

# Introduction to Mathematics

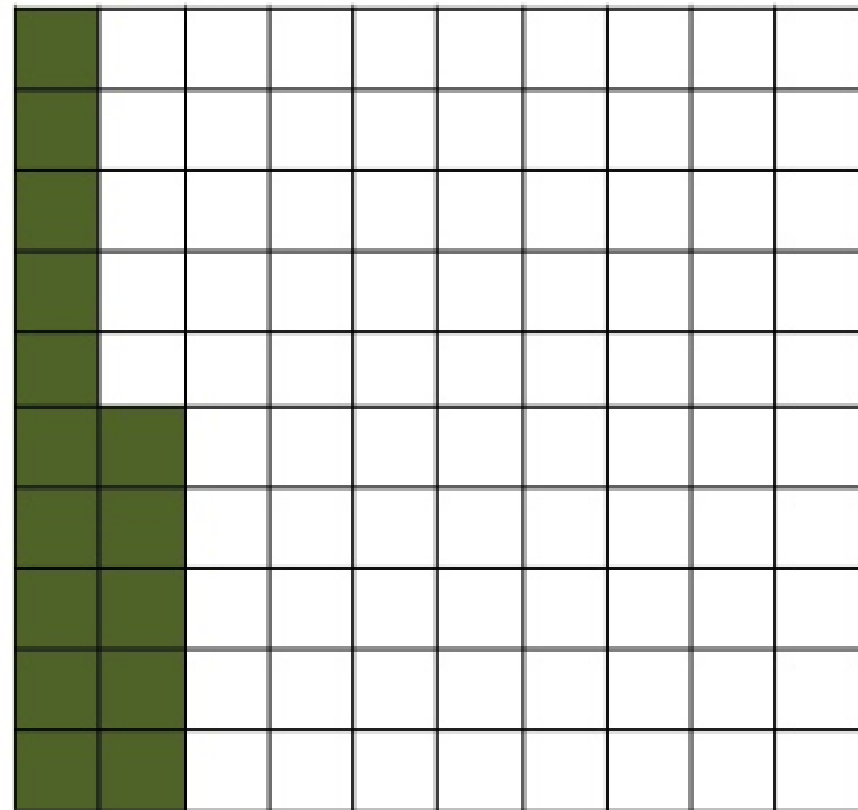
## Week 1

### Review of Basic Arithmetic Operations & Algebra

- Unit 1.3  
Percentages

# Percentages

- The term per cent literally translates to per hundred.
- We can think of a single per cent as being the same as a  $\frac{1}{100}$ th.
- Many other commonly used percentages can be thought of as simple fractions.



# How to calculate Percentages?

- Let's say I have a basket of fruits. Out of a total of 20 fruits, 5 are apples, 10 are oranges and 5 are pineapples. Then the percentage of all three fruits in the basket is calculated in the following way.
  - First determine the 'part' and the 'whole'. Here the 'Whole' is the fruit basket containing 20 fruits and the parts are 5 apples, 10 oranges and 5 pineapples.
  - Secondly, you must determine the fraction of fruits in basket, that are apples, oranges and pineapples. That is, you must establish the fractions. Here the fractions are:
    - Fraction of the Apples in Basket =  $5/20 = 1/4$
    - Fraction of Oranges in Basket =  $10/20 = 1/2$
    - Fraction of Pineapples in Basket =  $5/20 = 1/4$

So, one can now say that one-fourth of the fruits are apples, half are oranges and another one-fourth are pineapples.

- Once the fraction has been established, calculating percentages is extremely simple.
- The percentage of apples in the basket is calculated using following formula.

$$\text{Percentage (\%)} = (\text{Part/Whole}) \times 100$$

Therefore, in the example presented above,

$$\text{Percentage of Apples} = 5/20 \times 100 = \frac{1}{4} \times 100 = 25\%$$

$$\text{Percentage of Oranges} = 10/20 \times 100 = \frac{1}{2} \times 100 = 50\%$$

$$\text{Percentage of Pineapples} = 5/20 \times 100 = \frac{1}{4} \times 100 = 25\%$$

# Practice

- 17% of 100
- 20% of 80
- 25% of 16
- 50% of 18
- 40% of 12
- 35% of 20
- 20% of 45
- 25% of 36

- 120% of 10
- 150% of 18
- 125% of 40
- 700% of 2
- 133% of 15
- 12.5% of 72
- 20% of 105
- 120% of 105

# Solutions

○ 17% of 100 ○ 17

○ 20% of 80 ○ 16

○ 25% of 16 ○ 4

○ 50% of 18 ○ 9

○ 40% of 12 ○ 4.8

○ 35% of 20 ○ 7

○ 20% of 45 ○ 9

○ 25% of 36 ○ 9

○ 120% of 10 ○ 12

○ 150% of 18 ○ 27

○ 125% of 40 ○ 50

○ 700% of 2 ○ 14

○ 133% of 15 ○ 19.95

○ 12.5% of 72 ○ 9

○ 20% of 105 ○ 21

○ 120% of 105 ○ 126



**Thank you**

**IQRA UNIVERSITY**