, a square with a side length of 2 inches has a perimeter of 8 inches (i.e., 2 inches + 2 inches + 2 inches + 2 inches = 8 inches).
KEY CONCEPT OVERVIEW

In Lessons 4 through 6, students focus on **place value** and discover patterns as they multiply a whole number by 10, 100, or 1,000 (e.g., \(5 \times 1,000\)) and multiply a whole number by multiples of 10, 100, and 1,000 (e.g., \(5 \times 5,000\)).

You can expect to see homework that asks your child to do the following:

- Draw place value disks and arrows on a **place value chart** to represent multiplication by 10, 100, and 1,000 and by multiples of 10, 100, and 1,000.
- Use an **area model** (see Sample Problem below) to represent the multiplication of a two-digit multiple of 10 by a two-digit multiple of 10 (e.g., \(40 \times 40\)).

SAMPLE PROBLEM  *(From Lesson 6)*

Draw an area model to represent \(40 \times 40\).

\[
\begin{array}{c}
\text{40} \\
\text{40}
\end{array}
\]

\[
\begin{array}{c}
4 \text{ tens} \times 4 \text{ tens} = 16 \text{ hundreds} \\
40 \times 40 = 1,600
\end{array}
\]

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

- Help your child to remember that “tens times tens equals hundreds.” Have her make 10 groups of 10 objects (e.g., make 10 groups of 10 pennies or 10 groups of 10 mini marshmallows). Ask, “How many do you have?”
- Help your child remember the value of disks in a place value chart. Take turns drawing disks in a blank place value chart, and challenge each other to read the number in unit form while looking at the place value disks. For example, if you draw 2 disks in the hundreds column, 1 disk
HOW YOU CAN HELP AT HOME (CONTINUED)

in the tens column, and 3 disks in the ones column, your child would say, “2 hundreds, 1 ten, 3 ones.”

• Create a game to practice multiplication facts with your child. Each of you will need ten index cards or small pieces of paper. Number the cards so each of you has one card for each digit (0–9). Place the cards facedown in a pile. One player picks up two cards. The other player has to multiply the numbers shown on the two cards. Switch roles. See how many problems you can complete in one minute.

TERMS

Place value: The value of a given digit based on its position in a number. For example, the place value of the digit 2 in 235 is 200 (i.e., 2 hundreds).

MODELS

Area Model: A model used to help solve multiplication and division problems.

Place Value Chart
KEY CONCEPT OVERVIEW

Lessons 7 through 11 focus on multiplication. Students multiply a one-digit number by a number with up to four digits.

You can expect to see homework that asks your child to do the following:

- Draw place value disks to represent multiplication expressions.
- Multiply one-digit numbers by a number with up to four digits by using the standard algorithm, the partial products method, and the area model (as shown in this order in the Sample Problem below).
- Use multiplication to solve word problems.

SAMPLE PROBLEM (From Lesson 11)

Solve the following expression by using the standard algorithm, the partial products method, and the area model.

\[ 9 \times 762 \]

\[ \begin{array}{c}
\times & 7 & 6 & 2 \\
9 & & & \\
\hline
6, & 8, & 5, & 8 \\
\end{array} \]

\[ \begin{array}{c}
\times & 7 & 6 & 2 \\
9 & & & \\
\hline
9, & 6,300 & 540 & 18 \\
\end{array} \]

\[ \begin{array}{c}
9 \times (700 + 60 + 2) \\
(9 \times 700) + (9 \times 60) + (9 \times 2) \\
6,300 + 540 + 18 = 6,858 \\
\end{array} \]

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

- Discuss with your child the different methods for solving multiplication expressions. Ask her to explain which one she likes best and why. This will help you to understand her math thinking and help her to verbalize her thoughts.
- Write five multiplication expressions of a one-digit number times a two-, three-, or four-digit number. Before your child solves each expression, prompt him to roll a die to determine which method to use: 1 means standard algorithm, 2 means partial products, 3 means area model, 4 means his choice, 5 means you have to solve, 6 means he can use a calculator.

For more resources, visit » Eureka.support
**Expression:** Any combination of sums, differences, products, or divisions of numbers that evaluates to a number. For example, $3 \times 4$ is an expression. Expressions do not have an equal sign.

**Partial products:** The result of decomposing a multiplication expression into smaller parts. For example, we can decompose $24 \times 6$ into the partial products of $20 \times 6$ and $4 \times 6$.

**Standard algorithm:** A standard step-by-step procedure to solve a particular type of problem. For example, the process of multiplying vertically with regrouping is a standard algorithm.
In Lessons 12 and 13, students solve word problems. The problems have multiple steps and can be solved by using a combination of addition, subtraction, and multiplication.

You can expect to see homework that asks your child to do the following:

- Use the **RDW process** to solve word problems.
- Create word problems that correspond to a **tape diagram**.

**SAMPLE PROBLEM** *(From Lesson 12)*

Use the RDW process to solve the following problem.

Holly delivered 244 newspapers. Mike delivered three times as many newspapers as Holly. Their goal was to deliver 1,200 newspapers altogether. How many more newspapers do they have to deliver to meet their goal?

**Holly and Mike have to deliver 224 more newspapers to meet their goal.**

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.
HOW YOU CAN HELP AT HOME

- With your child, read a magazine article or a page from a book. Together, use the context of what you’ve read to create a word problem. Solve the problem together by using the RDW process. Have your child write the problem on a clean sheet of paper and take it and the solution with her to school. Prompt her to challenge one of her classmates to solve the problem. The original solution can be used as an answer key.

- Continue to practice basic facts for addition, subtraction, multiplication, and division. Find fact practice websites that are interactive and fun.

TERMS

**RDW process**: A three-step process used in solving word problems. **RDW** stands for Read, Draw, Write: Read the problem for understanding; Draw a model (e.g., a tape diagram) to help make sense of the problem; Write an equation and a statement of the answer.

MODELS

**Tape Diagram**

![Tape Diagram Image]

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KEY CONCEPT OVERVIEW

Lessons 14 through 21 focus on division. Students develop an understanding of **remainders**. They use different methods to solve division problems.

You can expect to see homework that asks your child to do the following:
- Use the RDW process to solve word problems involving remainders.
- Show division by using place value disks, arrays, **area models**, and **long division**.
- Check division answers by using multiplication and addition.

SAMPLE PROBLEM  *(From Lesson 21)*

Solve $87 ÷ 5$ by using an area model. Use long division and the **distributive property** to record your work.

- **Area Model**:
  
  \[
  \begin{array}{ccc}
  & 8 & 8 \\
  5 & 40 & 40 \\
  \hline
  5 & 5 & \quad \text{(40 ÷ 5) + (40 ÷ 5) + (5 ÷ 5)}
  \\
  & 8 & 8 + 1 \\
  & 17 & \quad \text{(check: (5 × 17) + 2 = 87)}
  \end{array}
  \]

  \[
  \begin{array}{c}
  1 \quad \text{R2} \\
  \hline
  5 & 8 & 7 \\
  - & 5 & \quad \text{(check: (5 × 17) + 2 = 87)}
  \\
  & 3 & 7 \\
  - & 3 & 5 \\
  & 2
  \end{array}
  \]

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.
**How You Can Help at Home**

- Provide your child with many opportunities to interpret remainders. For example, give scenarios such as the following: Arielle wants to buy juice boxes for her classmates. The juice boxes come in packages of 6. If there are 19 students in Arielle’s class, how many packages of juice boxes will she need to buy? (4) Will there be any juice boxes left? (Yes) How many? (5)
- Play a game of Remainder or No Remainder with your child.
  1. Say a division expression like 11 ÷ 5.
  2. Prompt your child to respond with “Remainder!” or “No remainder!”
  3. Continue with a sequence such as 9 ÷ 3 (No remainder!), 10 ÷ 3 (Remainder!), 25 ÷ 3 (Remainder!), 24 ÷ 3 (No remainder!), and 37 ÷ 5 (Remainder!). See how many problems your child can answer in one minute.

**Terms**

**Distributive Property:** A property of multiplication that can be used to create an easier problem, for example, 6 fours = 5 fours + 1 four or $6 \times 4 = (5 \times 4) + (1 \times 4)$.

**Long Division:** A process taken to solve a division problem; also known as the standard algorithm for division.

**Quotient:** The resulting answer when one number is divided by another. For example, in $28 \div 4 = 7$, the number 7 is the quotient.

**Remainder:** The number left over when a whole number is divided by a whole number, for example, $25 \div 6 = 4$ with a remainder of 1.

**Standard Algorithm:** A standard step-by-step procedure to solve a particular type of problem. For example, the process of long division is a standard algorithm.

**Models**

**Area Model:** A model used to help solve multiplication and division problems.

![Area Model Diagram]

$68 \div 4 = 17$
In Lessons 22 through 25, students identify **factors** that make up a number less than 100. They also identify **multiples, prime numbers**, and **composite numbers**.

You can expect to see homework that asks your child to do the following:
- Determine and record the factors and multiples of given numbers.
- Determine whether a number is prime or composite.
- Determine whether a given number is a factor of another number.
- Determine whether a given number is a multiple of another number.

### SAMPLE PROBLEM  *(From Lesson 22)*

Find all the factors for the following numbers, and classify each number as prime or composite. Explain your classification of each as prime or composite.

<table>
<thead>
<tr>
<th>Factor Pairs for 27</th>
<th>Factor Pairs for 31</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>27</td>
<td>31</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
</tr>
</tbody>
</table>

The number 27 is a composite number. It has more than two factors. The number 31 is prime. Its only factors are 1 and itself.

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.
HOW YOU CAN HELP AT HOME

• Create or print a hundreds chart. Have your child use crayons to color all of the multiples of a given number between 1 and 10. Choose a different color for each multiple. Look for and discuss any patterns that your child sees. For example, when coloring multiples of 2, your child should notice that the multiples all appear in the same columns and all end in 0, 2, 4, 6, or 8. When coloring multiples of 9, he should notice that the multiples appear in a diagonal pattern.

• Lay a calendar on the table. Ask your child to close her eyes. Prompt her to circle her pointer finger two times in the air, to place her finger on the calendar, and then to open her eyes. If the number that her finger has landed on is 10 or less, have her list the multiples of that number as high as she can successfully go. If the number is greater than 10, have her list the factors of that number and state whether the number is prime or composite.

TERMS

**Associative property (of multiplication):** When multiplying three or more numbers, the product will be the same regardless of how the numbers are grouped, for example, $6 \times 3 \times 8 = (6 \times 3) \times 8 = 6 \times (3 \times 8)$.

**Composite number:** A number with three or more factors. For example, 8 is a composite number because it has four factors: 1, 2, 4, and 8.

**Factor:** A number that is multiplied by another number. For example, in $3 \times 4 = 12$, the numbers 3 and 4 are factors. We can say, therefore, that 3 and 4 are factors of 12.

**Multiple:** The product of a given number and any other whole number. For example, 20 is a multiple of 10 because $2 \times 10 = 20$.

**Prime number:** A whole number greater than 1 with only two factors—1 and itself. For example, 3 is a prime number because it has only two factors—1 and 3.
KEY CONCEPT OVERVIEW

Lessons 26 through 33 focus on dividing three- and four-digit numbers by one-digit numbers, using different methods.

You can expect to see homework that asks your child to do the following:

- Divide by using place value disks, long division, and the area model.
- Check division work by using multiplication.
- Draw tape diagrams (see Sample Problem below) and solve division word problems, identifying whether the size of the groups or number of groups is unknown.
- Solve division word problems with remainders.

SAMPLE PROBLEM

Solve the following problem. Draw a tape diagram to help you solve. Identify whether the group size or the number of groups is unknown.

A group of students equally shared 816 liters of water. If each student received 2 liters of water, how many students received water?

\[
\begin{array}{c}
\text{816 liters} \\
\text{\begin{array}{c}
\text{2} \\
\vdots ...
\end{array}} \\
\text{\begin{array}{c}
\text{# of students}
\end{array}}
\end{array}
\]

\[
\begin{array}{c}
\text{Number of groups unknown} \\
408 \text{ students received water.}
\end{array}
\]

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

- Discuss with your child times when you might use division in everyday life. For example, you have $20 to spend on bagels. If each bagel costs $3, how many bagels can you buy? (6) Or, you have 37 orange slices to give to 8 soccer teammates. You want to give each of them 5 orange slices. Do you have enough? (No. You would need 40.)
- Take turns flipping a coin and creating word problems. If the coin lands on heads, create a word problem in which the size of the group is unknown (e.g., Sarah divided her 124 stickers equally among 4 of her friends. How many stickers will each of them get? (31)). If the coin lands on tails,
create a word problem in which the number of groups is unknown (e.g., Sarah gave away a total of 124 stickers. If she gave each of her friends 31 stickers, how many friends received stickers? (4)). Challenge each other to solve the problems.

- Ask your child to draw and label a place value chart. Create a four-digit number on the chart, using cereal or raisins for disks. Ask your child to use his “disks” to demonstrate how to divide the number by 2, 3, or 4.

**TERMS**

**Long division**: A process taken to solve a division problem, also known as the standard algorithm for division.

**Remainder**: The number left over when a whole number is divided by another whole number. For example, $25 \div 6 = 4$ with a remainder of 1.

**MODELS**

**Area Model**: A model used to help solve multiplication and division problems.

\[
\begin{array}{c}
600 \\
70 \\
2 \\
\end{array}
\begin{array}{c}
8 \\
4,800 \\
560 \\
16 \\
\end{array}
\]

\[
5,376 \div 8 = (4,800 \div 8) + (560 \div 8) + (16 \div 8) \\
= 600 + 70 + 2 \\
= 672
\]

**Tape Diagram**

\[
\begin{array}{c}
V \\
\end{array}
\begin{array}{c}
3,907 \\
2,568 \\
\end{array}
\begin{array}{c}
V \\
\end{array}
\begin{array}{c}
6,782 \\
\end{array}
\begin{array}{c}
June \\
July \\
\end{array}
\begin{array}{c}
4,806 \\
\end{array}
\]
Key Concept Overview

Lessons 34 through 38 focus on representing and solving multi-digit multiplication problems. Students use different methods to work with two-digit by two-digit multiplication problems.

You can expect to see homework that asks your child to do the following:
- Represent and solve multiplication expressions by using area models, partial products, and the distributive property (as shown in the Sample Problem below).
- Demonstrate knowledge of the associative property of multiplication.
- Use the standard algorithm to solve two-digit by two-digit multiplication problems.

Sample Problem (From Lesson 38)

Use the distributive property to express $32 \times 53$ as two partial products. Solve.

$$32 \times 53 = (2 \times 53) + (30 \times 53)$$

$$= (2 \times 53) + (3 \times 30 \times 53)$$

$$= 106 + 1590$$

$$= 1696$$

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at Great Minds.org.

For more resources, visit » Eureka.support
**HOW YOU CAN HELP AT HOME**

- Together with your child, look back at the multiplication work he did at the beginning of the module. Chances are he will be surprised at how much he’s learned! Ask him what success makes him the most proud. For example, perhaps he struggled at first with using the area model to model multiplication, but now he understands it.

- Prompt your child to talk about her favorite method for solving two-digit by two-digit multiplication (area model, partial products method, distributive property, or multiplication algorithm). Ask her to explain why that method is her favorite.

- Continue to practice basic facts for addition, subtraction, multiplication, and division. The goal is to know the facts by heart.

**TERMS**

**Associative property of multiplication:** When multiplying three or more numbers, the product will be the same regardless of how the numbers are grouped. For example, \(6 \times 3 \times 8 = (6 \times 3) \times 8 = 6 \times (3 \times 8)\) illustrates the associative property.

**Distributive property:** A property of multiplication that can be used to create an easier problem. For example, consider that \(6 \text{ fours} = 5 \text{ fours} + 1 \text{ four}\) or \(6 \times 4 = (5 \times 4) + (1 \times 4)\).

**Partial products:** The result of decomposing a multiplication expression into smaller parts. For example, we can decompose \(24 \times 6\) into the partial products of \(20 \times 6\) and \(4 \times 6\).

**MODELS**

**Area Model:** A model used to help solve multiplication and division problems.

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KEY CONCEPT OVERVIEW

In Lessons 1 through 4, students identify and draw points, lines, line segments, rays, angles, perpendicular lines, and parallel lines.

You can expect to see homework that asks your child to do the following:

- Draw figures containing points, lines, line segments, rays, and angles.
- Determine whether an angle is acute, right, or obtuse.
- Construct acute, right, and obtuse angles.
- Identify and draw perpendicular and parallel lines.

SAMPLE PROBLEM (From Lesson 1)

Use the following directions to draw a figure in the box to the right.

- Draw two points: \( A \) and \( B \).
- Use a straightedge to draw \( \overline{AB} \).
- Draw a new point, point \( C \), that is not on \( \overline{AB} \).
- Use a straightedge to draw \( \overrightarrow{AC} \).
- Draw point \( D \) that is not on \( \overline{AB} \) or \( \overrightarrow{AC} \).
- Use a straightedge to draw \( \overrightarrow{BD} \).
- Draw point \( E \) that is not on \( \overline{AB} \), \( \overrightarrow{AC} \), or \( \overrightarrow{BD} \).
- Use a straightedge to draw \( \overrightarrow{BE} \).
- Use the points you’ve already labeled to name two angles. \( \angle BAC \), \( \angle EBD \)
- Identify the angles you’ve labeled by drawing an arc to indicate the position of the angles.

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

- With your child, look around your home for acute, right, and obtuse angles and for perpendicular and parallel lines. You’ll likely discover that right angles, perpendicular lines, and parallel lines are the easiest to find! You might find acute and obtuse angles, among other places, on clocks, on the molding around windows and doors, on windows that crank open, and on hinged picture frames.

For more resources, visit » Eureka.support
TERMS

**Acute angle:** An angle with a measure less than 90 degrees.

**Angle:** Two rays that share a common vertex (they meet at the same point). For example, \( \overrightarrow{BA} \) and \( \overrightarrow{BC} \) have the common vertex of point \( B \) and form \( \angle ABC \).

**Line:** A straight path that extends in both directions without end. A line can be denoted, for example, as line \( \overrightarrow{AB} \) or \( AB \).

**Obtuse angle:** An angle with a measure greater than 90 degrees but less than 180 degrees.

**Parallel:** Two lines that do not intersect. Parallel lines can be denoted, for example, as \( \overrightarrow{AB} \parallel \overrightarrow{CD} \).

**Perpendicular:** Formed by two lines, line segments, or rays intersecting to form a 90 degree angle. Perpendicular lines are denoted by the symbol \( \perp \), for example, \( \overrightarrow{AB} \perp \overrightarrow{CD} \).

**Point:** A precise location in the plane designated by drawing a dot and labeling the dot with a letter. For example, a point can be denoted as point \( B \).

**Ray:** A point and the set of all points extending in one direction along a line. A ray is designated by an endpoint and an arrow and denoted, for example, as \( \overrightarrow{AB} \) or \( \overrightarrow{AB} \).

**Right angle:** An angle (formed by perpendicular lines) with a measure of 90 degrees.

**Segment:** Two points, \( A \) and \( B \), together with the set of points on line \( AB \) between \( A \) and \( B \). A segment is designated by two endpoints and denoted, for example, as segment \( \overline{AB} \) or \( AB \).

MODELS

**Right Angle Template**
KEY CONCEPT OVERVIEW

Lessons 5 through 8 focus on angle measurement. Students use protractors to measure and construct angles, and they record the measurements in degrees. Students also discover how $90^\circ$ turns add up to $180^\circ$, $270^\circ$, and $360^\circ$ turns.

You can expect to see homework that asks your child to do the following:
- Use a $360^\circ$ protractor to identify measures of angles.
- Use different protractors to measure angles.
- Construct angles given the number of degrees.
- Interpret and explore quarter ($90^\circ$) turns.

SAMPLE PROBLEM (From Lesson 7)

Construct an angle that measures the given number of degrees. Draw an arc to indicate the angle that was measured.

$54^\circ$

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.
HOW YOU CAN HELP AT HOME

- Using a straightedge, take turns with your child drawing angles on a piece of paper. Make a game of it. After drawing an angle, you and your child both guess how many degrees the angle measures. Measure the angle with a protractor to see whose guess was closest.

- Direct your child to use a protractor to draw an angle that measures a given number of degrees. Ask her to explain how she used the protractor.

- Practice, with your child, making quarter-turns with your bodies. Stand and face the same wall. Next, close your eyes. Take turns giving a directive to spin $90^\circ$, $180^\circ$, $270^\circ$, or $360^\circ$ to the right or left. After each spin, open your eyes to see whether you are both facing the same wall. If you are not, discuss who is facing the correct direction.

MODELS

180° Protractor

360° Protractor
KEY CONCEPT OVERVIEW

Lessons 9 through 11 focus on angle measurement. Students problem solve as they compose angles by using pattern blocks. Students also use what they know about the measure of right angles, straight angles, and angles around a point (360°) to solve for unknown angle measurements. (See Sample Problem.)

You can expect to see homework that asks your child to do the following:

- Compose angles of different measures by using pattern blocks.
- Determine unknown angle measurements mathematically and then use a protractor to verify the measurements.

SAMPLE PROBLEM  (From Lesson 11)

Write an equation and solve for the unknown angles numerically.

\( \angle TOS \) is 125°.

\[ g^\circ = 55^\circ \quad h^\circ = 125^\circ \quad i^\circ = 55^\circ \]

\[ 180^\circ - 125^\circ = i^\circ \]
\[ i^\circ = 55^\circ \]

\[ 55^\circ + h^\circ = 180^\circ \]
\[ h^\circ = 125^\circ \]

\[ 125^\circ + g^\circ = 180^\circ \]
\[ g^\circ = 55^\circ \]

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

- Prompt your child to lay two pieces of uncooked spaghetti on a piece of paper so they intersect at their midpoints. (She might want to tape the pieces down so they don’t move.) Next, direct her to use a protractor to measure any one of the angles. Finally, ask her to determine the measure of the other three angles mathematically (similar to what was done in the Sample Problem).

For more resources, visit » Eureka.support
HOW YOU CAN HELP AT HOME (continued)

- Draw a right angle. Ask your child to split the right angle into two smaller angles by drawing a ray that extends from the right angle. Prompt your child to measure one of the angles by using a protractor, and then ask him to mathematically determine the measure of the other angle (i.e., subtract the measured angle from \(90^\circ\) or add up to \(90^\circ\)). As a final step, he can use the protractor to prove that his calculation of the angle measure is correct. (Extend the activity by drawing and using a straight angle instead.)

TERMS

Angle: Two rays that share a common vertex (i.e., they meet at the same point). For example, \(\overline{BA}\) and \(\overline{BC}\) have the common vertex of point \(B\) and form \(\angle ABC\).

Right angle: An angle (formed by perpendicular lines) with a measure of 90 degrees.

Straight angle: An angle that measures 180 degrees.

MODELS

180° Protractor

Pattern Blocks

360° Protractor

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http://creativem dors.org/licenses/by-sa/4.0/
In Lessons 12 through 16, students explore lines of symmetry and characteristics of triangles and quadrilaterals.

You can expect to see homework that asks your child to do the following:

▪ Find and draw lines of symmetry.
▪ Given half of a figure and the line of symmetry, draw the other half of the figure.
▪ Classify triangles by side lengths (e.g., equilateral, isosceles, scalene) and by angle measurements (e.g., acute, right, obtuse).
▪ Draw triangles that fit different classifications (e.g., acute and scalene).
▪ Name quadrilaterals, identify attributes (i.e., characteristics) that define them, and construct them based on given attributes.

SAMPLE PROBLEM (From Lesson 13)

Classify each triangle by its side lengths and angle measurements. Circle the correct names.

<table>
<thead>
<tr>
<th></th>
<th>Classify Using Side Lengths</th>
<th>Classify Using Angle Measurements</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>![Triangle Diagram]</td>
<td>Equilateral, Isosceles, Scalene</td>
</tr>
<tr>
<td>b.</td>
<td>![Another Triangle]</td>
<td>Equilateral, Isosceles, Scalene</td>
</tr>
</tbody>
</table>

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.
HOW YOU CAN HELP AT HOME

- Ask your child to look around the house for objects that have lines of symmetry. Examples include the headboard of a bed, dressers, chairs, couches, and place mats. Ask him to show where the line of symmetry would be and what makes it a line of symmetry. Be careful of objects such as doors and windows. They could have a line of symmetry, but if there’s a knob or crank on just one side, then they are not symmetrical.

- Ask your child to name and draw all the quadrilaterals she can think of (e.g., square, rectangle, parallelogram, trapezoid, and rhombus). Alternatively, prompt her to draw a quadrilateral and then ask someone else to name it.

TERMS

**Acute angle:** An angle with a measure less than 90 degrees.

**Equilateral triangle:** A triangle with three sides of equal length.

**Isosceles triangle:** A triangle with at least two sides of equal length.

**Line of symmetry:** A line through a figure that creates two halves that match exactly.

**Obtuse angle:** An angle with a measure greater than 90 degrees but less than 180 degrees.

**Parallelogram:** A quadrilateral with two pairs of parallel sides. For example, squares, rectangles, and rhombuses are parallelograms.

**Quadrilateral:** Any polygon with four sides. For example, squares, rectangles, trapezoids, rhombuses, and parallelograms are all quadrilaterals.

**Rectangle:** A parallelogram with four 90 degree angles.

**Rhombus:** A parallelogram with all sides of equal length. A square is an example of a rhombus.

**Right angle:** An angle (formed by perpendicular lines) with a measure of 90 degrees.

**Scalene triangle:** A triangle with no sides of equal length and no angles of equal measure.

**Square:** A rectangle with all sides of equal length.

**Trapezoid:** A quadrilateral with at least one pair of parallel sides. Squares, rectangles, rhombuses, and parallelograms are examples of trapezoids as is any quadrilateral with one or two pairs of parallel sides.
KEY CONCEPT OVERVIEW

In Lessons 1 through 6, students explore fraction equivalence. They show how fractions can be expressed as the sum of smaller fractions by using different models.

You can expect to see homework that asks your child to do the following:

- **Decompose** fractions as a sum of **unit fractions** (e.g., \( \frac{3}{4} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4} \)), and write the equivalent **multiplication sentence** (e.g., \( \frac{3}{4} = 3 \times \frac{1}{4} \)).
- Draw and label **tape diagrams** to show decomposition of a fraction and to prove that two fractions are equivalent.
- Draw **area models** to show decomposition and to find equivalent fractions.

SAMPLE PROBLEM  *(From Lesson 5)*

Draw an area model to show the decomposition represented by the **number sentence** below. Represent the decomposition as a sum of unit fractions and as a multiplication sentence.

\[ \frac{1}{2} = \frac{4}{8} \]

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

\[ \frac{1}{2} = 4 \times \frac{1}{8} = \frac{4}{8} \]

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

- Explore fractions as you make sandwiches. Give a sandwich to your child. Ask her how many whole sandwiches she has. Cut your child’s sandwich in half. Ask her again how many whole sandwiches she has. Point to one half. Ask her to say the fraction that the piece represents. Point to the other half. Ask her again to say the fraction. Finally, ask her to say a number sentence that represents the decomposition \( (1 = \frac{1}{2} + \frac{1}{2}) \) or \( (1 = 2 \times \frac{1}{2}) \). Continue with this activity by decomposing the halves into smaller units (e.g., fourths, eighths).

For more resources, visit » Eureka.support
HOW YOU CAN HELP AT HOME
(continued)

- Use measuring cups to show equivalence. Measure \( \frac{2}{3} \) cup of water. Give your child the water and a \( \frac{1}{3} \)-cup measuring cup. Ask him how many times he will be able to fill the \( \frac{1}{3} \)-cup measuring cup with the water. Prompt him to prove it and then to say the decomposition in a number sentence, first using addition and then using multiplication (e.g., \( \frac{2}{3} = \frac{1}{3} + \frac{1}{3} \) and \( \frac{2}{3} = 2 \times \frac{1}{3} \)).

TERMS

Decompose/Decomposition: To break apart into smaller parts. There are multiple ways to show decomposition. For example, write \( 1 = \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} \) or \( 1 = \frac{2}{5} + \frac{2}{5} + \frac{1}{5} \), or partition a tape diagram into smaller parts to show equivalence, such as partitioning 1 whole into 5 fifths.

Equivalent: Names the same amount. For example, \( 2 \times \frac{1}{3} = \frac{2}{3} \) is equivalent to \( \frac{1}{3} + \frac{1}{3} = \frac{2}{3} \).

Multiplication sentence: A multiplication equation in which both expressions are numerical and can be evaluated to a single number. For example, \( 6 \times \frac{1}{8} = \frac{6}{8} \) is a multiplication sentence. Multiplication sentences do not have unknowns.

Number sentence: An equation for which both expressions are numerical and can be evaluated to a single number. For example, \( \frac{1}{4} + \frac{1}{4} = \frac{2}{4} \) and \( \frac{1}{10} + \frac{2}{10} + \frac{3}{10} = \frac{6}{10} \) are number sentences. Number sentences do not have unknowns.

Unit fraction: A fraction with a numerator of 1. For example, \( \frac{1}{2} \), \( \frac{1}{3} \), and \( \frac{1}{4} \) are all unit fractions.

MODELS

Area Model

\[
\begin{align*}
\frac{1}{2} &= \frac{6}{12} \\
\end{align*}
\]

Tape Diagram

\[
\begin{align*}
\frac{3}{4} &= \frac{1}{4} + \frac{1}{4} + \frac{1}{4} \\
\end{align*}
\]
In Lessons 7 through 11, students explore equivalent fractions by using multiplication and division. To explain how fractions can be equivalent, students use area models and the number line.

You can expect to see homework that asks your child to do the following:
- Express equivalent fractions in a number sentence by using multiplication (e.g., $\frac{1}{5} = \frac{1 \times 2}{5 \times 2} = \frac{2}{10}$).
- Express equivalent fractions in a number sentence by using division (e.g., $\frac{2}{10} = \frac{2 + 2}{10 + 2} = \frac{1}{5}$).
- Draw area models to represent number sentences and to prove fractions are equivalent.
- Draw number lines to show equivalence.

**SAMPLE PROBLEM** *(From Lesson 9)*

Compose the shaded fraction into larger fractional units. Express the equivalent fractions in a number sentence by using division.

With your child, take turns drawing area models, such as the one above, and shading a fraction of each. After you have drawn and shaded each area model, work together to determine whether you can compose the fraction into larger units.

Challenge your child to think about common factors. Write a fraction such as $\frac{4}{10}$. Ask your child to name the factors of 4 (1, 2, 4) and the factors of 10 (1, 2, 5, 10), and then ask him to name the common factors (1 and 2). Continue with other fractions.

For more resources, visit » Eureka.support
**TERMS**

**Compose:** To change a smaller unit for an equivalent larger unit (e.g., convert fourths to halves: $\frac{2}{4} = \frac{1}{2}$).

**Decompose:** To break apart into smaller parts (e.g., partition a tape diagram equally into smaller parts to show equivalence).

**Equivalent:** Identifies the same amount. For example, $\frac{2}{3} = \frac{2}{3}$ is equivalent to $\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$.

**Factor:** A number that is multiplied by another number. For example, in $3 \times 4 = 12$, the numbers 3 and 4 are factors; therefore, 3 and 4 are factors of 12.

**Fractional units:** The result of dividing a unit into parts. For example, halves, thirds, and fourths are fractional units.

**Number sentence:** An equation for which both expressions are numerical and can be evaluated to a single number. For example, $\frac{1}{4} + \frac{1}{4} = \frac{2}{4}$ and $\frac{1}{10} + \frac{2}{10} + \frac{3}{10} = \frac{6}{10}$ are number sentences. Number sentences do not have unknowns.

**Unit fraction:** A fraction with a numerator of 1. For example, $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{4}$ are all unit fractions.

**MODELS**

**Area Model**

Area Diagram

**Tape Diagram**

Tape Diagram

**Number Line**

Number Line
KEY CONCEPT OVERVIEW

In Lessons 12 through 15, students compare fractions by using different models (e.g., number line, area model) and strategies.

You can expect to see homework that asks your child to do the following:

- Plot fractions on a number line and use the number line to compare fractions.
- Compare fractions by referring to benchmarks. (See Sample Problem.)
- Compare fractions by thinking about the size of the unit (e.g., thirds are larger than sixths, so \( \frac{1}{3} > \frac{1}{6} \)).
- Compare fractions with common and related numerators (e.g., fifths are larger than eighths; there are three of each unit, so \( \frac{3}{5} > \frac{3}{8} \)).
- Compare fractions with common and related denominators (e.g., \( \frac{1}{3} \) is equivalent to \( \frac{2}{6} \), so \( \frac{1}{3} < \frac{3}{6} \)).

SAMPLE PROBLEM (From Lesson 12)

Compare the fractions below by writing > or < on the line. Give a brief explanation for the answer, referring to one or more of the benchmarks 0, \( \frac{1}{2} \), and 1.

\[
\frac{2}{3} < \frac{7}{8}
\]

\( \frac{2}{3} \) is one-third from 1. \( \frac{7}{8} \) is one-eighth from 1. Thirds are larger than eighths, meaning that \( \frac{2}{3} \) is farther from 1 than \( \frac{7}{8} \) is from 1, so \( \frac{2}{3} < \frac{7}{8} \).

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

Play the Fraction Number Battle game.
1. Remove the jacks, queens, kings, and jokers from a deck of cards. Let aces hold a value of 1. Decide how long you will play the game. Set a timer.
2. Divide the cards evenly between two players. Each player puts his cards facedown in a pile.
3. Each player picks two cards off the top of his pile, places them face up in the playing area, and arranges the cards as a fraction with the smaller number as the numerator.

For more resources, visit » Eureka.support
HOW YOU CAN HELP AT HOME (continued)

4. Each player calls out the value of his fraction. The player whose fraction has the greater value takes all of the cards played and places them at the bottom of his pile. If the fractions have an equal value, each player places three cards facedown in the playing area, followed by a new pair of cards face up, forming a new fraction with the cards. The player whose new fraction has the greater value gets all of the cards in the playing area.

5. Continue until one player wins by getting all of the cards. If time runs out first, the player with the most cards wins.

To LEARN MORE by viewing complete directions and other card game ideas, visit eurmath.link/eureka-card-games.

TERMS

Benchmark: A reference point by which something is measured. The numbers 0, $\frac{1}{2}$, and 1 are benchmarks that can be used to help compare fractions. For example, $\frac{3}{8}$ is less than $\frac{1}{2}$, and $\frac{4}{6}$ is greater than $\frac{1}{2}$; therefore, $\frac{3}{8}$ is less than $\frac{4}{6}$.

Denominator: Denotes the fractional unit (the bottom number in a fraction). For example, fifths in three-fifths, as represented by the 5 in $\frac{3}{5}$, is the denominator.

Numerator: Denotes the count of fractional units (the top number in a fraction). For example, three in three-fifths, or 3 in $\frac{3}{5}$, is the numerator.

MODELS

Area Model

Number Line

For more resources, visit Eureka.support

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KEY CONCEPT OVERVIEW

In Lessons 16 through 21, students add and subtract fractions. They use **number bonds**, **number lines**, and **tape diagrams**, as needed, to model the addition and subtraction. Students apply what they have learned to solve word problems.

You can expect to see homework that asks your child to do the following:

- Add and subtract fractions with like units (e.g., \( \frac{3}{6} + \frac{2}{6} \)) and unlike units (e.g., \( \frac{2}{6} + \frac{1}{3} \)).
- Record answers as **mixed numbers**, where applicable (e.g., \( \frac{11}{8} = 1\frac{3}{8} \)).
- Use the **RDW process** to solve word problems.

SAMPLE PROBLEM  (From Lesson 21)

Use a tape diagram to represent each addend. **Decompose** one of the tape diagrams to make like units. Then write the complete **number sentence**. Use a number bond to write the sum as a mixed number.

![Tape Diagram Example]

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

- Ask your child to teach you how to add and subtract fractions. Teaching you will help him to explain his thinking as he talks through the process. Ask him to explain how the models (the number bond, number line, and tape diagram) can help him solve.
- Together, find one of your child’s favorite recipes. Look at the amount needed for each ingredient. Pose the following questions: What happens if we want to make two batches of the recipe instead of one? How much of each ingredient will we need?

For more resources, visit » Eureka.support
Decompose/Decomposition: To break apart into smaller parts. There are multiple ways to show decomposition, for example, \( \frac{3}{6} = \frac{1}{2} + \frac{1}{6} \), or \( \frac{9}{6} = \frac{3}{2} + \frac{1}{6} \), or partitioning a tape diagram to make like units. (See Sample Problem.)

**Mixed number:** A number made up of a whole number and a fraction, for example, \( 13\frac{42}{100} \).

**Number sentence:** An equation for which both expressions are numerical and can be evaluated to a single number. For example, \( \frac{1}{4} + \frac{1}{4} = \frac{2}{4} \) and \( \frac{1}{10} + \frac{2}{10} + \frac{3}{10} = \frac{6}{10} \) are number sentences. Number sentences do not have unknowns.

**RDW process:** Read, Draw, Write is a three-step process used in solving word problems that requires students to read the problem for understanding, draw a model (e.g., a tape diagram) to help make sense of the problem, and write an equation and a statement of the answer.

**Unit form:** A number expressed in terms of its units. For example, \( \frac{15}{100} \) written in unit form is \( 1 \) tenth \( 5 \) hundredths or \( 15 \) hundredths.

---

**MODELS**

**Number Bond**

![Number Bond Diagram]

**Number Line**

![Number Line Diagram]

**Tape Diagram**

![Tape Diagram Diagram]
KEY CONCEPT OVERVIEW

In Lessons 22 through 28, students work with fractions greater than 1.

You can expect to see homework that asks your child to do the following:

▪ Add fractions to whole numbers and subtract fractions from whole numbers.
▪ Use tape diagrams, number bonds, number lines, benchmarks, and area models to add, subtract, and compare fractions.
▪ Multiply whole numbers by unit fractions.
▪ Convert fractions greater than 1 to mixed numbers.
▪ Convert mixed numbers to fractions greater than 1.
▪ Compare fractions by using <, >, or =.
▪ Create a line plot and solve problems related to its data.

SAMPLE PROBLEM  (From Lesson 22)

Solve by using a number bond. Draw a number line to represent the number sentence.

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

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

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

▪ Practice renaming whole numbers as a whole number and a fraction (e.g., 5 as \(4 \frac{4}{4}\)). This will help your child as he is tasked with subtracting a fraction from a whole number.
▪ Find 6 pencils of different lengths. Help your child to measure each pencil to the nearest quarter inch, and then create a chart that contains the measurements. Next, ask her to use the data to create a line plot (similar to the example on the following page), and then to create two questions based on the data.
TERMS

**Benchmark:** A reference point by which something is measured. The numbers 0, \( \frac{1}{2} \), and 1 are benchmarks that can be used to help compare fractions. For example, \( \frac{3}{8} \) is less than \( \frac{1}{2} \), and \( \frac{4}{6} \) is greater than \( \frac{1}{2} \); therefore, \( \frac{3}{8} \) is less than \( \frac{4}{6} \).

**Decompose/Decomposition:** To break apart into smaller parts. There are many ways to show decomposition, for example, \( 4 = 3 + \frac{3}{3} \) or \( 11 = 9 + \frac{2}{3} \) or \( 2 \frac{2}{3} = 1 \frac{2}{3} + 1 \).

**Fraction greater than 1:** A fraction with a numerator that is greater than the denominator. For example, \( \frac{5}{4} \) is a fraction greater than 1.

**Mixed number:** A number made up of a whole number and a fraction (e.g., \( 13 \frac{42}{100} \)).

**Number sentence:** An equation for which both expressions are numerical and can be evaluated to a single number. For example, \( \frac{1}{4} + \frac{1}{4} = \frac{2}{4} \) and \( \frac{1}{10} + \frac{2}{10} + \frac{3}{10} = \frac{6}{10} \) are number sentences. Number sentences do not have unknowns.

**Unit fraction:** A fraction with a numerator of 1. For example, \( \frac{1}{2} \), \( \frac{1}{3} \), and \( \frac{1}{4} \) are all unit fractions.

MODELS

**Line Plot**

Time Spent Doing Homework in One Week

- X
- X
- X
- X
- X

<table>
<thead>
<tr>
<th>Hours</th>
<th>5 ( \frac{3}{4} )</th>
<th>6</th>
<th>6 ( \frac{1}{4} )</th>
<th>6 ( \frac{1}{2} )</th>
<th>6 ( \frac{3}{4} )</th>
</tr>
</thead>
</table>

\( X = 1 \) student
In Lessons 29 through 34, students add and subtract fractions and mixed numbers by using different strategies. (See Sample Problem.)

You can expect to see homework that asks your child to do the following:

- Estimate the sum or difference of two mixed numbers (e.g., \(2\frac{1}{12} + 1\frac{7}{8} \approx 4\)).
- Add a mixed number and a fraction (e.g., \(2\frac{1}{5} + \frac{4}{5}\)).
- Add mixed numbers (e.g., \(2\frac{2}{3} + 1\frac{2}{3}\)).
- Subtract a fraction from a mixed number (e.g., \(3\frac{4}{6} - \frac{5}{6}\)).
- Subtract mixed numbers (e.g., \(5\frac{3}{10} - 4\frac{7}{10}\)).

**SAMPLE PROBLEM** (From Lesson 34)

Solve by using any strategy.

NOTE: The strategy used here to solve this problem, decompose the total, is just one possible strategy. Other strategies include the **arrow way** or using different number bonds/decomposition.

\[
\begin{align*}
7\frac{3}{8} - 4\frac{5}{8} &= 6\frac{11}{8} \\
\frac{3}{8} - \frac{5}{8} &= \frac{6}{8}
\end{align*}
\]

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.
HOW YOU CAN HELP AT HOME

- Ask your child to teach you the strategy she most prefers for adding and subtracting fractions. Ask her to explain why she thinks it’s better than other strategies.

- Practice decomposing, or taking apart, a mixed number. Write a mixed number on a piece of paper. Prompt your child to take one from the total, rename it in fractional form, and then add it to the mixed number that remains (e.g., \( \frac{3}{5} + \frac{5}{5} = \frac{8}{5} \)). Decompositions such as this help students with the strategy of decomposing the total before subtracting (e.g., \( \frac{3}{5} \) – \( \frac{4}{5} \) = \( \frac{8}{5} \) – \( \frac{4}{5} \) = \( \frac{4}{5} \)).

MODELS

Arrow Way

\[
\begin{array}{c}
4 \frac{3}{8} - 3 \frac{5}{8} = \frac{6}{8} \\
3 \frac{5}{8} + \frac{3}{8} \rightarrow 4 + \frac{3}{8} \rightarrow 4 \frac{3}{8}
\end{array}
\]
In Lessons 35 through 40, students multiply a whole number by a fraction or a mixed number, solve word problems involving fractions, and create line plots.

You can expect to see homework that asks your child to do the following:

- Write expressions in unit form to solve (e.g., $6 \times \frac{2}{5} = 6 \times \frac{2}{5}$).
- Rewrite repeated addition problems as multiplication problems (e.g., $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} = 3 \times \frac{1}{2}$).
- Multiply a whole number by a fraction (e.g., $3 \times \frac{1}{2}$).
- Use the **distributive property** to multiply a whole number by a mixed number. (See Sample Problem.)
- Use the **RDW process** to solve word problems involving multiplication of a whole number by a fraction or a mixed number.
- Interpret information from a chart and create a line plot.

---

**SAMPLE PROBLEM** *(From Lesson 37)*

Solve the following by using the distributive property.

\[
3 \times 2\frac{4}{6} = 3 \times \left(2 + \frac{4}{6}\right)
\]

\[
= (3 \times 2) + \left(3 \times \frac{4}{6}\right)
\]

\[
= 6 + \frac{12}{6}
\]

\[
= 6 + 2
\]

\[
= 8
\]

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.
HOW YOU CAN HELP AT HOME

- Choose one ingredient from your child’s favorite recipe. Ask him to determine how much of that ingredient you would need if you made the recipe four times. Choose another ingredient and repeat the activity.

- Ask your child to use a measuring cup (e.g., \(\frac{1}{4}\) cup, \(\frac{1}{3}\) cup, \(\frac{2}{3}\) cup, or \(\frac{3}{4}\) cup) to count how many measures of water are required to fill a larger container such as a jar, a drinking glass, or a bowl. Ask her to write a multiplication expression that could be used to find the amount of water needed to fill the container, and then ask her to solve. For example, if a drinking glass can hold three \(\frac{3}{4}\)-cup measures worth of water, the capacity of the drinking glass can be expressed as \(3 \times \frac{3}{4}\) cup, which is equal to \(2\frac{1}{4}\) cups.

TERMS

**Distributive property:** A property of multiplication that can be used to break apart a problem into an easier problem. For example, \(4 \times 6 \frac{2}{3} = (4 \times 6) + \left(4 \times \frac{2}{3}\right)\).

**RDW process:** Read, Draw, Write—A three-step process used in solving word problems that requires students to Read the problem for understanding; Draw a model (e.g., a tape diagram) to help make sense of the problem; and Write an equation and a statement of the answer.

MODELS

**Line Plot**

![Time Spent Doing Homework in One Week

<table>
<thead>
<tr>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>5(\frac{3}{4})</td>
<td>6</td>
<td>6(\frac{1}{4})</td>
<td>6(\frac{1}{2})</td>
</tr>
</tbody>
</table>

**X = 1 student**
KEY CONCEPT OVERVIEW

In Lesson 41, students find and use a pattern to calculate the sum of all fractional parts between 0 and 1. (See Sample Problem.)

SAMPLE PROBLEM (From Lesson 41)

Find the sum.

\[
\begin{array}{c}
1 \\
\hline
0 & 1 & 2 & 3 & 4 & 5 \\
\hline
5 & 5 & 5 & 5 & 5 & 5 \\
\hline
1
\end{array}
\]

\[
\left(\frac{0}{5} + \frac{5}{5}\right) + \left(\frac{1}{5} + \frac{4}{5}\right) + \left(\frac{2}{5} + \frac{3}{5}\right) = 1 + 1 + 1 = 3
\]

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

- Challenge your child to create his own math pattern problem by using addition, subtraction, multiplication, or any combination of the three operations. After he has finished creating the pattern and writing the numbers, try to figure out the pattern. For example, if he writes “1, 4, 7, 10, 13, 16, 19, ...”, the pattern is add 3.

- Prompt your child to find the sum of all whole numbers from 0 to 10. She can start by writing 0 + 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10. Next, she can look for a pattern. She will find that 5 pairs of numbers each add up to 10 (i.e., 0 + 10 = 10; 1 + 9 = 10; ...). There is one addend, 5, left, and 50 + 5 = 55.

For more resources, visit » Eureka.support
TERMS

**Denominator**: Denotes the fractional unit (e.g., fifths in 3 fifths as represented by the 5 in $\frac{3}{5}$).

**Unit fraction**: A fraction with a numerator of 1. For example, $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{4}$ are all unit fractions.
In Lessons 1 through 3, students explore tenths. They’ve already learned to express tenths in **fraction form**. Now they learn how to write the **decimal form** of tenths.

You can expect to see homework that asks your child to do the following:

- Express numbers in fraction form and decimal form (e.g., $\frac{6}{10} = 0.6$).
- Shade **area models** to express given numbers of ones and tenths.
- Use a centimeter ruler to draw line segments that match given lengths.
- Write **mixed numbers** in decimal form (e.g., $3\frac{1}{10} = 3.1$).
- Represent numbers with **place value disks**, on the **number line**, and in **expanded form**.

**SAMPLE PROBLEM** *(From Lesson 3)*

Draw disks to represent 3 tens 5 ones 2 tenths using tens, ones, and tenths. Then, show the expanded form of the number in fraction form and in decimal form.

3 tens 5 ones 2 tenths

$$\begin{align*}
\text{Fraction expanded form} & \quad \text{Decimal expanded form} \\
(3 \times 10) + (5 \times 1) + \left(2 \times \frac{1}{10}\right) & = \frac{35}{10} = 35.2 \\
\end{align*}$$

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.
HOW YOU CAN HELP AT HOME

- On index cards or small pieces of paper, write each of the fractions, in tenths, from $\frac{1}{10}$ to $\frac{10}{10}$ (i.e., $\frac{1}{10}, \frac{2}{10}, \frac{3}{10}, \ldots, \frac{10}{10}$). On another set of index cards, write each of the decimal numbers, in tenths, from 0 to 1.0 (i.e., 0.1, 0.2, 0.3, … , 1.0). Create a game using the cards. For example, play a memory game to create matches of equivalent amounts (e.g., $\frac{1}{10}$ and 0.1). The person with the most matches wins. For a challenge, change the objective to creating matches of pairs that add up to one (e.g., $\frac{1}{10}$ and $\frac{9}{10}$ or 0.2 and $\frac{8}{10}$).

TERMS

Decimal form: A number written in the form of a decimal. For example, 15 hundredths in decimal form is 0.15.

Expanded form: Representing a number as an addition expression or number sentence to show the value of each digit. For example, in fraction expanded form, $13\frac{42}{100} = (1\times10) + (3\times1) + \left(4\times\frac{1}{10}\right) + \left(2\times\frac{1}{100}\right)$, and in decimal expanded form, $13.42 = (1\times10) + (3\times1) + (4\times0.1) + (2\times0.01)$.

Fraction form: A number written in the form of a fraction. For example, 15 hundredths in fraction form is $\frac{15}{100}$.

Mixed number: A number made up of a whole number and a fraction (e.g., $13\frac{42}{100}$).

MODELS

Area Model

Place Value Disks

Number Line

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KEY CONCEPT OVERVIEW

In Lessons 4 through 8, students explore hundredths. They decompose tenths into hundredths and represent numbers in **decimal**, **fraction**, **expanded**, and **unit form**.

You can expect to see homework that asks your child to do the following:

- Express hundredths as the sum of tenths and hundredths and in decimal form (e.g., \( \frac{56}{100} = \frac{5}{10} + \frac{6}{100} = 0.56 \)).
- Find equivalent fractions using multiplication and division (e.g., \( \frac{3}{10} = \frac{3 \times 10}{10 \times 10} = \frac{30}{100} \)).
- Shade area models to represent a mixed number and locate the number on a number line.
- Identify the value of the digits within a number and express numbers in various forms.
- Rename **decimal numbers** to represent them in other ways (e.g., \( 2.1 = 2 \frac{1}{10} = \frac{21}{10} = \frac{210}{100} \)).

SAMPLE PROBLEM  *(From Lesson 8)*

Use the area model to represent \( \frac{170}{100} \). Complete the number sentence.

\[
\frac{170}{100} = \underline{17} \text{ tenths} = \underline{1} \text{ one } \underline{7} \text{ tenths} = \underline{1.7}
\]

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at Great Minds.org.

For more resources, visit » Eureka.support
**HOW YOU CAN HELP AT HOME**

- Prompt your child to look around the kitchen for five items such as boxes, cans, and bottles that have decimal numbers printed on them. Ask your child to say a decimal number and to identify the value of each digit. For example, if your child discovers a can with 21.35 written on it, she would say “twenty-one and thirty-five hundredths” and then state that the 2 has a value of 2 tens, the 1 has a value of 1 one, the 3 has a value of 3 tenths, and the 5 has a value of 5 hundredths.

**TERMS**

**Decimal form:** A number written in the form of a decimal. For example, 15 hundredths in decimal form is 0.15.

**Decimal number:** A number written using place value units that are powers of 10, such as hundreds, tens, ones, tenths, and hundredths. For example, 2.1 and 5.16 are decimal numbers, as are 245 and 31.

**Expanded form:** Representing a number as an addition expression or number sentence to show the value of each digit. For example, in fraction expanded form, \( \frac{42}{100} = (1 \times 10) + (3 \times 1) + \left(4 \times \frac{1}{10}\right) + \left(2 \times \frac{1}{100}\right) \), and in decimal expanded form, 13.42 = (1×10) + (3×1) + (4×0.1) + (2×0.01).

**Fraction form:** A number written in the form of a fraction. For example, 15 hundredths in fraction form is \( \frac{15}{100} \).

**Unit form:** A number expressed in terms of its units. For example, \( \frac{15}{100} \) written in unit form is 1 tenth 5 hundredths or 15 hundredths.

**MODELS**

**Tape Diagram/Meter Stick**

![Tape Diagram](image)
In Lessons 9 through 11, students compare **decimal numbers** by focusing on the value of the digits within the numbers.

You can expect to see homework that asks your child to do the following:

- Order and compare metric measurements of mass, volume, and length.
- Use the symbols <, >, and = to show the comparison of numbers written in **unit form**, **fraction form**, or **decimal form**.
- Shade area models to represent decimal numbers.
- Plot and label points on a **number line** to represent decimal numbers written in fraction form and decimal form.
- Order numbers from least to greatest or from greatest to least in decimal form.

**SAMPLE PROBLEM (From Lesson 11)**

Plot the following points on the number line using decimal form.

4.57, 4 ones and 77 hundredths, \(\frac{61}{100}\), \(\frac{463}{100}\), \(\frac{47}{10}\), 4.51

---

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.
HOW YOU CAN HELP AT HOME

- Plot six points on a number line using fraction form and decimal form, as shown on the number line in the Models section. Incorrectly plot at least two of the numbers. For example, start the number line at 7.1 and end it at 7.4. Make tick marks to represent each hundredth. Plot the points 7.14, 7.21, 7.33, 7.39, and \( \frac{728}{100} \). Plot 7.14 incorrectly at 7.24 and 7.39 incorrectly at 7.3. Have your child identify and re-plot the incorrectly plotted points.

- Access a website that can be used to determine the distance from one place to another. Help your child find the distance from your home to five different points of interest near you, such as a gas station, restaurant, library, post office, and school. Have her record each distance, read it in decimal form, and then order the distances from least to greatest. If you do not have Internet access, consider making up distances.

TERMS

**Decimal form:** A number written in the form of a decimal. For example, 15 hundredths in decimal form is 0.15.

**Decimal number:** A number written using place value units that are powers of 10, such as hundreds, tens, ones, tenths, and hundredths. For example, 2.1 and 5.16 are decimal numbers, as are 245 and 31.

**Fraction form:** A number written in the form of a fraction. For example, 15 hundredths in fraction form is \( \frac{15}{100} \).

**Unit form:** A number expressed in terms of its units. For example, \( \frac{15}{100} \) written in unit form is 1 tenth 5 hundredths or 15 hundredths.
KEY CONCEPT OVERVIEW

In Lessons 12 through 14, students add decimals by converting decimal numbers to fraction form before adding and then converting the sum back to a decimal number. (See Sample Problem.) It is important to note that, in these lessons, students do NOT learn to add decimals by lining up the decimal points.

You can expect to see homework that asks your child to do the following:

- Express tenths and hundredths as hundredths (e.g., 3 tenths + 4 hundredths = 34 hundredths).
- Add tenths and hundredths by converting tenths to hundredths before finding the sum.
- Add mixed numbers with units of ones, tenths, and hundredths.
- Solve word problems requiring the addition of numbers written in decimal form, converting to fraction form before solving.

SAMPLE PROBLEM  (From Lesson 13)

Solve by rewriting the expression in fraction form. After solving, rewrite the complete number sentence in decimal form.

5.9 + 4.94

\[
5.9 + 4.94 = 5 \frac{9}{10} + 4 \frac{94}{100} = 5 \frac{90}{100} + 4 \frac{94}{100} = 9 \frac{184}{100} = 10 \frac{84}{100}
\]

5.9 + 4.94 = 10.84

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.
HOW YOU CAN HELP AT HOME

- Although it may be tempting to show your child how to add numbers in decimal form by lining up the decimals, it will be more helpful to support the current lesson of adding decimals by converting to fractions. The objective is for students to see that writing numbers in decimal form is just another way of expressing whole numbers, tenths, and hundredths that were written in fraction form (e.g., \( \frac{86}{100} = 0.86 \)). In other words, the decimal and fraction forms share the same point on the number line. Students will be taught to add numbers in decimal form by lining up the decimals in Grade 5 of *Eureka Math*.

- Practice converting tenths to hundredths. Write a decimal number that has digits in both the ones place and the tenths place, such as 4.7. Prompt your child to write the number in fraction form (\( \frac{47}{10} \)). Next, prompt him to write the number in fraction form as hundredths (\( \frac{470}{100} \)).

  Watch for common errors such as saying that \( \frac{47}{10} \) is equivalent to \( \frac{47}{100} \) instead of \( \frac{470}{100} \).

TERMS

**Addend:** A number that is added to another number. For example, in \( 3 + 2 = 5 \), the numbers 3 and 2 are the addends.

**Decimal form:** A number written in the form of a decimal. For example, 23 hundredths in decimal form is 0.23.

**Decimal number:** A number written using place value units that are powers of 10, such as hundreds, tens, ones, tenths, and hundredths. For example, 2.1 and 5.16 are decimal numbers, as are 245 and 31.

**Fraction form:** A number written in the form of a fraction. For example, 23 hundredths in fraction form is \( \frac{23}{100} \).

**Mixed number:** A number made up of a whole number and a fraction (e.g., \( 13 \frac{42}{100} \)).
In Lessons 15 and 16, students express the value of pennies, dimes, and quarters in **decimal form** and as fractional parts of a dollar. Students learn to write money amounts by using a decimal point and a dollar sign, and they determine money totals by expressing dollars and cents in **unit form**. (See Sample Problem.) It is important to note that, in these lessons, students do NOT learn to add money amounts by lining up the dollar signs and decimal points.

You can expect to see homework that asks your child to do the following:

- Express the value of given numbers of pennies, dimes, and quarters in decimal form and in **fraction form**.
- Determine the total amount of money by using unit form (dollars and cents) and then express that total in fraction form and in decimal form.
- Use the **RDW process** to solve word problems involving money by adding like units (i.e., adding dollars to dollars and cents to cents).

**SAMPLE PROBLEM** *(From Lesson 15)*

Solve. Express the answer in decimal form.

3 dollars 4 dimes + 2 dollars 1 quarter 3 dimes

\[3 \text{ dollars 40 cents} + 2 \text{ dollars 55 cents} = 5 \text{ dollars 95 cents} = $5.95\]
HOW YOU CAN HELP AT HOME

- Gather some quarters, dimes, and pennies. Ask your child to determine the value of different combinations of coins. Ask her to express the value as a decimal number and as a fraction of a dollar. Extend the activity by using dollar bills as well. (NOTE: Nickels are not used because they represent \( \frac{1}{20} \) of a dollar. Twentieths are beyond the fourth-grade standard.)

- Ask your child to solve the following word problem by using a tape diagram and the RDW process: Sadie’s lunch cost 5 dollars 27 cents, and William’s lunch cost 6 dollars 14 cents. How much more did William’s lunch cost than Sadie’s? (87 cents) Keep in mind that, when computing with money, students use unit form. In this case, it is necessary for your child to rename 6 dollars 14 cents as 5 dollars 114 cents before he can subtract the 5 dollars 27 cents. Alternatively, he can rename each amount as cents, and then he can subtract by using the algorithm.

TERMS

**Decimal form:** A number written in the form of a decimal. For example, 7 hundredths in decimal form is 0.07.

**Fraction form:** A number written in the form of a fraction. For example, 7 hundredths in fraction form is \( \frac{7}{100} \).

**RDW process:** A three-step process used in solving word problems that requires students to 1) read the problem for understanding, 2) draw a picture or model, and 3) write an equation and a statement of their answer.

**Unit form:** A number expressed in terms of its units. For example, in unit form, $4.85 is 4 dollars 85 cents.
KEY CONCEPT OVERVIEW

In Lessons 1 through 5, students convert from one unit of measure to another by using conversion tables, and they solve word problems that require converting from a larger unit (or a larger mixed unit) to a smaller unit (e.g., feet to inches, pounds and ounces to ounces, gallons to cups).

You can expect to see homework that asks your child to do the following:

- Convert units of length, weight, capacity, and time to smaller units of length, weight, capacity, and time.
- Use the RDW process to solve word problems.
- Create word problems based on a given tape diagram.

SAMPLE PROBLEM (From Lesson 5)

Mary’s goal was to finish running a marathon in 4 hours. She completed the marathon in 228 minutes. By how many minutes did Mary beat her goal?

\[ \text{1 hour} = 60 \text{ minutes} \]
\[ 4 \text{ hours} = 4 \times 60 \text{ minutes} = 240 \text{ minutes} \]
\[ 240 - 228 = 12 \]

Mary beat her goal by 12 minutes.

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.
HOW YOU CAN HELP AT HOME

- Find packages, cartons, cans, or boxes in your kitchen whose labels show weights or capacities. With your child, convert the measurements to smaller units. For example, your milk container might have a capacity of 2 quarts. Convert to find out how many cups that is. (2 quarts = 8 cups) Find real-world situations throughout the day that will help your child think about conversions. For example, ask her whether she would have enough milk for a soup recipe requiring 9 cups if she had a 2-quart container full of milk. (No; 2 quarts is only 8 cups.)

- Challenge your child to convert units of length, weight, capacity, and time. For example, ask him to convert 3 yards 1 foot to inches. (120 inches) After he completes each conversion, allow him to check his work online (e.g., search for “How many inches are equal to 3 yards 1 foot?”).

TERMS

Mixed unit: Expressing a number in terms of more than one unit (e.g., 2 gallons 3 quarts, 2 meters 34 centimeters).

RDW process: A three-step process used in solving word problems that requires students to 1) read the problem for understanding, 2) draw a picture or model, and 3) write an equation and a statement of their answer.

MODELS

Conversion Table

<table>
<thead>
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</table>

Tape Diagrams

![Tape Diagrams](image)

For more resources, visit – Eureka.support

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**KEY CONCEPT OVERVIEW**

In Lessons 6 through 11, students solve problems involving mixed units of capacity, length, weight, and time.

You can expect to see homework that asks your child to do the following:

- Add and subtract mixed measurement units. (See Sample Problem.)
- Use the **RDW process** to solve multi-step measurement word problems.

**SAMPLE PROBLEM** *(From Lesson 10)*

Jennifer ran for 1 hour 12 minutes on Tuesday. On Wednesday, she ran 24 minutes less than she did on Tuesday. On Thursday, she ran twice as many minutes as she did on Wednesday. How much time did Jennifer spend running during that three-day period?

**Tuesday:**
1 hr 12 min = 60 min + 12 min = 72 min

**Wednesday:**
72 min – 24 min = 48 min

**Thursday:**
48 min + 48 min = 96 min

\[ R = 72 \text{ min} + 48 \text{ min} + 96 \text{ min} = 216 \text{ min} = 3 \text{ hr 36 min} \]

*Jennifer spent 3 hours 36 minutes running during the three-day period.*

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.
HOW YOU CAN HELP AT HOME

- When you find yourself working with units of measure during the day, ask your child questions about your activities. For example, you might say, “The directions on the box say to bake this bread for 1 hour 10 minutes. I want to check the bread 15 minutes before the time is up to make sure that it doesn’t burn. For how many minutes should I set the timer?” (55 minutes)

- Find a tape measure that a carpenter might use and show it to your child. Pull out the tape and ask him to examine the measurements. Are they metric units (i.e., centimeters) or standard units (i.e., inches)? How can you tell? Next, ask your child to use the tape measure to prove the equivalence of measurements. For example, you might ask him to prove that 1 foot 3 inches is equivalent to 15 inches.

TERMS

RDW process: A three-step process used in solving word problems that requires students to 1) read the problem for understanding, 2) draw a picture or model, and 3) write an equation and a statement of their answer.

MODELS

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Tape Diagrams

- [Diagram of a tape diagram showing 3,907 units and 2,568 units, labeled V]
- [Diagram of another tape diagram showing 6,782 units and 4,806 units, labeled V]
KEY CONCEPT OVERVIEW

In Lessons 12 through 14, students continue to work with conversions. They convert larger mixed measurement units with fractional parts to smaller units.

You can expect to see homework that asks your child to do the following:

▪ Draw a tape diagram to show equivalence from one unit of measure to a smaller unit of measure.
▪ Convert from a larger unit to a smaller unit.
▪ Use the RDW process to solve multi-step measurement word problems.

SAMPLE PROBLEM  (From Lesson 12)  

Draw a tape diagram to show that \(1 \frac{1}{4}\) gallons = 5 quarts.

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.
HOW YOU CAN HELP AT HOME

- With your child, use index cards or small pieces of paper to make 8 pairs of cards that show equivalent measurements. For example, on one card, write $\frac{3}{4}$ pounds; on another card, write 52 ounces. Use measures of length, weight, capacity, and time. Reference the conversion table in the Models section for examples of units. After you have made the cards, play a memory game with your child.

  1. Place the cards facedown in rows to form a grid.
  2. Player A flips over two cards, keeping the cards in their place. If the cards are a match, Player A keeps them and takes another turn. If the cards are not a match, Player A flips them back over, and Player B takes a turn.
  3. Play continues until all of the matches have been made. The person with the most matches wins.

- Take turns with your child naming measurements. With each turn, have the other person convert the given measurement to smaller units. For example, you say, “$1\frac{1}{2}$ hours,” and your child says, “90 minutes.”

MODELS

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KEY CONCEPT OVERVIEW

In Lessons 15 through 18, students review math concepts that they have learned throughout the year. They also create a summer folder.

You can expect to see homework that asks your child to do the following:

▪ Find the area of a shaded figure. (See Sample Problem.)
▪ Use a ruler and protractor to create a figure, shade part of the figure, and then find the area of the unshaded part.
▪ Plot and label points on a number line.
▪ Convert numbers written in decimal form to mixed numbers, tenths, and hundredths.

SAMPLE PROBLEM  (From Lesson 15)

Find the area of the shaded figure.

Area of large rectangle: \(6 \text{ ft} \times 12 \text{ ft} = 72 \text{ square ft}\)

Length of bottom center unshaded rectangle:
\(12 \text{ ft} - 2 \text{ ft} - 2 \text{ ft} - 2 \text{ ft} = 6 \text{ ft}\)

Area of unshaded rectangles:
\(1 \text{ ft} \times 6 \text{ ft} = 6 \text{ square ft}\)
\(2 \text{ ft} \times 3 \text{ ft} = 6 \text{ square ft}\)

Area of large rectangle – area of unshaded rectangles:
\(72 \text{ square ft} - 6 \text{ square ft} - 6 \text{ square ft} = 60 \text{ square ft}\)

The area of the shaded figure is 60 square feet.

Additional sample problems with detailed answer steps are found in the Eureka Math Homework Helpers books. Learn more at GreatMinds.org.
**HOW YOU CAN HELP AT HOME**

- Your child will soon bring home a summer folder. It will include the Homework pages from Lessons 15 through 17, fluency activity cards from Lesson 17, and vocabulary game ideas from Lesson 18. Each activity in the packet was carefully crafted to provide your child with opportunities to practice math throughout the summer. Set aside some math time each day and complete the activities together. Challenge your child to math contests. Celebrate what he knows and what he has learned this year. Congratulate him on his hard work and perseverance.

- Continue to practice basic facts for addition, subtraction, multiplication, and division. The goal is for your child to remain fluent with the basic facts.

**TERMS**

**Area:** The amount of space inside a two-dimensional shape. For example, in rectangles, Area = length × width.

**Mixed number:** A number made up of a whole number and a fraction (e.g., $\frac{42}{100}$).

**MODELS**

**180° Protractor**

![180° Protractor]

**Number Line**

![Number Line]