**4D Expressions Relating to Roots of Polynomials**

1. Expand $\left(α+β+γ\right)^{2}$
2. A cubic equation has roots $α$, $β$ and $γ$ such that $αβ+βγ+γα=7$ and $α+β+γ=-3$. Find the value of $α^{2}+β^{2}+γ^{2}$.

The sum of the doubles

- 2 x

The square of the sum of the singles

=

The sum of the squared singles

The sum of the triples

+ 3 x

The sum of the doubles

- 3 x

The cube of the sum of the singles

=

The sum of the cubed singles

1. The three roots of a cubic equation are $α$, $β$ and $γ$.

Given that $αβγ=4$, $αβ+βγ+γα=-5$ and $α+β+γ=3$,

find the value of $\left(α+3\right)\left(β+3\right)\left(γ+3\right)$.