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"3-a-day" A-Level Exam Practice Unit 2 (002)

Question I	
Convert the following algorithm run-times into Big-O Notation	
1. 6n ² + 8n + 9 2. 123	
3. 9 ⁴ + log n	
	(3 marks)
Question 2	
What is the difference between intractable and tractable problems?	
What does the word 'heuristic' mean in relation to intractable problems?	
	(4 marks)
Question3	
Question3 What is meant by recursion?	
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Question3 What is meant by recursion? Rewrite the following algorithm without the use of recursion. def countdown (n): if n <= 0: print 'Blastoff!' else: print n countdown (n = 1)	

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A		
Answer		
1) O(n²) 2) O(1) 3) O(log n)		
Answer 2		
Any problem that can be solved in reasonable problem. Intractable problems are those which take an e solve	time (polynomial or less) is known as a tractable extremely long (yet 'less than infinite') time to	
With intractable problems, it is sometimes best to take a heuristic approach – where we use our experience to produce a 'good enough' solution. For example, finding the shortest distance between an increasing number of locations		
Answer 3		
Recursion is when a function will call itself. A recursive function should have a stopping condition, otherwise the function will continue to call itself, adding function call after function call to the stack until the computer can no longer store the function calls – this is known as a stack overflow error.		
For Loop	While Loop	
def countdown (n):	def countdown (n):	
for i in range (n11):	while $n > 0^{\circ}$	
if i <= 0:	print n	
print "Blastoff!"	n = n - 1	
else:	print "Blastoff!"	
print i		