Percentage

Lecture sheet – 1

- *What is percentage?*

➔ In mathematics, a percentage is a number or ratio expressed as a fraction of 100. It is denoted using the percent sign "%".

Example:

$1\% = \frac{1}{100}$, $15\% = \frac{15}{100}$, $137\% = \frac{137}{100}$

- $100\% = \frac{100}{100} = 1$

- *Express the following quantities in fractions and decimals.*

  1) 60 %   2) 125 %

Solution:

$$1)\ 60\% = \frac{60}{100}$$

$$= \frac{3}{5} \quad \text{[Reducing]}$$

$$60\% = \frac{3}{5}$$

Again,

$$60\% = \frac{60}{100}$$

$$= 0.6 \qquad \text{[When dividing any number by 10,100, the decimal point}$$

moves to the left as many as the number of 0s]

$$60\% = 0.6$$

2) 125 %

$$= \frac{125}{100}$$

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

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

125 % $= 1\frac{1}{4}$

Again,

125 %

$$= \frac{125}{100}$$

$$= 1.25$$

125 % $= 1.25$

1) Exercise (Do yourself):

* **Express the following quantities in fractions and decimals:**

a) 34 %   b) 89 %   c) 25 %   d) 42 %

* *Express the following fractions and decimals by using percentage symbol %:*

Solution:

1) $\frac{24}{100} = 24\%$ $[\frac{1}{100} = \%]$

2) $0.03 = \frac{3}{100} = 3\%$

3) $\frac{23}{20} = \frac{23 \times 5}{20 \times 5} = \frac{115}{100} = 115\%$

2) Exercise (Do yourself):

* Express the following fraction and decimals by using the percent symbol % :

   a) 0.54   **b)** $\frac{21}{50}$ **c) 0.3**   **d)** $\frac{12}{25}$

* Fill in the blanks:

1. 25 litres are _____ % of 50 litres.
2. _____ kilograms are 20% of 120 kilogram.
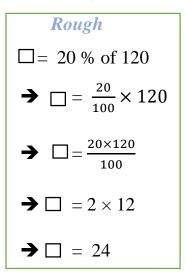3. 16 people are 32% of _____ people.

Solution:

1.   25 litres are ____50____ % of 50 litres.
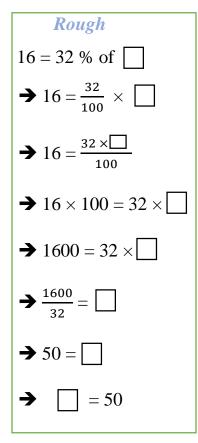

Rough

$25 = \boxed{}$ % of 50

➔ $25 = \dfrac{\boxed{}}{100} \times 50$ [% $= \dfrac{1}{100}$ *and 'of'* $= \times$ *(multiplication)*]

➔ $25 = \dfrac{\boxed{} \times 50}{100}$

➔ $25 = \dfrac{\boxed{}}{2}$

➔ $25 \times 2 = \boxed{}$

➔ $\boxed{} = 50$

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2) <u>24</u> kilograms are 20 % of 120 kilograms.

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Rough

□ = 20 % of 120

➔ □ = $\frac{20}{100}$ × 120

➔ □ = $\frac{20 \times 120}{100}$

➔ □ = 2 × 12

➔ □ = 24

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3) 16 people are 32% of <u>50</u> people.

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Rough

16 = 32 % of □

➔ 16 = $\frac{32}{100}$ × □

➔ 16 = $\frac{32 \times □}{100}$

➔ 16 × 100 = 32 × □

➔ 1600 = 32 × □

➔ $\frac{1600}{32}$ = □

➔ 50 = □

➔ □ = 50

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3) Exercise (Do yourself):

* Fill in the blanks:

a) **12 people is _____ % of 20 people.**

b) **150 % of 300 Taka is _____ Taka.**

c) **56 % of _____ grams is 42 grams.**