Factorising Quadratic Expressions - Answers

Exercise A

(1) $x^2+7x+10 = (x+5)(x+2)$

(2) $x^2+7x+12 = (x+4)(x+3)$

(3) $x^2+8x+15 = (x+3)(x+5)$

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

(5) $x^2+8x+12 = (x+6)(x+2)$

(6) $y^2+12y+35 = (y+7)(y+5)$

(7) $y^2+11y+24 = (y+8)(y+3)$

(8) $y^2+10y+25 = (y+5)^2(y+5)$

(9) $y^2+15y+36 = (y+12)(y+3)$

(10) $a^2-3a-10 = (a-5)(a+2)$

(11) $a^2-a-12 = (a-4)(a+3)$

(12) $z^2+z-6 = (z+3)(z-2)$

(13) $x^2-2x-35 = (x-7)(x+5)$

(14) $x^2-5x-24 = (x-8)(x+3)$

(15) $x^2-6x+8 = (x-4)(x-2)$

(16) $y^2-5y+6 = (y-3)(y-2)$

(17) $x^2-8x+15 = (x-5)(x-3)$

(18) $a^2-a-6 = (a-3)(a+2)$

(19) $a^2+14a+45 = (a+9)(a+5)$

(20) $b^2-4b-21 = (b-7)(b+3)$

(21) $x^2-8x+16 = (x-4)(x-4)$

(22) $y^2+2y+1 = (y+1)(y+1)$

(23) $y^2-3y-28 = (y-7)(y+4)$

(24) $x^2 - x - 20 = (x-5)(x+4)$

(25) $x^2 - 8x - 240 = (x-20)(x+12)$

(26) $x^2 - 26x + 165 = (x-15)(x-11)$

(27) $y^2 + 3y - 108 = (y+12)(y-9)$

(28) $x^2 - 49 = (x-7)(x+7)$

(29) $x^2 - 9 = (x-3)(x+3)$

(30) $x^2 - 16 = (x-4)(x+4)$

(31) $2x^2 + 12x + 16 = 2[x^2 + 6x + 8]$

$= 2[(x+4)(x+2)]$

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

(32)

(a) $2x^2 + 4x - 30 = 2[x^2 + 2x - 15]$

$= 2[(x+5)(x-3)]$

$= 2(x+5)(x-3)$

(b) $3x^2 + 21x + 30 = 3[x^2 + 7x + 10]$

$= 3(x+5)(x+2)$

(c) $3x^2 + 24x + 45 = 3(x^2 + 8x + 15)$

$= 3(x+5)(x+3)$

(d) $2n^2 - 6n - 20$ ~~$= 2(n^2 - 6n$~~

$= 2(n^2 - 3n - 10)$

$= 2(n-5)(n+2)$

(e) $5a^2 + 5a - 30 = 5(a^2 + a - 6)$

$= 5(a+3)(a-2)$

(f) $4x^2 - 64 = 4(x^2 - 16)$

$= 4(x-4)(x+4)$

Exercise B

1. $2x^2 + 5x + 3$

$= 2x^2 + 3x + 2x + 3$

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

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

$p = (+2)(+3) = +$

$S = +5$

$+3, +2$

2. $2x^2 + 7x + 3$

$= 2x^2 + 6x + x + 3$

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

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

$p = (+2)(+3) = +6$

$S = +7$

$+6, +1$

3. $3x^2 + 7x + 2$

$= 3x^2 + 6x + x + 2$

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

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

$p = (+3)(+2) = +6$

$S = +7$

$+6, +1$

4. $2x^2+11x+12$ $\quad p=(+2)(+12)=+24$, $s=+11$ $\quad +8, +3$

$= 2x^2+8x+3x+12$

$= 2x(x+4)+3(x+4)$

$= (x+4)(2x+3)$

5. $3x^2+8x+4$ $\quad p=(+3)(+4)=+12$, $s=+8$ $\quad +6, +2$

$= 3x^2+6x+2x+4$

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

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

6. $2x^2+7x+5$ $\quad p=(+2)(+5)=+10$, $s=+7$ $\quad +5, +2$

$= 2x^2+5x+2x+5$

$= x(2x+5)+1(2x+5)$

$= (2x+5)(x+1)$

7. $3x^2-5x-2$ $\quad p=(+3)(-2)=-6$, $s=-5$ $\quad -6, +1$

$= 3x^2-6x+x-2$

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

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

8. $2x^2-x-15$ $\quad p=(+2)(-15)=-30$, $s=-1$ $\quad -6, +5$

$= 2x^2-6x+5x-15$

$= 2x(x-3)+5(x-3)$

$= (x-3)(2x+5)$

9. $2x^2 + x - 21$

$= 2x^2 + 7x - 6x - 21$

$= x(2x+7) - 3(2x+7)$

$= (2x+7)(x-3)$

$P = (+2)(-21) = -42$

$S = +1$

$+7, -6$

10. $3x^2 - 17x - 28$

$= 3x^2 - 21x + 4x - 28$

$= 3x(x-7) + 4(x-7)$

$= (x-7)(3x+4)$

$P = (+3)(-28) = -84$

$S = -17$

$-21, +4$

11. $6x^2 + 7x + 2$

$= 6x^2 + 4x + 3x + 2$

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

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

$P = (+6)(+2) = +12$

$S = +7$

$+4, +3$

12. $3x^2 - 11x + 6$

$= 3x^2 - 9x - 2x + 6$

$= 3x(x-3) - 2(x-3)$

$= (x-3)(3x-2)$

$P = (+3)(+6) = +18$

$S = -11$

$-9, -2$

13. $3y^2 - 11y + 10$

$= 3y^2 - 6y - 5y + 10$

$= 3y(y-2) - 5(y-2)$

$= (y-2)(3y-5)$

$P = (+3)(+10) = +30$

$S = -11$

$-6, -5$

14. $6y^2+7y-3$

$= 6y^2+9y-2y-3$

$= 3y(2y+3)-1(2y+3)$

$= (2y+3)(3y-1)$

$p = (+6)(-3) = -18$

$s = +7$

$+9, -2$

15. $10x^2+9x+2$

$= 10x^2+5x+4x+2$

$= 5x(2x+1)+2(2x+1)$

$= (2x+1)(5x+2)$

$p = (+10)(+2) = +20$

$s = +9$

$+5, +4$