Year 10 GCSE Math exam

Question 1.

A bag contains red, blue, and green marbles. The number of each color marble is unknown, but the total number of marbles is known to be 30. You are to design a game involving drawing a marble from the bag without looking, where players win a prize if they draw a red marble. Create a set of rules for the game that includes the probability of winning a prize, and explain how changing the number of red marbles affects the probability of winning. Assume you have the freedom to decide how many marbles of each color are in the bag, but there must be at least one marble of each color. Illustrate your answer with at least two different scenarios and provide the calculations for the probability of winning in each case.

Answer:

Question 2.

Consider the function $f(x) = ax^2 + bx + c$, where a , b, and c are constants. The graph of $\mathrm{f(x)}$ passes through the points $(1, 6)$, $(2, 11)$, and $(3, 18)$. Analyze the given points and the form of the function to determine the values of a, b, c. Show all your steps and justify your reasoning.

Answer

Question 3.

Simplify the expression: 2(x + 3) + 4(x - 2). Show each step of your simplification process.

Answer

Question 4.

A recipe for a cake requires 250 grams of flour for every 75 grams of sugar. If a baker has 1 kilogram of sugar, how m uch flour is needed to keep the proportions the same?

Answer

Question 5.

Consider the function $f(x) = ax^2 + bx + c$. Given that the graph of f(x) passes through the point (1, 6) and has a vertex at the point (3, 2), analyze the information to determine the values of a, b, and c. Show all steps in your analysis.

Answers: