

## **Senior 2 Mathematics – Scenario-Based Questions (Batch 1)**

### **Item 1 – Numbers and Fractions**

A baker prepares 120 loaves of bread in a day. He sells two-thirds of the loaves in the morning and half of the remaining loaves in the afternoon.

#### **Task**

- A. Calculate the number of loaves sold in the morning.
- B. Find how many loaves are sold in the afternoon.
- C. Determine how many loaves remain unsold at the end of the day.

### **Item 2 – Percentages**

A jacket originally costs 60,000 shillings. It is sold at a discount of 20%. The seller then adds a 10% tax on the discounted price.

#### **Task**

- A. Calculate the price after the discount.
- B. Find the amount of tax added.
- C. Determine the final price of the jacket including tax.

### **Item 3 – Algebra: Simple Equations**

A number is increased by 8, then multiplied by 3. The result is 45.

#### **Task**

- A. Write an equation representing this situation.
- B. Find the original number.
- C. Verify your answer.

### **Item 4 – Geometry: Angles**

A quadrilateral has three angles measuring 70 degrees, 85 degrees, and 95 degrees.

#### **Task**

- A. Calculate the measure of the fourth angle.
- B. Classify the quadrilateral based on its angles.
- C. If one side of the quadrilateral is 12 cm and the adjacent side is 15 cm, calculate the perimeter assuming the other two sides are equal in length.

### **Item 5 – Ratios and Proportions**

A recipe calls for mixing milk and water in the ratio 3:2. If you have 15 liters of milk, how much water is needed?

#### **Task**

- A. Calculate the amount of water needed.
- B. If the total mixture is to be increased to 35 liters, find the new amounts of milk and water.
- C. Write the ratio of milk to water in the new mixture.

### **Item 6 – Data Handling: Averages**

The marks scored by six students in a math test are 65, 70, 58, 72, 68, and 75.

#### **Task**

- A. Calculate the mean mark.
- B. Find the median mark.
- C. Identify the mode of the marks.

**Item 7 – Measurement: Perimeter and Area**

A triangular field has sides measuring 30 meters, 40 meters, and 50 meters.

**Task**

- A. Calculate the perimeter of the field.
- B. Calculate the area of the field using Heron's formula.
- C. If fencing costs 2,000 shillings per meter, calculate the total cost of fencing the field.

**Item 8 – Probability**

A box contains 6 red balls, 4 blue balls, and 5 yellow balls.

**Task**

- A. What is the probability of picking a red ball?
- B. What is the probability of picking a ball that is not yellow?
- C. If two balls are drawn one after the other without replacement, find the probability that both are blue.

**Item 9 – Sequences**

The pattern 2, 6, 10, 14, ... continues.

**Task**

- A. Find the 15th term of the sequence.
- B. Write an expression for the  $n$ th term of the sequence.
- C. Calculate the sum of the first 15 terms.

**Item 10 – Volume and Capacity**

A cuboid-shaped tank measures 3 meters in length, 2 meters in width, and 1.5 meters in height.

**Task**

- A. Calculate the volume of the tank in cubic meters.
- B. Convert the volume to liters (1 cubic meter = 1000 liters).
- C. If water flows into the tank at 20 liters per minute, how long will it take to fill the tank completely?