**7-6 Choosing a Factoring Method**

**Objectives**: Choose an appropriate method for factoring a polynomial. Combine methods for factoring a polynomial.

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| **Factoring Polynomials** | **Example** |
| **Step 1**: Check for a greatest common factor. | 6x2y + 10xy2 = 2xy(3x + 5y) |
| **Step 2**: Check for a pattern that fits the difference of two squares or a perfect-square trinomial. | x2 – 9y2 = (x + 3y)(x – 3y)  x2 + 4x + 4 = (x + 2)2 or x2 – 2x + 1 = (x – 1)2 |
| **Step 3**: To factor **x2 + bx + c**, look for two numbers whose sum is b and whose product is c.  To factor **ax2 + bx + c**, check for factors of a times c. The sum of the products of the outer and inner terms should be b. | x2 + 3x + 2 = (x + 1)(x + 2)  6x2 + 7x + 2 = (2x + 1)(3x + 2) |
| **Step 4**: Check for common factors (4 or more terms, factor by grouping) | 2x3 + 4x2 + x + 2 = (2x3 + 4x2)+(x + 2)  = 2x2(**x + 2**) +1(**x + 2**)  = (**x + 2**)(2x2 + 1) |

**Example 1**: Tell whether each expression is completely factored. If not, factor it.

1. 3x2(6x – 4)
2. (x2 + 1)(x – 4)

**Example 2**: Factor each polynomial completely. Check your answer.

1. 10x2 + 48x + 32
2. 8x6y2 – 18x2y2

**Example 3**: Factor each polynomial completely.

1. 9x2 + 3x – 2
2. 12b3 + 48b2 + 48b
3. 4y2 + 12y – 72
4. (x4 – x2)