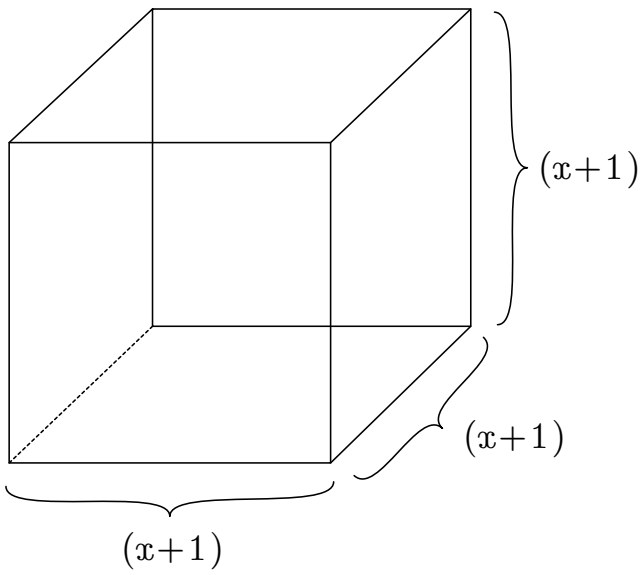

1) To find the volume, multiply all the edges together.

Volume = $(x+1)(x+1)(x+1)$

2) To write this expression using exponential notation, clearly show the exponent of 1 on each factor. Copy the base, and add the exponents to get the final result.

$$V=(x+1)^1(x+1)^1(x+1)^1=(x+1)^{1+1+1}=(x+1)^3$$

3) In this context, the 3 in the exponent indictes we're in 3 dimensional space.

4) To expand this expression means to perform the multiplications. You can do the multiplications two at a time.

$$\text{Volume}=\underbrace{(x+1)(x+1)}(x+1)$$

$$\text{Volume}=\underbrace{(x^2+2x+1)(x+1)}$$

$$=x^2(x+1)+2x(x+1)+1(x+1)$$ distribute $x+1$ over the terms of x^2+2x+1

$$=x^2\cdot x+x^2\cdot 1+2x\cdot x+2x\cdot 1+1\cdot x+1\cdot 1$$ distribute again

$$=x^3+x^2+2x^2+2x+1x+1$$ do the multiplications

$$=x^3+3x^2+3x+1$$ combine like terms