

$$2x^2 + 23x + 11$$

$$(kx + m)(jx + n)$$

$$m \cdot n = 11 = \begin{array}{|l} \text{factors (+)} \\ 1 \cdot 11 \text{ or } 11 \cdot 1 \end{array}$$

$$k \cdot j = 2 = 1 \cdot 2,$$

$$\begin{array}{cc} kx + m & jx + n \\ (\boxed{1}x + \boxed{11}) & (\boxed{2}x + \boxed{11}) \end{array}$$

$$2x^2 + 11x + 2x + 11$$

└───┬───┘
add

$$2x^2 + 13x + 11 \leftarrow \text{no}$$

$$\begin{array}{cc} (kx + m) & (jx + n) \\ (\boxed{2}x + \boxed{11}) & (\boxed{1}x + \boxed{11}) \end{array}$$

$$2x^2 + 11x + 2x + 11$$

$$2x^2 + 23x + 11 \leftarrow \text{yes,}$$

Answer

$$\boxed{(1x + 11)(2x + 1)}$$

$$8x^2 + 28x + 12 \rightarrow 4 \left[2x^2 + 7x + 3 \right] \quad \text{Common factor}$$

$$4 \left[2x^2 + 7x + 3 \right]$$

$$CF \left[ax^2 + bx + c \right]$$

$$CF \left[(kx + m) (jx + n) \right]$$

$m \cdot n = 3$	Factors 1, 3 or 3, 1
$k \cdot j = 2$	1, 2

$(kx + m)$	$(jx + n)$
$(\boxed{1}x + \boxed{1})$	$(\boxed{2}x + \boxed{3})$

$$CF \left[2x^2 + 3x + 2x + 3 \right]$$

add

$$CF \left[2x^2 + 5x + 3 \right] \quad \leftarrow \text{NO}$$

$(kx + m)$	$(jx + n)$
$(\boxed{1}x + \boxed{3})$	$(\boxed{2}x + \boxed{1})$

$$2x^2 + 1x + 6x + 3$$

add

$$CF \left[2x^2 + 7x + 3 \right] \quad \leftarrow$$

$$4 \left[2x^2 + 7x + 3 \right]$$

$$\boxed{8x^2 + 28x + 12}$$

Answer

$$4 \left[(1x + 3) (2x + 1) \right]$$