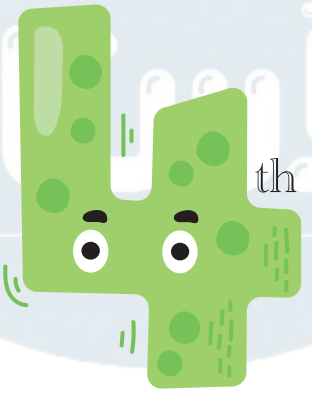
PONY

سلسلة كتب الأستاذ

Math

Monthly Revision of February and March



Primary

Second Term

2026

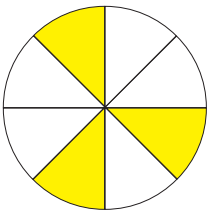
Chapter 9

Unit Fractions & Decomposing Fractions

Fraction

It is a number named as a part of a whole or a part of a group.

Example: The opposite figure represents a circle divided into 8 equal parts; 3 of them are shaded.



- The fraction that represents the shaded parts is:

Numerator: Shaded parts

Denominator: All parts

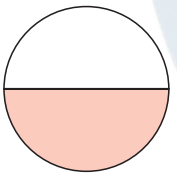
$$\frac{3}{8}$$

Three - eighths

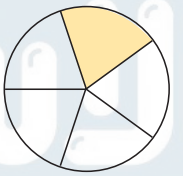
Unit Fraction

It's any fraction that has 1 as the numerator. It represents one part only.

- The following figures represent examples of unit fractions:



$\frac{1}{2}$ (One-half)

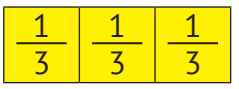


$\frac{1}{5}$ (One-fifth)

Composing Fractions

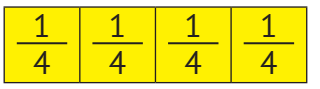
It means putting fractions together to get a new fraction or one whole.

Composing One Whole Using Unit Fractions:



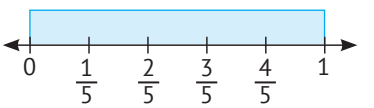
Three-thirds = One whole

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



Four-fourths = One whole

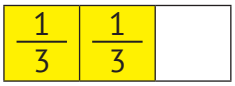
$\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = 1$



Five-fifths = One whole

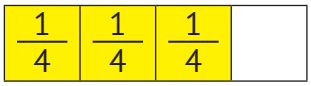
$\frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} = 1$

Composing Fractions Using Unit Fractions:



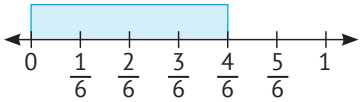
Two-thirds

$\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$



Three-fourths

$\frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{3}{4}$



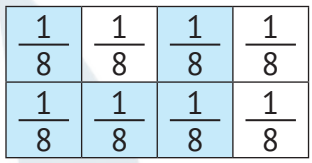
Four-sixths

$\frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{4}{6}$

Decomposing Fractions

It means breaking the fraction into separate units or parts.

Example: In the opposite figure, the fraction that represents the shaded parts is $\frac{5}{8}$.



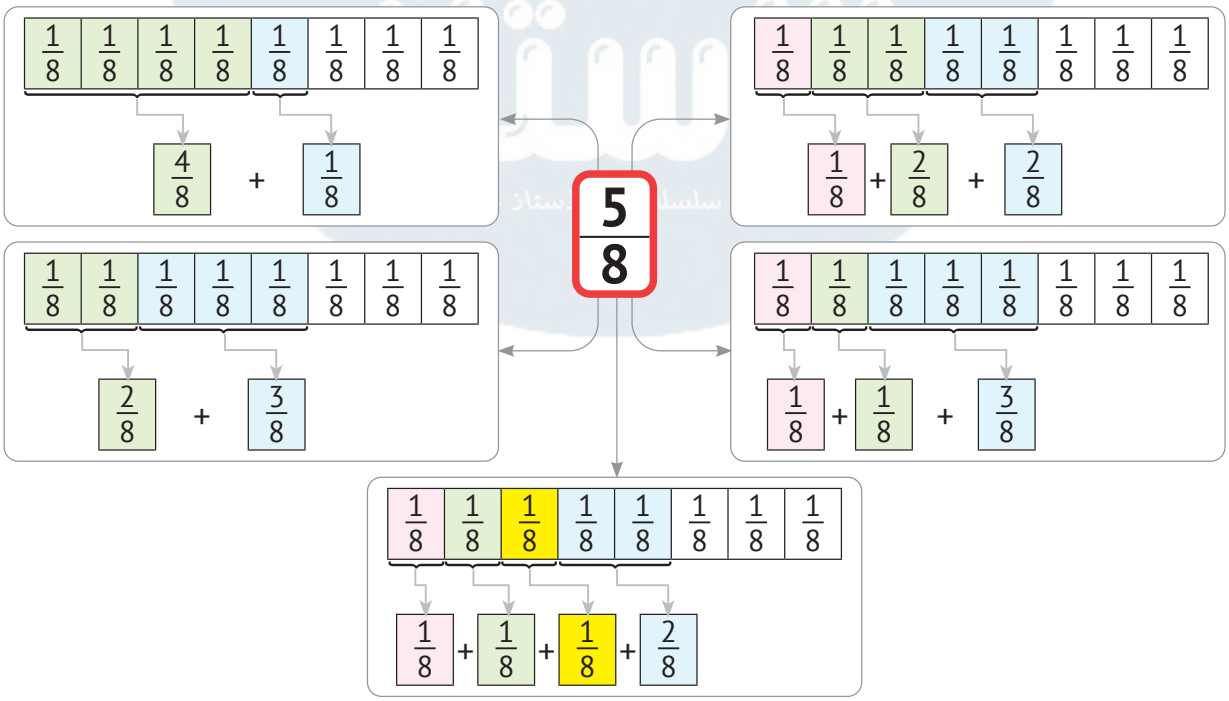
- **Decomposing a Fraction:**

Using Unit Fractions

$\frac{5}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$

Using Fractions

We can decompose a fraction in more than one way, as follows:



Fractions and Mixed Numbers

Fractions

- Proper Fractions
- Improper Fractions

Proper Fraction

Its numerator is smaller than its denominator.

Examples: $\frac{3}{4}, \frac{2}{5}$

Proper Fraction < 1

Improper Fraction

Its numerator is equal to or greater than its denominator.

Examples: $\frac{7}{3}, \frac{5}{4}$

Improper Fraction > 1

Whole Number

If the numerator is a multiple of the denominator, it's a whole number.

Example:

Improper Fraction $\frac{3}{3} = 1$ Whole Number

Example:

Improper Fraction $\frac{15}{5} = 3$ Whole Number

Mixed Number

Whole Number + Fraction

If the numerator is not divisible by the denominator, it's a mixed number.

Example:

Improper Fraction $\frac{15}{4} = 3\ \frac{3}{4}$ Mixed Number

Whole Number | Fraction

It's read as: Three and three fourths.

Changing From One Form to Another

1 Improper fraction to → whole number

Numerator ÷ Denominator = Whole Number

(Since there is no remainder for the division.)

$\frac{12}{3} = 4$ | $12 \div 3 = 4$

$\frac{28}{4} = 7$ | $28 \div 4 = 7$

2 Improper fraction to → mixed number

Numerator ÷ Denominator = The Quotient (The Whole Number) and The Remainder (The New Numerator)

$13 \div 5 = 2$, and the remainder is 3

$\frac{13}{5} = 2\frac{3}{5}$

The denominator without any change

3 Mixed number to → improper fraction

Denominator × Whole Number + Numerator = New Numerator

$2\frac{1}{3} = \frac{7}{3}$

$(3 \times 2) + 1$

The denominator without any change

Adding and Subtracting Fractions

1 Adding Fractions and Whole Numbers:

Example: Add: $2 + \frac{3}{5} + \frac{4}{5}$

First: Using Models

$$2 + \frac{3}{5} + \frac{4}{5}$$

$$= \frac{5}{5} + \frac{5}{5} + \frac{3}{5} + \frac{4}{5}$$

$$= \frac{5}{5} + \frac{5}{5} + \frac{5}{5} + \frac{2}{5}$$

$$= 3\frac{2}{5}$$

Second: Using Regrouping

$$2 + \frac{3}{5} + \frac{4}{5}$$

$$= \frac{10}{5} + \frac{3}{5} + \frac{4}{5} = \frac{17}{5}$$

$$= 3\frac{2}{5}$$

Important Note:

- $\frac{17}{5} = 3\frac{2}{5}$

Or Fractions can be added together, and whole numbers can be added together.

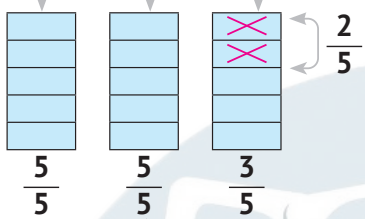
$$2 + \frac{3}{5} + \frac{4}{5} = 2\frac{7}{5} = 3\frac{2}{5}$$

2 Subtracting Fractions and Whole Numbers:

Example: Subtract: $3 - \frac{2}{5}$

First: Using Models

$3 = \frac{5}{5} + \frac{5}{5} + \frac{5}{5}$



$3 - \frac{2}{5} = 2\frac{3}{5}$

Second: Using Regrouping

$3 - \frac{2}{5}$

Borrow 1 from 3 and decompose it into $\frac{5}{5}$

$= 2\frac{5}{5} - \frac{2}{5} = 2\frac{3}{5}$

Example: Subtract:

$5 - \frac{7}{9} = 4\frac{9}{9} - \frac{7}{9} = 4\frac{2}{9}$

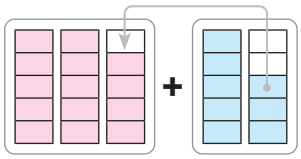
$1 = \frac{9}{9}$

Adding Mixed Numbers

Example: Add: $2\frac{4}{5} + 1\frac{3}{5}$

First: Using Models

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



$= 4\frac{2}{5}$

Second: Using Regrouping

Add

1. Fraction + Fraction
2. Whole Number + Whole Number

$2\frac{4}{5} + 1\frac{3}{5} = 3\frac{7}{5}$

$= 4\frac{2}{5}$

$\frac{7}{5}$ is an improper fraction.

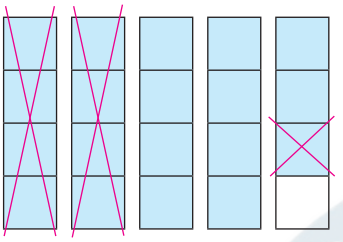
$3\frac{7}{5} = 3 + \frac{5}{5} + \frac{2}{5} = 4\frac{2}{5}$

One whole, add it to the whole number.

Subtracting Mixed Numbers

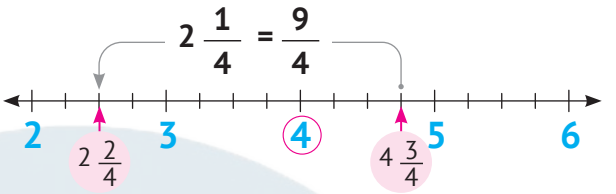
Example: Subtract: $4\frac{3}{4} - 2\frac{1}{4}$

First: Using Models



$4\frac{3}{4} - 2\frac{1}{4} = 2\frac{2}{4}$

Second: Using the Number Line



$4\frac{3}{4} - 2\frac{1}{4} = 2\frac{2}{4}$

Third: Using Regrouping

Subtract

1. Fraction – Fraction
2. Whole Number – Whole Number

Example: $4\frac{3}{4} - 2\frac{1}{4} = 2\frac{2}{4}$

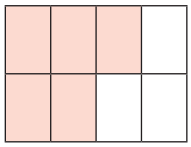
Example: $5\frac{1}{3} - 3\frac{2}{3} = 4\frac{4}{3} - 3\frac{2}{3} = 1\frac{2}{3}$ (+ $\frac{3}{3}$)

Comparing Fractions With Like Denominators or Numerators

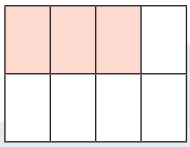
Comparing Fractions With

Like Denominators

Example:



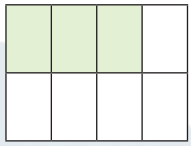
$\frac{5}{8} > \frac{3}{8}$



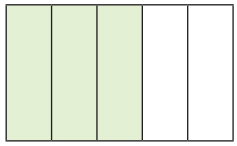
The fraction with the greater numerator is the greatest.

Like Numerators

Example:



$\frac{3}{8} < \frac{3}{5}$



The fraction with the greater denominator is the smallest.

Same Fraction, Different Ways

Identifying Equivalent Fractions Using Models

Equivalent Fractions: They are fractions that have the same value.

Remember

- Both the numerator and denominator can be multiplied or divided by the same number (except zero) to get equivalent fractions.

Benchmark Fractions

Benchmark Fractions

- They are fractions that are widespread and useful. They can help us in comparing fractions.

Examples: $\frac{1}{4}, \frac{1}{3}, \frac{1}{2}, 0, 1, 1\frac{1}{2}, \ldots$ etc.

- **Usage of Benchmark Fractions:**

There is a relationship between the numerator and the denominator of the benchmark fraction that can help us find the equivalent fractions to the benchmark fraction.

Fractions that are equivalent to a half:

Numerator = half the denominator → $\frac{1 \div 2}{2 \times 2}$ ← Denominator = double the numerator

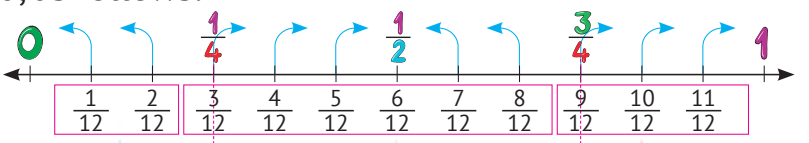
- All fractions that are equivalent to benchmark fractions have a numerator that is half the denominator.

Examples: $\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8} = \frac{5}{10} = \ldots$ etc.

Important Notes:

- **In the following number line:**

When placing fractions on a number line, the fractions closest to 0, $\frac{1}{2}$, or 1 can be determined, as follows:



Closer to 0
All fractions less than $\frac{1}{4}$ are closer to 0.

Closer to $\frac{1}{2}$
All fractions less than $\frac{3}{4}$ and greater than $\frac{1}{4}$ are closer to $\frac{1}{2}$.

Closer to 1
All fractions equal to or greater than $\frac{3}{4}$ are closer to 1.

Equivalent Fractions Using the Identity Property Multiplication and Division Finding the Missing in Equivalent Fractions

1 Finding Equivalent Fractions Using the Identity Property:

- The Identity Property of Multiplication → Any number X 1 = the same number
- The Multiplicative Identity Element → 1

$$1 = \frac{2}{2} = \frac{3}{3} = \frac{4}{4} = \frac{5}{5} = \frac{6}{6} = \frac{7}{7} = \frac{8}{8} = \frac{9}{9} \ldots$$

The Identity Property of Multiplication can be used to find equivalent fractions by multiplying the fraction by a fraction equivalent to one (Identity Element).

$$\frac{2}{3} \times 1 = \frac{2}{3}$$

$$\frac{2}{3} \times \frac{2}{2} = \frac{4}{6} \rightarrow \frac{2}{3} = \frac{4}{6}$$

$$\frac{2}{3} \times \frac{3}{3} = \frac{6}{9} \rightarrow \frac{2}{3} = \frac{6}{9}$$

2 Finding Equivalent Fractions Using Multiplication and Division:

- Both the numerator and denominator can be multiplied or divided by the same number to get equivalent fractions.

Examples:

$$\frac{3}{5} \overset{\times 4}{=} \frac{12}{20} \qquad \frac{2}{3} \overset{\times 5}{=} \frac{10}{15} \qquad \frac{12}{16} \overset{\div 4}{=} \frac{3}{4} \qquad \frac{6}{24} \overset{\div 6}{=} \frac{1}{4}$$

Multiplying by a Whole

Methods of Expressing a Fraction

Models

$\frac{4}{6} = \frac{1}{6} \; \frac{1}{6} \; \frac{1}{6} \; \frac{1}{6} \; \frac{1}{6} \; \frac{1}{6}$

Addition Process

$\frac{4}{6} = \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6}$

Multiplication Process

$\frac{4}{6} = 4 \times \frac{1}{6}$

Multiplying a Fraction by a Whole Number

Using Repeated Addition

Example:

$3 \times \frac{1}{5} = \frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \frac{3}{5}$

Using Multiplication

- Multiply the whole number by the numerator, and the denominator remains unchanged.

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

Chapter 10

Let's Explore Decimals & Hundredths

Decimals

- We can express mixed numbers that contain fractions with denominators of 10 or powers of (10) using the decimal point, where:

Whole Number is written to the left of the decimal point. **and** **Numerator** is written to the right of the decimal point.

Examples:

$2\frac{6}{10} = 2.6$ $\quad$ $15\frac{1}{10} = 15.1$

Decimal Point

If the denominator is 10, then there is one digit to the right of the decimal point.

$4\frac{45}{100} = 4.45$ $\quad$ $25\frac{17}{100} = 25.17$

If the denominator is 100, then there are two digits to the right of the decimal point.

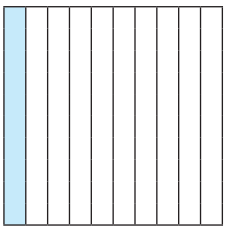
Important Note:

- When we write fractions as decimals, we put **0** in the place of the whole number.

$\frac{1}{10} = 0.1$ $\quad$ $\frac{17}{100} = 0.17$ $\quad$ $\frac{9}{100} = 0.09$

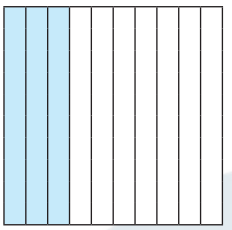
Representing Decimals

- The following models represent decimals, where the whole one is divided into 10 equal parts.



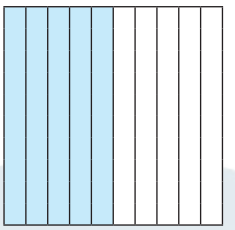
$\frac{1}{10} = 0.1$

One-tenth



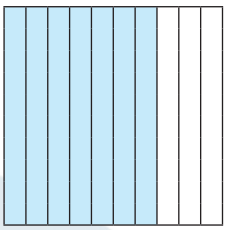
$\frac{3}{10} = 0.3$

Three-tenths



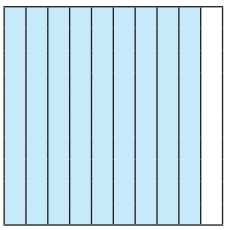
$\frac{5}{10} = 0.5$

Five-tenths



$\frac{7}{10} = 0.7$

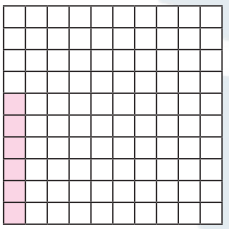
Seven-tenths



$\frac{9}{10} = 0.9$

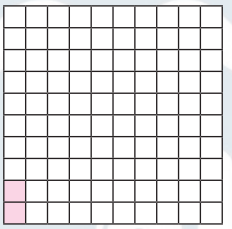
Nine-tenths

- The following models represent decimals, where the whole one is divided into 100 equal parts.



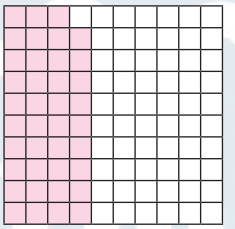
$\frac{6}{100} = 0.06$

Six-hundredths



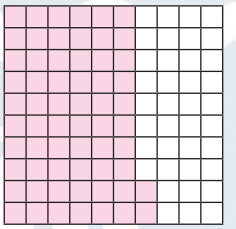
$\frac{2}{100} = 0.02$

Two-hundredths



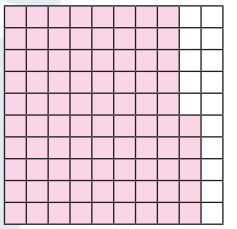
$\frac{39}{100} = 0.39$

Thirty-nine hundredths



$\frac{62}{100} = 0.62$

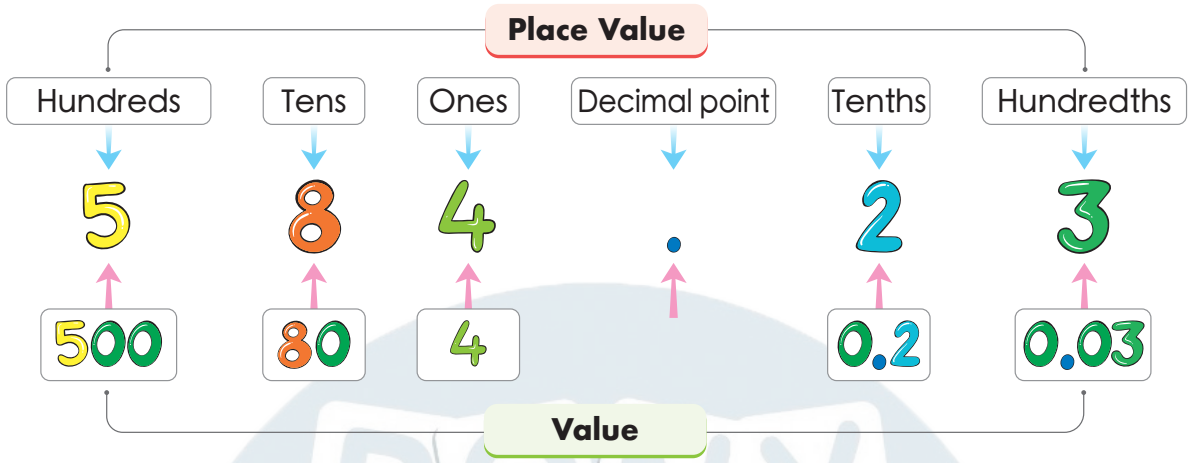
Sixty-two hundredths



$\frac{85}{100} = 0.85$

Eighty-five hundredths

The Place Value Decimals in Different Forms



Different Forms of Decimals

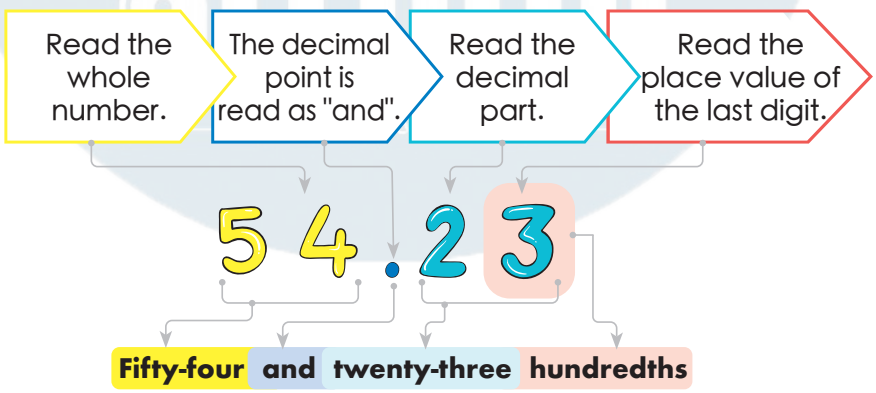
1 Standard Form It's writing the number in **digits**.

Example: 54.23

2 Word Form It's writing the number in **words**, as you read it.

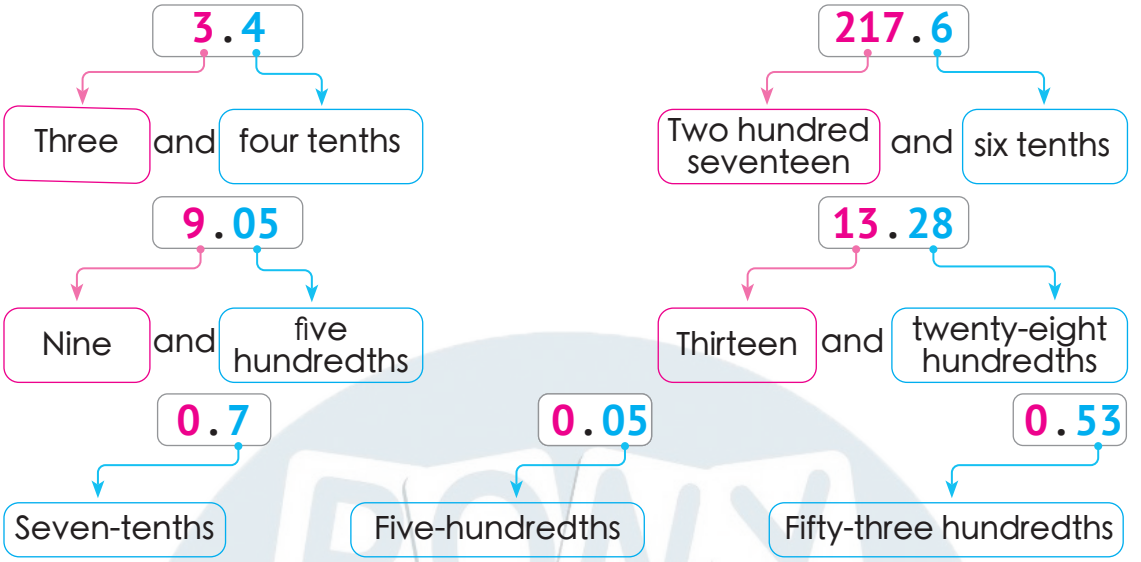
Example:

- Start reading the number from **left** to **right**:



- If the whole number on the left of the decimal point is **zero**, we read the number on the **right** of the decimal point only.
  We also say the **place value** of the **last** digit.

Notice the following examples:



3 Expanded Form

- It's writing each digit with its **value** in an addition operation form.

Example:

54.23

50 + 4 + 0.2 + 0.03

4 Unit Form

- It's writing each digit with its **place value**.

Example:

54.23

5 Tens , 4 Ones , 2 Tenths , 3 Hundredths

Same Value, Different Ways - The Whole Breakdown - All Things Equal

Decimals in Fraction Form

1 When there is one digit on the right side of the decimal point:

We write 10 as the denominator.

$0.3 \rightarrow \frac{3}{10}$ Three-tenths

$3.4 \rightarrow 3\frac{4}{10}$ Three and four tenths

2 When there are two digits on the right side of the decimal point:

We write 100 as the denominator.

$0.12 \rightarrow \frac{12}{100}$ Twelve-hundredths

$0.05 \rightarrow \frac{5}{100}$ Five-hundredths

$2.69 \rightarrow 2\frac{69}{100}$ Two and sixty-nine hundredths

Equivalent Decimals

They are decimals that are equal in value.

Examples:

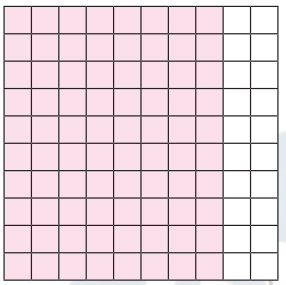
- $0.3 = 0.30$ **Because:** $\left(\frac{3}{10} = \frac{30}{100}\right)$
- $1.4 = 1.40$ **Because:** $\left(\frac{14}{10} = \frac{140}{100}\right)$

Comparing Decimals

1 Comparing Decimals:

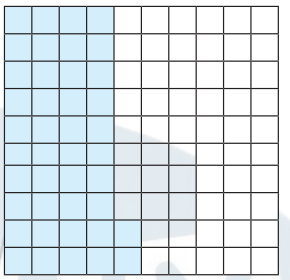
Example: • Which is greater, 0.8 or 0.42?

First: Using Models



0.8 (80 colored squares)
(80 hundredths)

>



0.42 (42 colored squares)
(42 hundredths)

So, 0.8 > 0.42

Second: Using the Place Value Table

Example: • Which is greater, 0.8 or 0.42?

Ones	Decimal Point	Tenths	Hundredths
0	.	8	
0	.	4	2

- **The digits in the Ones place:** They are equal, so we can't compare them.
- **The digits in the Tenths place:** The first digit (8) is greater than the second digit (4).

So, 0.8 > 0.42

Third: Using Tenths and Hundredths

Example: • Which is greater, 13.95 or 13.92?

1. Compare the whole numbers.
   13 . 95
   13 . 92
   We find that: 13 = 13

If they're equal

2. Compare the Tenths.
   13 . 9 5
   13 . 9 2
   We find that: 9 = 9

If they're equal

3. Compare the Hundredths.
   13 . 9 5
   13 . 9 2
   We find that: 2 < 5

So, 13.92 < 13.95

Model 1

Choose:

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

ⓐ $\frac{7}{5}$ ⓑ $\frac{5}{7}$ ⓒ $\frac{5}{21}$ ⓓ $\frac{5}{777}$

2 $\frac{3}{4}$ equivalent to .....

ⓐ $\frac{15}{20}$ ⓑ $\frac{6}{12}$ ⓒ $\frac{8}{9}$ ⓓ $\frac{1}{2}$

Answer:

1 What is the benchmark fraction closest to $\frac{7}{8}$?

2 Which is greater: $\frac{3}{10}$ **or** $\frac{7}{10}$?

3 Are the fractions $\frac{1}{4}$ and $\frac{4}{16}$ equivalent? Why?

4 Write the mixed number $1\frac{9}{10}$ as a decimal number.

Model 2

Choose:

1 Which of the following represents the decomposition of $\frac{3}{7}$ into unit fractions?

ⓐ $\frac{1}{4}+\frac{2}{3}$ ⓑ $\frac{3}{1}+\frac{2}{1}+\frac{2}{1}$ ⓒ $\frac{1}{7}+\frac{1}{7}$ ⓓ $\frac{1}{7}+\frac{1}{7}+\frac{1}{7}$

2 $\frac{50}{100}=$ ..... (Decimal)

ⓐ 0.05 ⓑ 5.0 ⓒ 50 ⓓ 0.5

Answer:

1 What is the result of: $\frac{6}{8}-\frac{3}{8}$?

.....

.....

2 Write the fraction that its **decomposition** is $\frac{1}{4}+\frac{1}{4}+\frac{1}{4}$.

.....

.....

3 What is the benchmark fraction closest to $\frac{1}{9}$?

.....

.....

4 What is the **value** of 8 in the number 2.38?

.....

.....

Model 3

Choose:

1 The fraction $\frac{3}{7}$ is smaller than ..... .

ⓐ $\frac{3}{5}$ ⓑ $\frac{6}{14}$ ⓒ $\frac{3}{8}$ ⓓ $\frac{3}{9}$

2 10 + 4 + 0.3 + 0.05 = ...

ⓐ 53.41 ⓑ 14.35 ⓒ 13.45 ⓓ 41.53

Answer:

1 Order the following fractions **descendingly** (from greatest to smallest):

$\frac{3}{8}, \frac{7}{8}, \frac{1}{8}, \frac{5}{8}$

.....

.....

2 Decompose the decimal **2.4** into tenths and write the fraction that represents it

.....

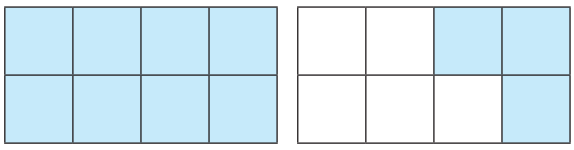
.....

3 What is the benchmark fraction closest to $\frac{3}{5}$?

.....

.....

4 Write what the following model represents as an **improper fraction** and as a **mixed number**.



.....

.....

Model 4

Choose:

1 The fraction $\frac{8}{16}$ is equivalent to ..... .

ⓐ $\frac{1}{2}$ ⓑ $\frac{4}{12}$ ⓒ $\frac{16}{20}$ ⓓ $\frac{24}{30}$

2 Twenty-seven and three hundredths = ...

ⓐ 27.3 ⓑ 2.73 ⓒ 27.03 ⓓ 3.27

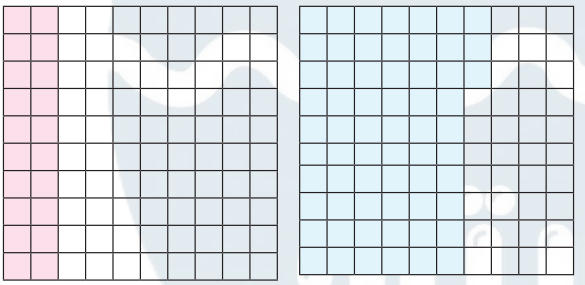
Answer:

1 Write the fraction $\frac{78}{100}$ in a decimal form.

.....

.....

2 Write the problem that the following model expresses.



..... + ... = ...

3 What is the benchmark fraction closest to $\frac{4}{7}$?

.....

.....

4 Adam has $\frac{12}{100}$ liter of water. Express this amount of water as a decimal. Determine the Hundredths digit.

.....

.....

Model 5

Choose:

1 $\frac{4}{7} \times 3 = \frac{\ldots\ldots}{\ldots\ldots\ldots}$

ⓐ $\frac{3}{7}$ ⓑ $\frac{12}{21}$ ⓒ $\frac{4}{21}$ ⓓ $\frac{12}{7}$

2 $\frac{2}{9} = \frac{\ldots\ldots}{45}$

ⓐ 10 ⓑ 18 ⓒ 21 ⓓ 24

Answer:

1 Write the fraction $\frac{63}{100}$ in a decimal form.

.....

.....

2 Decompose the decimal 3.6 into tenths and write the fraction that represents it.

.....

.....

3 Order the following fractions **ascendingly** (from smallest to greatest):

$\frac{3}{7}, \frac{9}{7}, \frac{1}{7}, \frac{5}{7}$

.....

.....

4 Write the mixed number $2\frac{6}{10}$ as a decimal number.

.....

.....

Answers

Model 1

Choose:

1. $\frac{5}{7}$
2. $\frac{15}{20}$

Answer:

1. 1
2. $\frac{7}{10} > \frac{3}{10}$
3. Yes, $\frac{1}{4} \times \frac{4}{4} = \frac{4}{16}$
4. = 1.9

Model 2

Choose:

1. $\frac{1}{7} + \frac{1}{7} + \frac{1}{7}$
2. 0.5

Answer:

1. $= \frac{3}{8}$
2. $\frac{3}{4}$
3. Zero
4. 0.08

Model 3

Choose:

1. $\frac{3}{5}$
2. 14.35

Answer:

1. $\frac{7}{8} > \frac{5}{8} > \frac{3}{8} > \frac{1}{8}$
2. $2 + 0.4 , \frac{24}{10} = \frac{12}{5}$
3. $\frac{1}{2}$
4. $1\frac{3}{6} = \frac{9}{6}$

Model 4

Choose:

1. $\frac{1}{2}$
2. 27.03

Answer:

1. 0.78
2. $\frac{20}{100} + \frac{63}{100} = \frac{83}{100}$
3. $\frac{1}{2}$
4. 0.12 , 2

Model 5

Choose:

1. $\frac{12}{7}$
2. 10

Answer:

1. 0.63
2. $3 + 0.6 , \frac{36}{10} = \frac{18}{5}$
3. $\frac{1}{7} < \frac{3}{7} < \frac{5}{7} < \frac{9}{7}$
4. 2.6