



Grade 9

Mathematics

Trinomials

Question 1: Factorise these trinomials

1. $x^2 + 7x + 6$
2. $y^2 + 4y + 4$
3. $r^2 - 8r - 9$
4. $m^2 - 7m - 18$
5. $x^2 - x - 42$
6. $q^2 - 4q - 45$
7. $n^2 + 10n + 24$
8. $t^2 + t - 90$
9. $z^2 + 2z - 24$
10. $k^2 - 13k + 40$

$$\begin{array}{lll} \textcircled{1} x^2 + 7x + 6 & \textcircled{2} y^2 + 4y + 4 & \textcircled{3} r^2 - 8r - 9 \\ = (x+6)(x+1) & = (y+2)(y+2) & = (r-9)(r+1) \\ \textcircled{4} m^2 - 7m - 18 & \textcircled{5} x^2 - x - 42 & \textcircled{6} q^2 - 4q - 45 \\ = (m-9)(m+2) & = (x-7)(x+6) & = (q-9)(q+5) \\ \textcircled{7} n^2 + 10n + 24 & \textcircled{8} t^2 + t - 90 & \textcircled{9} z^2 - 2z - 24 \\ = (n+6)(n+4) & = (t+10)(t-9) & = (z-6)(z+4) \\ \textcircled{10} k^2 - 13k + 40 & & \\ = (k-8)(k-5) & & \end{array}$$

Question 2: Factorise these trinomials, taking out common factors first

1. $w^3 + 3w^2 + 2w$
2. $5x^2 - 25x - 30$
3. $3ax^2 + 21ax - 24a$
4. $7x^3 + 7x^2 - 42$
5. $2x^2 - 4x - 70$

$$\begin{array}{ll} \textcircled{1} w^3 + 3w^2 + 2w & \textcircled{2} 5x^2 - 25x - 30 \\ = w(w^2 + 3w + 2) & = 5(x^2 - 5x - 6) \\ = w(w+2)(w+1) & = 5(x-6)(x+1) \\ \textcircled{3} 3ax^2 + 21ax - 24a & \textcircled{4} 7x^3 + 7x^2 - 42 \\ = 3a(x^2 + 7x - 8) & = 7x(x^2 + x - 6) \\ = 3a(x+8)(x-1) & = 7x(x+7)(x-6) \\ \textcircled{5} 2x^2 - 4x - 70 & \\ = 2(x^2 - 2x - 35) & \\ = 2(x-7)(x+5) & \end{array}$$