

$15t^2 - 16t + 4$

$(5t - 2)(3t - 2)$

$5 \cdot \frac{2}{10} + 3 \cdot \frac{2}{6} = 16$

Annotations:
 - "sum" with an arrow pointing to the constant term 4.
 - "both the same" with an arrow pointing to the constant term 2 in both factors.
 - "5t, 3t" and "15t, t" on the left side.
 - "2, 2" and "1, 4" on the right side.
 - Blue lines connect the leading coefficients (5 and 3) to the constant term (2) in the factors.
 - Green lines connect the constant term (2) in both factors to the constant term (4) in the original expression.

$6x^2 - 7x - 3$

$(2x - 3)(3x + 1)$

Annotations:
 - "3, 1" on the right side.
 - "+2, 3" and "3" in green above the first factor.
 - "6, 1" in green above the second factor.

$(3x + 1)(2x - 3)$

check: $6x^2 - 9x + 2x - 3$
 $6x^2 - 7x - 3$

difference

$$2x^2 + 9x - 18$$

$\begin{matrix} 12 & -3 \\ 2 \cdot 6 & 3 \\ \hline 2 \cdot 9 & \\ \hline 18 & \end{matrix}$

2,1

$(2x - 3)(x + 6)$

check: $2x^2 + 12x - 3x - 18$
 $2x^2 + 9x - 18 \checkmark$

difference

$$6x^2 + 7x - 10$$

$\begin{matrix} 1,10 \\ 2,5 \end{matrix}$

~~$\begin{matrix} 6,1 \\ 2,3 \end{matrix}$~~

$$6 \cdot \underline{2} \quad 1 \cdot \underline{-5} = 7$$

$\begin{matrix} 12 & -5 \end{matrix}$

$(6x - 5)(x + 2)$

check: $6x^2 + 12x - 5x - 10$
 $6x^2 + 7x - 10$

$$4x^2 - 17xy + 15y^2$$

sum
↓

$\begin{matrix} 4, 1 \\ 2, 2 \end{matrix}$

$(4x - 5y)(x - 3y)$

$\begin{matrix} 1, 15 \\ 3, 5 \end{matrix}$

$$4 \cdot \frac{3}{12} + 1 \cdot \frac{5}{5} = 17$$

check: $4x^2 - 12xy - 5xy + 15y^2$
 $4x^2 - 17xy + 15y^2$

your turn

$$6x^2 + 17xy - 10y^2$$

23. $2t^2 + 5t - 3$