## Factor the Sum and Difference of Two Cubes

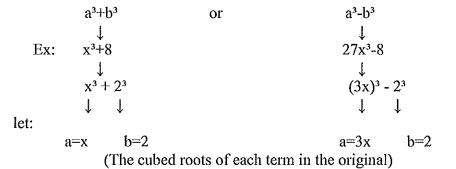
1. Formulas for factoring the Sum and Difference of two cubes:

Sum: 
$$a^3+b^3=(a+b)(a^2-ab+b^2)$$

Difference: 
$$a^3-b^3=(a-b)(a^2+ab+b^2)$$

Note: Keep in mind that the middle of the trinomial is always opposite the sign of the binomial

2. Identification of Sum and Difference in the given problem;



Sample of perfect cubes:

3. Match it to the sum or difference formulas:

Use your "a" and "b" values to match "a" and "b" in the formula you have chosen:

So: 
$$x^3+8=x^3+2^3=(x+2)(x^2-2x+4)$$

Note: the middle sign of the trinomial is opposite of the binomial

3. To prove your answer is right multiply  $(x+2)(x^2-2x+4) \rightarrow$  using the distributive property:

$$(x+2)(x^2-2x+4)$$
 $\leftrightarrow$ 

So:  $x^3-2x^2+4x+2x^2-4x+8$  Simplify by canceling like terms

You get x<sup>3</sup>+8 which proves that your answer is correct.