Number Rules - OK

For each of the cases below, try some numerical examples to convince yourself that each statement is true.

Then try to provide convincing pictorial and/or algebraic arguments that they are always true.

1. Two consecutive numbers add to give an odd number
2. The product of two consecutive numbers is even
3. The sum of four consecutive numbers is never a multiple of 4
4. Two odd numbers add to give an even number
5. The pattern below continues forever:

$$7^2 = 6^2 + 6 + 7$$

$$8^2 = 7^2 + 7 + 8$$

$$9^2 = 8^2 + 8 + 9$$

6. Squaring an odd number always gives an odd number
7. If a square number is multiplied by a square number the product is a square number

Final Challenge

Can you discover any other number rules and provide convincing arguments that they are always true?