(a) Consider the statement:

For all odd numbers n, $n^2 + 4$ is prime.

Find a counterexample to show that the statement is false. **1**

(b) Prove directly that the difference between the cubes of any two consecutive integers is not divisible by 3. **3**

Answers:

(a)   Find any counterexample, eg. n = 9 or n = 11.

(b)   Model two consecutive integers and their difference. Manipulate into an expression that is 1 greater than a multiple of 3.