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P.7 MATHEMATICS

LESSON ONE WEEK SIX

TOPIC: FRACTION
CONTENT: Constant Proportion

Note:

Constant proportion is neither direct nor inverse proportion. The proportion is always constant.

Example:

1. 10 girls can sing the National Anthem in 2 minutes. How long will 80 girls take to sing the same National anthem at the same rate?

They will also take 2 minutes.

2. A bus carrying 30 people take 2 hours to reach Jinja. How long would it take if it carried 10 people and was driven at the same speed?

Since the speed driven at is the same, it would take: 2 hours to reach Jinja.

SUB TOPIC: CHANGING PERCENTAGES INTO COMMON FRACTIONS.

Examples:

Express 35% as a common fraction

$$35\% = \frac{35}{100}$$

$$= \frac{35 \div 5}{100 \div 5}$$

$$= \mathbf{\frac{7}{20}}$$

Express 120% as a common fraction

$$120\% = \frac{120}{100} \quad \text{by 2}$$

$$= \frac{6}{5}$$

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

Activity

Express the following percentages as a common fraction

a) 30%
b) 45%
c) 60%
d) 140%
e) 150%
f) 160%

SUBTOPIC : CHANGING FRACTIONS INTO PERCENTAGES:

Examples:

Write $^1/_3$ as a percentage.

Solution:

$= \frac{1}{3} \times \frac{100}{1}\%$

$= \frac{100\%}{3}$

$= 33\ ^1/_3\%$

Write $^2/_5$ as a percentage.

$= \frac{2}{\cancel{5}_1} \times \frac{\overset{20}{\cancel{100}}}{1}\%$

$= 2 \times 20\%$

$= 40\%$

Change 0.2 to a percentage

$= \frac{2}{1\cancel{0}} \times 10\cancel{0}\%$

$= 2 \times 10\%$

$= 20\%$

Change 1.5 to a percentage

$= \frac{15}{1\cancel{0}} \times 10\cancel{0}\%$

$= 15 \times 10\%$

$= 150\%$

Activity

Change the following fractions to percentages.

a) ½
b) $^3/_5$
c) $^1/_6$
d) 0.25
e) 0.75
f) 2.5

SUB TOPIC: CHANGING PERCENTAGES TO RATIOS

EXAMPLES:

Express 5% in ratio form

$5\% = \frac{\cancel{5}^{\ 1}}{\cancel{100}_{\ 20}}$ reduce by 5

$= \frac{1}{20}$

Ratio = 1:20

Express $33\frac{1}{3}\%$ in ratio form

$33\frac{1}{3}\% = \frac{100}{3}\%$

$= \frac{100}{3} \div \frac{100}{1}$

$= \frac{\cancel{100}}{3} \times \frac{1}{\cancel{100}}$

$= \frac{1}{3}$

Ratio = 1:3

ACTIVITY:

Express the following percentages as ratios.

a) 40%
b) 60%
c) 80%
d) $22\frac{1}{2}\%$
e) $12\frac{1}{2}\%$
f) $16\frac{2}{3}\%$

SUB TOPIC: CHANGING RATIOS TO PERCENTAGES

EXAMPLES:

Express 4 : 5 as a percentage.

Ratio = 4 : 5

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

$= \frac{4}{\cancel{5}_1} \times \cancel{100}^{20}\%$

$= 4 \times 20\%$

= 80%

Express $\frac{1}{4} : \frac{1}{3}$ as a percentage.

Ratio = $\frac{1}{4} : \frac{1}{3}$

Fraction = $\frac{1}{4} \div \frac{1}{3}$

$= \frac{1}{\cancel{4}} \times \frac{3}{1} \times \cancel{100}^{25}\%$

$= 3 \times 25\%$

= 75%

ACTIVITY:

Change the following ratios to percentages.

a) 3 : 4
b) 2 : 5
c) 2 : 8
d) ¼ : ½
e) $^{2}/_{3} : {}^{4}/_{9}$
f) $^{3}/_{5} : {}^{2}/_{3}$

SUB TOPIC: FINDING PERCENTAGES OF QUANTITIES

Examples:

1. Find 40% of 150

   40% of 150

   $= \frac{40}{100} \times 150$

   $= 4 \times 15$

   $= 60$

2. A piece of land is 200 hectares. A farmer used 60% of it for cultivation. How much land is used for cultivation?

   Cultivation = 60% of 200

   $= \frac{60}{100} \times 200$ hectares

   $= 60 \times 2$ hectares

   $= 120$ hectares

3. If 20% of a number is 40, what is 30% of the same number?

   Solution:

   Let the number be m

   20% of x = 40

   $\frac{20}{100} \times m = 40$

   $5 \times \frac{m}{5} = 40 \times 5$

   m = 200

   30% of the number

   = 30% x 200

   $= \frac{30}{100} \times 200$

   $= 30 \times 2$

   $= 60$

ACTIVITY:

1. Find 20% of 200
2. What is 30% of 300 books?
3. If 50% of a number is 60, what is 20% of the same number?
4. 20% of a number is 80, what is 60% of the same number?
5. If 40% of a number is 200, what is 25% of the same number?