

Name: _____
PCH: Review of Factoring

Date: _____
Ms. Loughran

When factoring a polynomial go through this list in your mind:

1. GCF: Look for all factors that are common to all terms of the polynomial, pull out the greatest common factor.
2. Difference of two squares: If the polynomial is a binomial, look to see if it is the difference of two squares.

$$a^2 - b^2 =$$

- Remember you can NOT factor the sum of two squares.

3. Difference or sum of two cubes: If the polynomial is a binomial, look to see if it is the sum or difference of two cubes.

$$a^3 - b^3 =$$

$$a^3 + b^3 =$$

4. Trinomials: $ax^2 + bx + c$ If the polynomial is a trinomial then look at the leading coefficient, a .

If the leading coefficient is one ($a = 1$), use the add multiply method. Look for numbers that multiply to c while adding to b .

If the leading coefficient is not equal to one ($a \neq 1$) use factoring by trial and error or the AC method.

The AC Method

- a. Form the product ac
- b. Find a pair of numbers whose product is ac and whose sum is b
- c. Rewrite the polynomial so that the middle term (bx) is written as the sum of the two terms whose coefficients are the two numbers found in step b
- d. Factor by grouping

5. Grouping: If the polynomial has 4 terms, try factoring by grouping.
6. Final check: Always make sure that the factors you end up with are completely factored. If you have overlooked a common factor, you can catch it here.

Exercises

- 1) $2x^2 - 18$
- 2) $3y^2 - 48$
- 3) $a^4 - 16$
- 4) $5a^2 - 30a + 45$
- 5) $4a^2 + 16a + 16$
- 6) $-x^2 + 50x - 625$
- 7) $ax - bx + ay - by$
- 8) $2ax + 3 + x + 6a$
- 9) $x^3 - 3x^2 - 9x + 27$
- 10) $3x^2 + 5x - 2$
- 11) $12a^2b^2 - 3ab$
- 12) $x^2 - 4x + 2xy - 8y$
- 13) $x^2 - 16y^2$
- 14) $x^2 - 9x + 18$
- 15) $3a^2 - 2ax - 3a + 2x$
- 16) $a^2 - 2a + ab - 2b$
- 17) $6x^2 + 13x + 6$
- 18) $x^4 - 11x^3 + 24x^2$
- 19) $8x^2 - 6x - 2$
- 20) $9x^2 - 12x + 4$
- 21) $a^3 - a^2b - a + b$
- 22) $x^2 + 6x + 5$
- 23) $x^2 - 4x + 3$
- 24) $n^2 + 5n + 6$
- 25) $n^2 - 10n + 25$
- 26) $nr^2 + 3ms - 4s^2$
- 27) $y^2 + 4y - 12$
- 28) $y^2 - y - 30$
- 29) $t^2 - 14t - 72$
- 30) $6 - x - x^2$
- 31) $36 + 5x - x^2$
- 32) $36s^2 + 12s + 1$
- 33) $6s^2 + 30s - 900$
- 34) $2a^4 - 10a^3 - 72a^2$
- 35) $2x^3 - 3x^2 - 2x + 3$
- 36) $(x - 1)^2 - 4$
- 37) $(x + 2)^2 - (y - 3)^2$
- 38) $16 - (2x - 1)^2$
- 39) $4a^2 - 4ab - 36 + b^2$
- 40) $2a^3 - 16a^2 + 32a$