**Algebraic Proof - Homework**

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| **Literacy**You should know and understand the meaning of these words DemonstrateProveInteger | **Research – 5mins**Bertrand Russell spent the first 360 pages of his book Principia Mathematica to prove a simple result. What was it? | **Memory and reminder**All even numbers can be written in the form “2n” or “2m” etc, where n & m are integers.All odd numbers can be written in the form “2n + 1” or “2p + 1” etc where n & p are integers. Pythagoras’ Theorem says that for a right angled triangle, a2 + b2 = c2  |
| **Skills Practice – 20-40mins**1a) Use examples to demonstrate that if a triangle has sides of length 3y, 4y and 5y it will be a right angled triangle. 1b) Use algebra to prove what you’ve just demonstrated.2a) Use examples to demonstrate that the square of any even number is a multiple of 4.2b) Use algebra to prove what you’ve just demonstrated.3a) Use examples to demonstrate that the square of any odd number is one more than a multiple of 4.3b) Use algebra to prove that for any odd number p, p2 = 4q + 1 where q is an integer. | **Challenge** **and** **Stretch – 10-20mins**1) All prime numbers from 5 onwards can be written in the form 6n ± 1 (that means either 6n + 1 or 6n – 1).a) Can you demonstrate this? b) Can you prove it?Hint – think about why a number of the form 6n + 2 *wouldn’t* be prime…. 2) Prove that if g and f are numbers in the sequence 3n + 1, gf will also be in that sequence. |