Rearrange these statements to form a proof about triangular and square numbers.

| |
|---|
| Then $T = \frac{1}{2}n(n+1)$ for some whole number $n$. |
| Expanding, $8T + 1 = 4n^2 + 4n + 1$ |
| Let $T$ be a triangular number |
| Therefore, if $T$ is triangular, $8T + 1$ is square |
| We wish to prove that if $T$ is a triangular number then $8T + 1$ is a square number. |
| Simplifying, $8T + 1 = 4n(n+1) + 1$ |
| Factorising the right hand side, $8T + 1 = (2n+1)^2$ |
| Therefore $8T + 1 = 8\left(\frac{1}{2}n(n+1)\right) + 1$ |