

Factoring trinomials ($a > 1$) Worksheet

1) $3p^2 - 2p - 5$

8) $5x^2 - 18x + 9$

2) $2n^2 + 3n - 9$

9) $4x^2 - 35x + 49$

3) $3n^2 - 8n + 4$

10) $4n^2 - 17n + 4$

4) $5n^2 + 19n + 12$

11) $6x^2 + 7x - 49$

5) $2v^2 + 11v + 5$

12) $-6a^2 - 25a - 25$

6) $7a^2 + 53a + 28$

13) $6n^2 + 5n - 6$

7) $9k^2 + 66k + 21$

14) $16b^3 + 60b^2 - 100b$

Factoring trinomials (a > 1) Worksheet

1) $3p^2 - 2p - 5$ $3 \cdot 5 = 15$
 $\begin{array}{r} 3p^2 - 5p + 3p - 5 \\ \hline p(3p-5) + 1(3p-5) \\ \hline (3p-5)(p+1) \end{array}$
 $\begin{array}{r} 3 \cdot 5 = 15 \\ 1 \cdot 15 \\ \hline 3 \cdot 5 \end{array}$

2) $2n^2 + 3n - 9$ $2 \cdot 9 = 18$
 $\begin{array}{r} 2n^2 + 6n - 3n - 9 \\ \hline 2n \quad -3 \\ 2n(n+3) - 3(n+3) \\ \hline (n+3)(2n-3) \end{array}$
 $\begin{array}{r} 2 \cdot 9 = 18 \\ 1 \cdot 18 \\ 2 \cdot 9 \\ \hline 3 \cdot 6 \end{array}$

3) $3n^2 - 8n + 4$ $3 \cdot 4 = 12$
 $\begin{array}{r} 3n^2 - 6n - 2n + 4 \\ \hline 3n \quad -2 \\ 3n(n-2) - 2(n-2) \\ \hline (n-2)(3n-2) \end{array}$
 $\begin{array}{r} 3 \cdot 4 = 12 \\ 1 \cdot 12 \\ 2 \cdot 6 \\ \hline 3 \cdot 4 \end{array}$

4) $5n^2 + 19n + 12$ $5 \cdot 12 = 60$
 $\begin{array}{r} 5n^2 + 15n + 4n + 12 \\ \hline 5n \quad 4 \\ 5n(n+3) + 4(n+3) \\ \hline (n+3)(5n+4) \end{array}$
 $\begin{array}{r} 5 \cdot 12 = 60 \\ 1 \cdot 60 \\ 2 \cdot 30 \\ 3 \cdot 20 \\ 4 \cdot 15 \\ 5 \cdot 12 \\ \hline 6 \cdot 10 \end{array}$

5) $2v^2 + 11v + 5$ $2 \cdot 5 = 10$
 $\begin{array}{r} 2v^2 + v + 10v + 5 \\ \hline v \quad 5 \\ v(2v+1) + 5(2v+1) \\ \hline (2v+1)(v+5) \end{array}$
 $\begin{array}{r} 2 \cdot 5 = 10 \\ 1 \cdot 10 \\ \hline 2 \cdot 5 \end{array}$

6) $7a^2 + 53a + 28$ $7 \cdot 28 = 196$
 $\begin{array}{r} 7a^2 + 49a + 4a + 28 \\ \hline 7a \quad 4 \\ 7a(a+7) + 4(a+7) \\ \hline (a+7)(7a+4) \end{array}$
 $\begin{array}{r} 7 \cdot 28 = 196 \\ 1 \cdot 196 \\ 2 \cdot 98 \\ \hline 4 \cdot 49 \end{array}$

7) $9k^2 + 66k + 21$
 $3(3k^2 + 22k + 7)$
 $3(3k+1)(k+7)$

8) $5x^2 - 18x + 9$ $5 \cdot 9 = 45$
 $\begin{array}{r} 5x^2 - 15x - 3x + 9 \\ \hline 5x \quad -3 \\ 5x(x-3) - 3(x-3) \\ \hline (x-3)(5x-3) \end{array}$
 $\begin{array}{r} 5 \cdot 9 = 45 \\ 1 \cdot 45 \\ \hline 3 \cdot 15 \\ 5 \cdot 9 \end{array}$

9) $4x^2 - 35x + 49$ $4 \cdot 49 = 196$
 $\begin{array}{r} 4x^2 - 28x - 7x + 49 \\ \hline 4x \quad -7 \\ 4x(x-7) - 7(x-7) \\ \hline (x-7)(4x-7) \end{array}$
 $\begin{array}{r} 4 \cdot 49 = 196 \\ 1 \cdot 196 \\ 2 \cdot 98 \\ 4 \cdot 49 \\ \hline 7 \cdot 28 \end{array}$

10) $4n^2 - 17n + 4$ $4 \cdot 4 = 16$
 $\begin{array}{r} 4n^2 - 4n - 13n + 4 \\ \hline 4n \quad -1 \\ 4n(n-1) - 4(n-1) \\ \hline (n-1)(4n-4) \end{array}$
 $\begin{array}{r} 4 \cdot 4 = 16 \\ 1 \cdot 16 \\ \hline 2 \cdot 8 \\ 4 \cdot 4 \end{array}$

11) $6x^2 + 7x - 49$ $6 \cdot 49 = 294$
 $\begin{array}{r} 6x^2 + 21x - 14x - 49 \\ \hline 3x \quad -7 \\ 3x(2x+7) - 7(2x+7) \\ \hline (2x+7)(3x-7) \end{array}$
 $\begin{array}{r} 6 \cdot 49 = 294 \\ 1 \cdot 294 \\ 2 \cdot 147 \\ 3 \cdot 98 \\ 6 \cdot 49 \\ 7 \cdot 42 \\ \hline 14 \cdot 21 \end{array}$

12) $-6a^2 - 25a - 25$ $6 \cdot 25 = 150$
 $\begin{array}{r} -1(6a^2 + 25a + 25) \\ -1(6a^2 + 15a + 10a + 25) \\ -1[3a(2a+5) + 5(2a+5)] \\ -1(2a+5)(3a+5) \end{array}$
 $\begin{array}{r} 6 \cdot 25 = 150 \\ 1 \cdot 150 \\ 2 \cdot 75 \\ 3 \cdot 50 \\ 5 \cdot 30 \\ 6 \cdot 25 \\ \hline 10 \cdot 15 \end{array}$

13) $6n^2 + 5n - 6$ $6 \cdot 6 = 36$
 $\begin{array}{r} 6n^2 - 4n + 9n - 6 \\ \hline 2n \quad 3 \\ 2n(3n-2) + 3(3n-2) \\ \hline (3n-2)(2n+3) \end{array}$
 $\begin{array}{r} 6 \cdot 6 = 36 \\ 4 \cdot 9 \end{array}$

14) $16b^3 + 60b^2 - 100b$ $4 \cdot 25 = 100$
 $4b(4b^2 + 15b - 25)$
 $4b[4b^2 + 20b - 5b - 25]$
 $4b[4b(b+5) - 5(b+5)]$
 $4b(b+5)(4b-5)$
 $\begin{array}{r} 4 \cdot 25 = 100 \\ 1 \cdot 100 \\ 2 \cdot 50 \\ 4 \cdot 25 \\ \hline 5 \cdot 20 \end{array}$