S.5 SAMPLE ITEMS
MATHEMATICS PAPER 1
TERM 1

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Item 1

In a certain pharmaceutical company a certain product is produced by using a process function which depends on the thickness ,t, of the tablet produced in mm given $f(t) = 3t^2 + 4t + 1$. At a certain instant when $f(t) = 0$, tablets of thickness V and U were produced. However the company started facing a problem of varying the thickness tablets produced due to mechanical problems in the production machine. However the company has no money to import a better machine but after analysis, it has been observed that tablets produced differ from the previous ones by 2mm.

Your father is an process engineer in this company and he is stuck on what to do and has approached you.

Task

As a student of s5 mathematics use mathematical concepts to come up with anew process function that can be used by your father to continue tablet production using the available machine.

Item 2

In a certain chemical processing company product X is formed by combining reactants A, B and C according to the reaction equation below. $aA + bB + cC$-X, Where a, b, and c are different ratios that vary with time. The company produces product X in shifts morning , evening and nights shifts .The table below shows how different shifts and how they combined reactants A, B and C to produce x on Friday.

Shift	Ratios used			Quantity of X produced in grams
	A	B	C	
Morning	3	-2	-1	5
Evening	1	3	-1	4
Night	2	-1	4	13

Your Aunt is working with the company and would like to know the quantities of each reactants used previous friday and has approached you for assistance.

Task

As a student of mathematics use your mathematical knowledge to help your Aunt to know the amount of A, B and C used on that Friday.