**When factoring polynomials, there are 3 methods we will encounter:**

\*Special Quadratics

\*Sum or Difference of Special Cubes

\*Grouping

Remember...EVERY time you factor \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_!!!!! Place in the front of your final answer.

Then look at the "leftovers" to see if you can factor using another method.

**Use "Special Quadratics" when you have...**

\*\_\_\_\_\_\_\_ Terms

\*Leading coefficient = \_\_\_\_\_\_\_\_\_\_\_\_\_

\*Degree = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Note: The "bx" term will have an exponent that is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the degree.

Factor these just like we did **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** except the x's will have a different exponent.

**Steps:**

1.) Find two numbers that multiply to "c" that sum up to "b."

**What will my answer look like?**

\*Remember there are \_\_\_\_\_ possible sign combinations for these!

**Example: Factoring using Special Quadratics.**

|  |  |
| --- | --- |
|  |  |

**Use "Sum or Difference of Special Cubes" when you have...**

\*\_\_\_\_\_\_\_\_\_ Terms

\*Coefficients and Constants are Perfect \_\_\_\_\_\_\_\_\_\_

\*Variables have exponents that are multiples of \_\_

\*\*To factor variables, \_\_\_\_\_\_ the exponent by 3

**Steps:**

1.) Take the cube root of the 1st term & 2nd term.

**What will my answer look like?**

*Your answer will depend on whether the original polynomial was a sum or difference:*

|  |  |
| --- | --- |
| **Sum**  | **Difference** |

To help you remember the signs for factoring Special Cubes, think **\_\_\_\_\_\_\_\_\_\_\_**!

**S**ame **O**pposite **A**lways **P**ositive

**Example: Factoring using Special Cubes.**

|  |  |
| --- | --- |
|  |  |

**Use "grouping" when you have...**

\*\_\_\_\_\_\_\_\_\_\_\_\_\_ terms

\*\_\_\_\_\_\_\_\_\_\_\_\_\_\_ GCF

**Steps:**

1.) Put (first 2 terms)(last 2 terms)

2.) Factor out a GCF from each parenthesis.

**GCF(leftovers) +/- GCF(leftovers)**

\*For the second GCF, take out the same sign as the 3rd term. You may need to take out a 1 or - 1 for the second GCF.

\*Your leftovers should be identical!

3.) Write your factors as **(GCF's)(leftoveR)**

**Example: Factoring using Grouping.**

