UK Math Sample Problem and Homework Template

Instructions: The purpose of this assignment is to develop your ability to formulate and communicate mathematical arguments. Your complete assignment should have your name and other information as specified on the course homework template, be stapled, and be neat and legible. *Unreadable work will receive no credit.*

You should provide well-written, complete answers to each of the questions. We will look for correct mathematical arguments, complete explanations, and correct use of English. Your solution should be formulated in complete sentences. As appropriate, you may want to include diagrams or equations written out on a separate line. You may read your textbook to find examples of how we communicate mathematics.

Students are encouraged to use word-processing software to produce high quality solutions. However, you may find that it is simpler to add graphs and equations using pen or pencil.

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1. Consider the polynomial $f(x) = x^5 + x^4 - 10x^3 + 8x^2$. Factor $f(x)$ completely and use this to find the zeros of $f(x)$ and their corresponding multiplicities.

2. Suppose that a population of animals triples every year, with an initial population of 120.

   (a) Express the population $P(t)$ after t years as a function of t.

   (b) Explain why this formula is correct when $t = 4$.

   (c) How long does it take for the population to reach 5000? Explain your work. (You may use a calculator to compute your final answer, but you need to show the rest of your work without using a calculator.)

Course Number	Due Date	Assignment Name	Last Name, First Name	Problem #/ total number of problems
				State Goal of Problem
				Choose Variables, State Relevant Equations, Draw Diagrams
				Explain Solution Methods Using Sentences, Clearly Showing Computations on Separate Lines
				Answer