

$$2x^2 + 4x \quad 2x^4$$

$$2x(x+2)$$

I. Greatest Common Factor (GCF) → if possible, always do this **FIRST**.

<p>A. $24a^2b^2 - 18ab^2$</p> <p>$6a^2b^2 - 3b^2$</p> <p>$6a^2b^2 - 18ab^2$</p>	<p>B. $5x^2y^3 - 20xy^2z + 35y^3z^2$</p> <p>$5y^3(x^2 - 4xy^2z + 7y^2z^2)$</p>	<p>C. $2x^3yz^3 - 7xy^5z^2$</p> <p>$xyz^2(2x^2z - 7y^4)$</p> <p>$\frac{z^3}{z^2} = \frac{7 \cdot z \cdot z}{z \cdot z}$</p>
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II. Factoring by Grouping (4 term polynomials) → Group by 2's

<p>A. $4x - 20 + 3xy - 15y$</p> <p>$4(x-5) + 3y(x-5)$</p> <p>$(4+3y)(x-5)$</p>	<p>B. $15ab^2 - 3a + 10b^2 - 2$</p> <p>$3a(5b^2-1) + 2(5b^2-1)$</p> <p>$(3a+2)(5b^2-1)$</p>
<p>C. $3a^2 - ab - 12a + 4b$</p> <p>$a(3a-b) - 4(3a-b)$</p> <p>$(a-4)(3a-b)$</p>	<p>D. $16x^3 - 128x^2 + 2x - 16$</p> <p>$16x^2(x-8) + 2(x-8)$</p> <p>$(16x^2+2)(x-8)$</p> <p>$2(8x^2+1)(x-8)$</p>

II. Difference of Two Squares Factoring → $a^2 - b^2 = (a-b)(a+b)$ *** Always check for a GCF first!!!!

<p>A. $x^2 - 9$</p> <p>$(x+3)(x-3)$</p> <p>$(x-3)(x+3)$</p>	<p>B. $x^2 - 49$</p> <p>$(x+7)(x-7)$</p>	<p>C. $x^2 - 36y^2$</p> <p>$(x+6y)(x-6y)$</p>
<p>D. $16x^2 - 1$</p> <p>$(4x+1)(4x-1)$</p>	<p>E. $5x^2 + 25$</p> <p>Prime</p> <p>$x^2 - 25 = (x-5)(x+5)$</p>	<p>F. $-1 + x^2$</p> <p>$x^2 - 1 = (x-1)(x+1)$</p>
<p>G. $24x^5 - 54xy^6$</p> <p>$6x^4(4x - 9y^6)$</p> <p>$6x(2x^3 - 3y^6)(2x^3 + 3y^6)$</p>	<p>H. $4x^2 - 64$</p> <p>$4(x^2 - 16)$</p> <p>$4(x-4)(x+4)$</p>	<p>I. $x^4 - 16$</p> <p>Diff. of Sq.</p> <p>$(x^2+4)(x^2-4)$</p> <p>$(x^2+4)(x-2)(x+2)$</p>

Practice GCF

$$1) 4x^2y^3 - 8xyz + 12x^4z$$
$$4x^2 (y^3 - 2xyz + 3x^2z)$$

$$2) 6x^2y^2 + 3xy + 9x^4y^6$$

$$3xy (2xy + 1 + 3x^3y^5)$$

$$3) 96x^2y^4z^8 - 48x^3y^5z^7$$

$$48x^2y^4z^7 (2z - xy)$$

FACTOR COMPLETELY:

1. $15x^2y - 10xy^2$ $5xy(3x - 2y)$	2. $2x^3y - x^2y + 5xy^2$ $xy(2x^2 - x + 5y)$	3. $7k^2 + 9k$ $k(7k + 9)$
4. $2p^3 + 5p^2 + 6p + 15$	5. $m^3 - m^2 + 2m - 2$	6. $12xy - 28x - 15y + 35$
7. $16r^2 - 169$	8. $x^2 - 49$	9. $2y^2 - 242$
10. $x^2 + 64$	11. $x^4 - 81$	12. $25 - 4x^2$
13. $4x^6 - 4x^2$	14. $45x^2 - 80y^2$	15. $16 - 81x^2$