Senior 3 Mathematics - Scenario-Based Questions (Batch 1)

Item 1 – Numbers and Fractions
A farmer harvested 240 kilograms of maize. He sold three-fifths of the maize on the first day and one-quarter of the remaining maize on the second day.
Task
A. Calculate the amount of maize sold on the first day.
B. Find how much maize was sold on the second day.
C. Determine the amount of maize left after the second day.

Item 2 – Percentages
A shop offers a 15% discount on all items. If a bag originally costs 80,000 shillings, find:
Task
A. The amount of discount on the bag.
B. The price after the discount.
C. The total price if a customer buys 3 bags.

Item 3 – Algebra: Simple Equations
John thinks of a number. He multiplies it by 5, then subtracts 8, and the result is 27.
Task
A. Write an equation to represent this problem.
B. Find the number John thought of.
C. Check your answer by substituting it back into the equation.

Item 4 – Geometry: Angles
In a triangle, two angles measure 50 degrees and 65 degrees.
Task
A. Find the measure of the third angle.
B. State the type of triangle based on the angles.
C. If the triangle's sides opposite to the 50 degrees and 65 degrees angles are 8 cm and 10 cm respectively, find the perimeter given the third side is 12 cm.

Item 5 – Ratios and Proportions
A recipe requires mixing flour and sugar in the ratio 4:1. If a baker uses 12 kilograms of flour, how much sugar does he need?
Task
A. Calculate the amount of sugar needed.
B. If the baker wants to make half the quantity, how much flour and sugar will he use?
C. Write the new ratio for the half quantity.

Item 6 – Data Handling: Averages
Marks scored by five students in a test are: 45, 52, 38, 60, and 55.
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 rectangular garden has a length of 20 meters and a width of 15 meters.

Task

A. Calculate the perimeter of the garden.
B. Find the area of the garden.
C. If a fence costs 5,000 shillings per meter, calculate the total cost to fence the garden.

Item 8 – Probability

A bag contains 5 red balls, 3 blue balls, and 2 green balls.

Task

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

Item 9 – Sequences

The sequence 3, 7, 11, 15, … continues.

Task

A. Find the 10th term of the sequence.
B. Write an expression for the nth term of the sequence.
C. Calculate the sum of the first 10 terms.

Item 10 – Volume and Capacity

A cylindrical water tank has a radius of 3 meters and a height of 5 meters.

Task

A. Calculate the volume of the tank using 3.14 as π.
B. If the tank is filled at the rate of 10 liters per minute, how long will it take to fill the tank completely? (Note: 1 cubic meter = 1000 liters)
C. If water is used at 15 liters per minute, how long will the tank last?