## KEY CONCEPT OVERVIEW

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In Lessons 1 through 3, students explore tenth. 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 notation.

SAMPLE PROBLEM

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

3 tens 5 ones 2 tenths
(10) 10

(0.1)(0.1)

Fraction expanded notation
$(3 \times 10)+(5 \times 1)+\left(2 \times \frac{1}{10}\right)=35 \frac{2}{10}$

Decimal expanded notation

$$
(3 \times 10)+(5 \times 1)+(2 \times 0.1)=35.2
$$

## 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., $0.1,0.2,0.3, \ldots, 1.0$ ). 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 notation: A number written as an addition expression or number
sentence to show the value of each digit. For example, in fraction expanded noation, $13 \frac{42}{100}=(1 \times 10)+(3 \times 1)+\left(4 \times \frac{1}{10}\right)+\left(2 \times \frac{1}{100}\right)$, and in decimal expanded notation, $13.42=(1 \times 10)+(3 \times 1)+(4 \times 0.1)+(2 \times 0.01)$.
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



## KEY CONCEPT OVERVIEW

In Lessons 4 through 8, students explore hundredths. They decompose tenths into hundredths and represent numbers in decimal form, fraction form, expanded notation, 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., $2 \cdot 1=2 \frac{1}{10}=\frac{21}{10}=\frac{210}{100}$ ).


## SAMPLE PROBLEM

Use the area model to represent $\frac{170}{100}$. Complete the number sentence.
$\frac{170}{100}=\underline{\mathbf{1 7}}$ tenths $=\underline{1}$ one $\mathbf{7}$ tenths $=\underline{\mathbf{1 . 7}}$


## 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 notation: Representing a number as an addition expression or number sentence to show the value of each digit. For example, in fraction expanded noation, $13 \frac{42}{100}=(1 \times 10)+(3 \times 1)+\left(4 \times \frac{1}{10}\right)+\left(2 \times \frac{1}{100}\right)$, and in decimal expanded notation, $13.42=(1 \times 10)+(3 \times 1)+(4 \times 0.1)+(2 \times 0.01)$.
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

Strip Diagram/Meter Stick


$$
\left(5 \times \frac{1}{10}\right)+\left(1 \times \frac{1}{100}\right)=0.51
$$

0.51 meter shaded

## KEY CONCEPT OVERVIEW

$\qquad$

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, $4 \frac{61}{100}, \frac{463}{100}, \frac{47}{10}, 4.51$
$4.574 .77 \quad 4.61 \quad 4.634 .74 .51$

$\qquad$

- 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 $7.14,7.21,7 \frac{33}{100}, 7 \frac{2}{10}, 7.39$, 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.
- Use a mapping app on a smartphone or 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 access to a smartphone or the internet, 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.

## MODEL

## Number Line



## TIPS FOR FAMILIES

## KEY CONCEPT OVERVIEW

In Lessons 12 through 14, students add and subtract decimals by using place value understanding. They represent decimal numbers on the place value chart and learn to record their thinking using a vertical algorithm. (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 and subtract tenths and hundredths by representing the values on a place value chart and relate it to the standard, vertical algorithm to find the sum or difference.
- Add mixed numbers with units of ones, tenths, and hundredths.
- Solve word problems requiring the addition or subtraction of numbers written in decimal form, converting to fraction form before solving.

SAMPLE PROBLEM
(From Lesson 13)
Use the place value chart to subtract. Record your thinking vertically.
$7.6-5.8$

$7.6-5.8=1.8$


## HOW YOU CAN HELP AT HOME

- 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 $\left(4 \frac{7}{10}\right)$. Next, prompt him to write the number in fraction form as hundredths ( $4 \frac{70}{100}$ ).

Watch for common errors such as saying that $4 \frac{7}{10}$ is equivalent to $4 \frac{7}{100}$ instead of $4 \frac{70}{100}$.

## TERMS

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., $13 \frac{42}{100}$ ).

## KEY CONCEPT OVERVIEW

In Lessons 15-18 students expand their understanding of money and explore personal financial literacy. They begin by expressing 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.)

Students learn about the purpose of financial institutions and their role in saving, lending, and borrowing. Next, they explore the difference between fixed and variable expenses as it relates to an allowance. Finally, students will solve real world problems which include calculation of profit.

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.
- Calculate the amount owed for borrowing money and the amount earned for investing money.
- Manage an allowance by determining how to allocate the funds between fixed and variable expenses.
- Determine profit earned from the selling of goods or services.


## SAMPLE PROBLEM (From Lesson 15)

Solve. Express the answer in decimal form.

3 dollars 4 dimes +2 dollars 1 quarter 3 dimes
$\mathbf{3}$ dollars $\mathbf{4 0}$ cents $+\mathbf{2}$ dollars $\mathbf{5 5}$ cents $=\mathbf{5}$ dollars $\mathbf{9 5}$ cents $=\mathbf{\$ 5 . 9 5}$

## 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 Grade 4 standard.)


## HOW YOU CAN HELP AT HOME

(continued)

- Piggybank on It: Discuss budgeting with your child. Ask your child to research the cost of an item they would like to purchase and budget a fictional allowance amount between saving to purchase the item, other expenses, and longer term savings. Have your child share their budget.


## TERMS

Decimal form: A number written in the form of a decimal. For example, 77 cents in decimal form is $\$ 0.0 \%$.

Deposit: Money put into an account at a financial institution, such as in a bank account.
Financial institution: A place to deposit money to keep it safe. A financial institution can also act as a lender when borrowing money. Examples include banks, credit unions, and investment firms.
Fixed expenses: Consistent, predictable costs, often occurring monthly. Rent, mortgage payments, and insurance are examples of fixed expenses that can be planned for when creating a budget.
Fraction form: A number written in the form of a fraction. For example, $\$ 0.07$ in fraction form is $\frac{7}{100}$ of a dollar.
Interest earned: The money a financial institution such as a bank pays to customers for money deposited and kept in an account for a certain amount of time.

Interest paid: The money a financial institution such as a bank charges a customer for borrowing money for a certain amount of time.

Personal financial literacy: The application of mathematical process standards to manage one's financial resources effectively for lifetime financial security.
Profit: The total amount earned from the sale of goods or services minus the amount spent producing those goods or services.
Variable expenses: Costs that vary and often involve decision-making. Money spent on games, toys, or restaurants are examples of variable expenses.
Unit form: A number expressed in terms of its units. For example, in unit form, $\$ 4.85$ is 4 dollars 85 cents.

Withdrawal: Money taken out of an account at a financial institution, such as from a bank account.

