

Factoring Chart



<u>Number of Terms</u>	<u>Common Factoring</u>	<u>Difference of Squares</u>	<u>Trinomials</u>	<u>Trinomials Using Decomposition</u>	<u>Factor By Grouping</u>
2	✓	✓			
3	✓		✓	✓	
4 or More	✓				✓

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2	✓	✓			
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4 or more	✓				✓

1. $3x^2 + 15x + 18$

2. $81x^4 - 16y^8$

3. $4x^2 - 14x + 12$

4. $2ab + 8a + 10b + 40$

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1. $3x^2 + 15x + 18$

$$\begin{aligned}
 & 3(x^2 + 5x + 6) \quad \begin{array}{l} \underline{2} \times \underline{3} = 6 \\ \underline{2} + \underline{3} = 5 \end{array} \\
 & = 3(x+2)(x+3)
 \end{aligned}$$

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2. $81x^4 - 16y^8 \div 2$

$$\begin{aligned}
 & (9x^2)^2 - (4y^4)^2 \\
 & (9x^2 + 4y^4)(9x^2 - 4y^4) \\
 & (9x^2 + 4y^4) \left[(3x)^2 - (2y^2)^2 \right] \\
 & = (9x^2 + 4y^4)(3x + 2y^2)(3x - 2y^2)
 \end{aligned}$$

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3. $4x^2 - 14x + 12$

$$\begin{aligned}
 & 2(2x^2 - 7x + 6) \\
 & \begin{matrix} 4x-3=12 \\ 4x+3=-7 \end{matrix} \quad 2 \left[\underbrace{2x^2 - 4x} - \underbrace{3x + 6} \right] \\
 & 2 \left[2x(x-2) - 3(x-2) \right] \\
 & = 2(2x-3)(x-2)
 \end{aligned}$$

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4. $2ab + 8a + 10b + 40$

$$\begin{aligned} & 2(ab + 4a + 5b + 20) \\ & 2[a(b+4) + 5(b+4)] \\ & = 2(a+5)(b+4) \end{aligned}$$

