

Name _____

- **Finding a Percent of a Number**

- To find a percent of a number:

1. Change the percent to a fraction or decimal.
2. Then multiply.

Example: What number is 75% of 20?

Change the percent to a fraction; then multiply.

$$\frac{75}{100} \text{ reduces to } \frac{3}{4} \quad \frac{3}{4} \text{ of } 20$$

$$\frac{3}{4} \times \overset{5}{\cancel{20}} = 15$$

Change the percent to a decimal; then multiply.

$$0.75$$

$$\begin{array}{r} \times 20 \\ \hline 15.00 \end{array}$$

- To find a total price for a purchase:

1. Find the sales tax on the purchase.
2. Add the tax amount to the purchase price.

Practice:

1. Write 60% as a reduced fraction and as a decimal numeral. _____

2. Matthew answered 40% of the 50 questions correctly.
How many questions did he answer correctly?

3. A \$40 pair of shoes is on sale for 25% off the regular price.

How much money is 25% of \$40? _____

4. The sales-tax rate was 8%. Brianna bought a craft kit for \$9.49.

How much was the tax on the kit? _____

5. What is the total price of a \$22.95 item plus 6% sales tax? _____

6. Sam ordered a \$4.90 meal. The tax rate was 7%. He paid with a \$10 bill.

How much money should he get back? _____

- **Renaming Fractions by Multiplying by 1**

- To **rename** a fraction means to make an **equivalent fraction**.

Multiply the fraction by a fraction equal to 1. The new fraction will be an equivalent fraction.

Example: Write a fraction equal to $\frac{1}{2}$ that has a denominator of 20.

$$\frac{1}{2} = \frac{?}{20} \quad \frac{1}{2} \times \frac{10}{10} = \frac{10}{20}$$

- Try the shortcut: divide; then multiply.

Example: $\times \frac{2}{3} = \frac{?}{15}$ $(15 \div 3) \times 2 = 10$

Practice:

Solve 1–4.

1. $\frac{3}{4} = \frac{?}{16} =$ _____

2. $\frac{2}{7} = \frac{?}{21} =$ _____

3. $\frac{8}{25} = \frac{?}{100} =$ _____

4. $\frac{7}{20} = \frac{?}{100} =$ _____

5. By what fraction equal to 1 should $\frac{3}{8}$ be multiplied to form $\frac{6}{16}$? _____

6. Write $\frac{1}{4}$ as a fraction with 8 as the denominator.

Then add the fraction to $\frac{1}{8}$. What is the sum? _____

Name _____

Math Course 1, Lesson 43

• Unknown-Number Problems with Fractions and Decimals

Find unknown numbers in fraction and decimal problems just like finding unknown numbers in whole-number problems.

Addition

- To find an unknown **addend** \longrightarrow **subtract**

Example: $\frac{1}{5} + a = \frac{4}{5} \longrightarrow \frac{4}{5} - \frac{1}{5} = a \longrightarrow a = \frac{3}{5}$

Subtraction

- To find the unknown **minuend** (first number in subtraction) \longrightarrow **add**

Example: $n - 3 = 2.2 \longrightarrow 2.2 + 3 = n \longrightarrow n = 5.2$

- To find the unknown **subtrahend** \longrightarrow **subtract**

Example: $5.3 - y = 2 \longrightarrow 5.3 - 2 = y \longrightarrow y = 3.3$

Multiplication

- For a product of 1, the two factors must be reciprocals.

Example: $\frac{3}{5}f = 1 \longrightarrow \frac{3}{5} \times \frac{5}{3} = \frac{15}{15} = 1 \longrightarrow f = \frac{5}{3}$

Check your work by replacing the letter with the answer.

Practice:

Solve 1–6.

1. $4.56 + n = 7$

$n =$ _____

2. $1 - x = 0.58$

$x =$ _____

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

$w =$ _____

4. $5\frac{5}{8} - m = 2$

$m =$ _____

5. $11.4 - y = 6.2$

$y =$ _____

6. $\frac{4}{7}z = 1$

$z =$ _____

- **Simplifying Decimal Numbers**
- **Comparing Decimal Numbers**

- To simplify decimal numbers:
 1. Remove the extra zeros in **front** and **back**.
 2. Keep the zero in front of the decimal.
 3. Do not remove a zero between other digits.

Examples:

$$02.0100 = 2.01$$

$$0.4200 = 0.42$$

- To compare decimal numbers:
 1. Ignore zeros at the end of a decimal number.
They do not change the value of the number.
$$0.3 = 0.300 = 0.3000$$
 2. Write the numbers with the same number of decimal places.
$$0.3 \bigcirc 0.209 \longrightarrow 0.300 \bigcirc 0.209$$
 3. Compare the greatest place value first.
$$0.\underline{3}00 > 0.\underline{2}09$$

Practice:

Simplify 1–2.

1. $3.0400 = \underline{\hspace{2cm}}$

2. $0.09100 = \underline{\hspace{2cm}}$

Compare 3–5.

3. $2.45 \bigcirc 0.425$

4. $0.081 \bigcirc 0.81$

5. $0.5 + 0.5 \bigcirc 0.5 \times 0.5$

• Dividing a Decimal Number by a Whole Number

To divide decimal numbers by a whole number:

1. Put the **first** number **inside** the division box.
2. Put the **second** number **in front** of the box.
3. Put the decimal straight up on the answer line.
4. Use zero as a placeholder.
5. Put a digit above each digit.
6. Add zeros to the dividend and keep dividing until there is no remainder (or until digits repeat).

Example: $0.3 \div 4$

$$\begin{array}{r} 4 \overline{)0.3} \end{array}$$

$$\begin{array}{r} 0. \\ 4 \overline{)0.3} \end{array}$$

$$\begin{array}{r} 0.075 \\ 4 \overline{)0.300} \end{array}$$

When dividing by a **whole** number,
decimal goes straight **up**.



Practice:

Simplify 1–6.

1. $5 \overline{)1.8}$

2. $6 \overline{)0.27}$

3. $9 \overline{)2.43}$

4. $0.62 \div 2 = \underline{\hspace{2cm}}$

5. $0.432 \div 8 = \underline{\hspace{2cm}}$

6. $3.9 \div 4 = \underline{\hspace{2cm}}$

• Mentally Multiplying Decimal Numbers by 10 and by 100

When we multiply decimal numbers by 10 or by 100, the digits shift to the left. When the digits shift left, the decimal point is shifting to the right.

- To multiply by **10**: Shift the decimal to the **right one** place.
- To multiply by **100**: Shift the decimal to the **right two** places.

Examples: Shift right →

$$1.\underline{234} \times 100 = 123.4$$

$$7.8 \times 100 = 780$$

Remember: If multiplying by a whole number, the product will be larger than the starting number.

Practice:

1. Mentally calculate this product:

$$6.5 \times 100 = \underline{\hspace{2cm}}$$

Simplify 2–6.

2. $87.56 \times 10 = \underline{\hspace{2cm}}$

3. $35.79 \times 10 = \underline{\hspace{2cm}}$

4. $2.4 \times 100 = \underline{\hspace{2cm}}$

5. $0.81 \times 10 = \underline{\hspace{2cm}}$

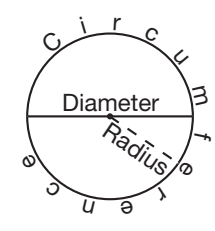
6. $0.6 \times 100 = \underline{\hspace{2cm}}$

Name _____

- **Circumference**
- **Pi (π)**

If the **radius** or **diameter** of a circle is known, the **circumference** can be found.

Multiply the diameter by π : $C = \pi d$
 Use 3.14 as an approximation for π : $C = 3.14d$



Remember: $d = 2r$
 So, $C = 2\pi r$

Practice:

Solve. Use 3.14 for π .

1. The diameter of a tortilla is 10 inches. What is the circumference of the tortilla?

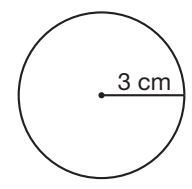
2. The diameter of a circle is 200 mm. What is the circumference of the circle?

3. Marco used a compass to draw a circle with a radius of 5 cm.

What was the circumference of the circle? _____

4. The diameter of a truck's tire is 40 inches. How far down the road will the tire travel if it makes one full turn? (Round your answer to the nearest inch.)

5. What is the circumference of the circle?



• Subtracting Mixed Numbers with Regrouping, Part 1

If you need to regroup (borrow):

1. Rename one of the wholes.
2. Combine the fraction with the renamed 1.
3. Then subtract.

Example:

$$\begin{array}{r}
 5\frac{1}{3} \\
 - 2\frac{2}{3} \\
 \hline
 \end{array}
 \quad
 \begin{array}{c}
 4 + \frac{3}{3} + \frac{1}{3} \\
 \xrightarrow{\hspace{1.5cm}}
 \end{array}
 \quad
 \begin{array}{r}
 4\frac{4}{3} \\
 - 2\frac{2}{3} \\
 \hline
 2\frac{2}{3}
 \end{array}$$

Practice:

Simplify 1–5.

1. $5\frac{1}{7}$
 $- 2\frac{3}{7}$
 \hline

2. $6\frac{1}{3}$
 $- 2\frac{2}{3}$
 \hline

3. $4\frac{2}{4}$
 $- 1\frac{3}{4}$
 \hline

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

5. $7\frac{3}{8} - 2\frac{5}{8} =$ _____

Name _____

• Dividing by a Decimal Number

Change the problem to division by a whole number:

1. Move the decimal in the divisor **over** to make a whole number.
2. Move the decimal in the dividend **over** the same number of places.
3. Put a decimal in the quotient **up** above the moved decimal.
4. Use zero as a placeholder.
5. Put a digit above each digit.
6. Add zeros to the dividend and keep dividing until there is no remainder (or until digits repeat).

Example:
$$\begin{array}{r} \\ 0.4 \overline{) 0.1325} \\ \underline{0.4} \\ \\ \\ \end{array}$$

Annotations:
- An arrow points from the decimal point in the divisor (0.4) to the right, labeled "up".
- An arrow points from the decimal point in the dividend (0.1325) to the right, labeled "over".
- A bracket is drawn under the first two digits of the dividend (0.1) and labeled "over".
- A bracket is drawn under the next two digits of the dividend (.32) and labeled "over".

Practice:

Simplify 1–5.

1. $0.5 \overline{) 0.018}$

2. $0.4 \overline{) 42}$

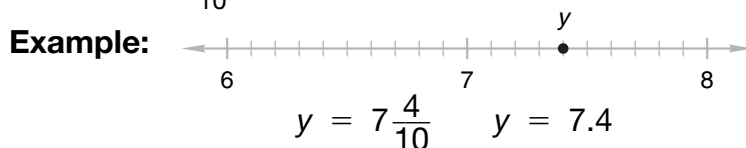
3. $0.7 \overline{) 0.91}$

4. $0.459 \div 0.09 = \underline{\hspace{2cm}}$

5. $6 \div (0.8 \times 3) = \underline{\hspace{2cm}}$

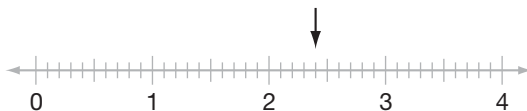
• Decimal Number Line (Tenths)

- We can locate decimal numbers on the number line.
- On the number line, the distance between consecutive whole numbers is divided into ten equal lengths.
- Each length is $\frac{1}{10}$.
- Point y is 4 marks beyond the 7. So y is on $7\frac{4}{10}$.
- We can rename $7\frac{4}{10}$ as 7.4.

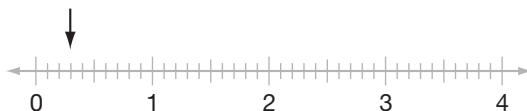


Practice:

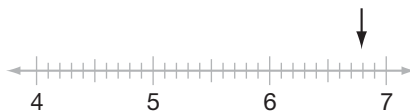
1. To which decimal number is the arrow pointing? _____



2. To which decimal number is the arrow pointing? _____



3. To which decimal number is the arrow pointing? _____



4. To which decimal number is the arrow pointing? _____

