

Name: _____

Date: _____

Always check for a GCF first!

Difference of Two Squares: 1^2 2^2 3^2 4^2 5^2 6^2 7^2 8^2 9^2 10^2 11^2 12^2
 1 4 9 16 25 36 49 64 81 100 121 144

① Binomial
 ② All terms are perfect squares
 ③ Subtraction!

To Factor:
 $(+) (-)$
 Find square roots!

1. $x^2 - 4$
 $(x + 2)(x - 2)$

2. $9x^2 - 64y^2$
 $(3x + 8y)(3x - 8y)$

3. $50x^2 - 32$
 $2(25x^2 - 16)$
 $2(5x + 4)(5x - 4)$

Sum and Difference of Cubes: 1^3 2^3 3^3 4^3 5^3 6^3 7^3 8^3
 1 8 27 64 125 216 343 512

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

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

Same
 Opposite
 A } Always Positive
 P }

4. $64x^3 + 27$
 $(4x + 3)(16x^2 - 12x + 9)$
 $4x \cdot 4x \quad 4x \cdot 3 \quad 3 \cdot 3$

5. $8x^3 - 125$
 $(2x - 5)(4x^2 + 10x + 25)$
 $2x \cdot 2x \quad 2x \cdot 5 \quad 5 \cdot 5$

6. $27x^3 - 8$
 $(3x - 2)(9x^2 + 6x + 4)$
 $3x \cdot 3x \quad 3x \cdot 2 \quad 2 \cdot 2$

Grouping: 4 terms!

- Group 1st 2 terms and 2nd 2 terms.
- Take GCF out of each group.
- Write answer as 2 binomials.

7. $(x^3 - 2x^2 - 9x + 18)$
 $x^2(x - 2) - 9(x - 2)$
 $(x^2 - 9)(x - 2)$
 $(x + 3)(x - 3)(x - 2)$

8. $(2x^3 - 8x^2 + 3x - 12)$
 $2x^2(x - 4) + 3(x - 4)$
 $(2x^2 + 3)(x - 4)$

9. $(4x^3 + 16x^2 - x - 4)$
 $4x^2(x + 4) - 1(x - 4)$
 $(4x^2 - 1)(x + 4)$
 $(2x + 1)(2x - 1)(x + 4)$

What about problems with a higher degree?

10. $x^4 - 16$
 $(x^2 + 4)(x^2 - 4)$
 $(x^2 + 4)(x + 2)(x - 2)$

Trinomial - Big X

11. $x^4 + 6x^2 + 8$
 $(x^2 + 4)(x^2 + 2)$

8^m
 4×2
 6
 A