

9 The first term is $a_1 = 1$ and the common ratio is $r = 2$. Since there are 8 terms, the sum is

$$S_n = a_1 \left(\frac{1 - r^n}{1 - r} \right) \Rightarrow S_8 = 1 \left(\frac{1 - 2^8}{1 - 2} \right) = 255.$$

This sum can be verified by adding $1 + 2 + 4 + 8 + 16 + 32 + 64 + 128 = 255$.