

Fractions, Decimals, and Percentages

 Guide Notes

DEFINITION OF TERMS

Fraction

- The symbol $\frac{a}{b}$, where a, b are natural numbers and $b \neq 0$, is called a fraction. The number above the bar is called numerator and the number below the bar is the denominator.
- A **proper fraction** is a fraction in which the numerator is less than the denominator.
- An **improper fraction** is a fraction in which the numerator is greater than or equal to the denominator.
- A **mixed number** is composed of a whole number and a fraction.

Decimal

- A **decimal** is a fraction whose denominator can be expressed as a power of ten.
- A **terminating decimal** is the quotient obtained by dividing the numerator of a fraction by denominator with a remainder of zero.
- A **repeating decimal** is the representation of a fraction in which a pattern of digit repeats itself indefinitely.
- A **non-repeating and non-terminating** decimal is a decimal in which none of its digits repeat successively.

Percent

- Percent is a ratio of a given number to 100. This means that a percent is the numerator of a fraction whose denominator is 100.

CHANGING FRACTION TO DECIMAL

Example 1:

Determine a decimal that denotes $\frac{1597}{250}$ (improper fraction)

Solution:

$$\frac{1597}{250} = 1597 \div 250 = 6.388$$

Sample Problem 1: Convert the following fraction to decimal

1. $\frac{21}{40}$

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

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CHANGING DECIMALS TO FRACTION

Example 2:

To convert a terminating decimal the denominator depends on their position from the decimal point.

Convert 0.08 to fraction.

$$0.08 = \frac{8}{100} = \frac{2}{25}$$

For a repeating decimal, the numerator is the repeating digit and the denominator is 9..9

(depends on how many digits are repeated)

Example 3:

Convert $0.\overline{27}$ To fraction

$$0.\overline{27} = \frac{27}{99} = \frac{3}{11}$$

For a mixed repeating decimal, the numerator is equal to the digits of the decimal minus the non-repeating digits while denominator is 9 for each repeating decimal and zero for non-repeating decimals.

Example 4:

Convert $0.12\overline{37}$ to fraction

$$0.12\overline{37} = \frac{1237 - 12}{9900} = \frac{1225}{9900} = \frac{49}{369}$$

Sample Problem 2:

Change the following decimals into fraction.

1. 0.125

2. $2.\overline{545}$

3. $0.14\overline{71}$

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CHANGING PERCENT TO DECIMAL

Example 5: Write each percent to decimal form.

1. 16%

2. $66\frac{2}{3}\%$

Solution:

1. 16%

2. $66\frac{2}{3}\%$

Sample Problem 3:

Write each percent to decimal form.

1. 7.2%

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