

Factoring

1. common factor

$$\text{eg. } 7x^2 - 14x \\ = 7x(x-2)$$

2. difference of squares

$$\text{eg. } 4x^2 - 25 \\ = (2x-5)(2x+5)$$

3. trinomials

a) simple trinomial

$$\text{eg. } x^2 - 14x + 33 \\ = (x-3)(x-11)$$

add multiply

b) complex trinomial

$$\text{eg. } 2x^2 + 7x + 3 \\ = 2x^2 + 6x + x + 3 \\ = 2x(x+3) + 1(x+3) \\ = (x+3)(2x+1)$$

$$\begin{array}{l} x \rightarrow 6 \\ + \rightarrow 7 \end{array} \left. \vphantom{\begin{array}{l} x \\ + \end{array}} \right\} 1, 6$$

} decomposition

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Stump the Student ☺

$$1. x^2 - 16 \\ = (x+4)(x-4)$$

$$2. x^2 + 10x + 21 \\ = (x+3)(x+7)$$

add multiply

$$3. 3x^2 - 3 \\ = 3(x^2 - 1) \\ = 3(x-1)(x+1)$$

$$4. \textcircled{9}x^2 + \textcircled{12}x + \textcircled{4} \quad \left. \begin{array}{l} x \Rightarrow \textcircled{36} \\ t \Rightarrow \textcircled{12} \end{array} \right\} b, b$$

$$= \underline{9x^2 + 6x} + \underline{6x + 4}$$

$$= 3x(3x+2) + 2(3x+2)$$

$$= (3x+2)(3x+2) \text{ or } (3x+2)^2$$

$$5. 2x^2 + 9xy + 4y^2 \quad \left. \begin{array}{l} x \Rightarrow 8 \\ t \Rightarrow 9 \end{array} \right\} 1, 8$$

$$= \underline{2x^2 + 1xy} + \underline{8xy + 4y^2}$$

$$= x(2x+y) + 4y(2x+y)$$

$$= (x+4y)(2x+y)$$