Exercise 11 (B)

1. i) $8x + 5x = 13x$ ii) $8x - 5x = 3x$
iii) $6xy^2 + 9xy^2 = 15xy^2$ iv) $6xy^2 - 9xy^2 = -3xy^2$
v) $8a + 6a + 5b = 14a + 5b$
vi) $5 + 7xy + 6 + 3xy = 10xy + 11$
vii) $4a + 3b - 7a + 4b = -3a + 7b$
viii) $-15x + 13x + 8 = -2x + 8$
ix) $6x^2y + 13xy^2 - 4x^2y + 2xy^2 = 2x^2y + 15xy^2$
x) $16x^2 - 9x^2 = 7x^2$, $25xy^2 - 12xy^2 = 8xy^2$

2. i) $(-9x) + 3x + 4x = -9x + 3x + 4x = -2x$
ii) $23y^2 + 8y^2 + (-12y^2) = 23y^2 + 8y^2 - 12y^2 = 19y^2$
iii) $13pq + (-15pq) + 3pq = 13pq - 15pq + 3pq = 6pq$

3. i) $3m + 12m - 5m$
$= 15m - 5m = 10m$
ii) $7n^2 - 9n^2 + 3n^2$
$= 10n^2 - 9n^2$
$= n^2$

iii) $25xy - 8xy - 6xy$
$= 25xy - 14xy$
$= 11xy$

iv) $-5ax^2 + 7ax^2 - 12ax^2$
$= -17ax^2 + 7ax^2$
$= -10ax$

v) $-16am + 4mx + 4am - 15mx + 5am$
$= -16am + 9am + 11mx$
$= -7am + 11mx$

4. i) $a + b + 2a + 3b$
$= 3a + 4b$

ii) $(2x + y) + (3x - 4y)$
$= 2x + 3x + y + 4y$
$= 5x - 3y$

iii) $(-3a + 2b) + (3a + b)$
$= -3a + 2b + 3a + b$
$= 3b$

iv) $(4 + x) + (5 - 2x) + 6x$
$= 4 + x + 5 - 2x + 6x$
$= 9 + 5x$

5. i)
$3x + 8y + 7z$
$-2x + 6y + 4z$
$-4x + 3y + 6z$
$-3x + 17y + 17z$

ii) $3a+3b+2c$
$2a+3b-c$
$a+b+c$
$6a+9b+2c$

iii) $4x^2+8xy-2y^2$
$x^2+8xy-5y^2$
$5x^2+16xy-7y^2$

iv) $(9x^2-6x+7)+(5-4x)+(6-3x^2)$
$= 9x^2-6x+7+5-4x+6-3x^2$
$= 6x^2-10x+18$

v) $(5x^2-2xy+3y^2)+(2x^2+5xy+9y^2)+(3x^2-xy-4y^2)$
$= 5x^2-2xy+3y^2-2x^2+5xy+9y^2+3x^2-xy-4y^2$
$= 6x^2+2xy+8y^2$

vi) $(a^2+b^2+2ab)+(2b^2+c^2+2bc)+(4c^2-a^2+2ac)$
$= a^2+b^2+2ab+2b^2+c^2+2bc+4c^2-a^2+2ac$
$= 3b^2+2ab+5c^2+2bc+2ac$

vii) $(9ax-6bx+8)+(4ax+8bx-7)+(-6ax-4bx-3)$
$= 9ax-6bx+8+4ax+8bx-7-6ax-4bx-3$
$= 7ax-2bx-2$

viii) $(abc+2ba+3ac)+(4ca-4ab+2bca)+(2ab-3abc-6ac)$
$= abc+2abc-3abc+2ab-4ab+2ab+3ac+4ac-6ac$
$= ac$

ix) $(4a^2 + 5b^2 - 6ab) + 3ab + (6a^2 - 2b^2) + (4b^2 - 5ab)$
$= 4a^2 + 6a^2 + 5b^2 - 2b^2 + 4b^2 - 6ab + 3ab - 5ab$
$= 10a^2 + 7b^2 - 8ab$

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

xi) $(4x^3 + 2x^2 - x + 1) + (2x^3 -$
$= 4x^3 + 2x^3 + 5x^3 + 2x^2 - 5x^2 + x^2 - x - 3x$
$- 7x + 8 + 1 + 6$
$= 11x^3 - 2x^2 - 11x + 15$

6. i) $x + 3y = x + 3y$
ii) $-3a + 5 = -2a + 5$
iii) $-4x^2 + 7x = -4x^2 + 7x$
iv) $+4a + (-7b) = +4a - 7b$
v) $x^3 + 3x^2y + 2y^2 = x^3 + 3x^2y + 2y^2$
vi) $11 - by = 11 - by$

7. Perimeter of triangle = sum of all sides
$= (2x + 3y) + (x + 5y) + (7x - 2y)$
$= 2x + x + 7x + 3y + 5y - 2y$
$= 10x + 6y$

8. Perimeter of rectangle = 2(sum of its sides)
$= 2\{(6a + 4b) + (8a - 4b)\}$
$= 2\{6a + 8a + 4b - 4b\}$
$= 2\{14a + 5b\}$
$= 28a + 10b$

a. i) $(2a+b)-(a+b)$
$= 2a+b-a-b$
$= a$

ii) $(-2b+ac)-(b+3c)$
$= -2b+ac-b-3c$
$= ac-3b-3c$

iii) $(5a+b)-(-6b+2a)$
$= 5a+b+6b-2a$
$= 3a+7b$

iv) $(a^3-1+a)-(3a-2a^2)$
$= a^3-1+a-3a+2a^2$
$= a^3+2a^2-2a-1$

v) ~~$3a-3b$~~ $(p+2)-1$
$= p+2-1$
$= p+1$

vi) $(x+2y+z)-(-x-y-3z)$
$= x+2y+z+x+y+3z$
$= 2x+3y+4z$

vii) $(3a^2-8ab-2b^2)-(3a^2-4ab+6b^2)$
$= 3a^2-8ab-2b^2-3a^2+4ab-6b^2$
$= -4ab-8b^2$

viii) $(4pq-6p^2-2q^2)-4p^2$
$= 4pq-6p^2-2q^2-4p^2$
$= 4pq-15p^2-2q^2$

iv) $10abc - (2a^2 + 2abc - 4b^2)$
$= 10abc - 2a^2 - 2abc + 4b^2$
$= 8abc - 2a^2 + 4b^2$

x) $(a^2 + ab + c^2) - (a^2 - d^2)$
$= a^2 + ab + c^2 - a^2 + d^2$
$= ab + c^2 + d^2$

10i) $(8 - x) + 4x$
$= 8 - x - 4x$
$= 8 - 5x$

ii) $(c + 3d) - (-8c)$
$= c + 3d + 8c$
$= 9c + 3d$

iii) $(b + 6c) - (-5a - 2b)$
$= b + 6c + 5a + 2b$
$= 5a + 3b + 6c$

iv) $(3p^2 - 8p) - (4p + p^2)$
$= 3p^2 - 8p - 4p - p^2$
$= 2p^2 - 12p$

v) $(4a - b - 2c) - (5a - 3b + 2c)$
$= 4a - b - 2c - 5a + 3b - 2c$
$= 4a - 5a - b + 3b - 2c - 2c$
$= -a + 2b - 4c$

vi) $(xy - yz + xz) - (-xy + yz - zx)$
$= xy - yz + xz + xy + yz + xz$
$= 2xy - 2yz + 2xz$

vii) $(3x^2 - 5xy + 3y^2) - (2x^2 - 7xy - y^2)$
$= 3x^2 - 5xy + 3y^2 - 2x^2 + 7xy + y^2$
$= x^2 + 2xy + 4y^2$

viii) $(2b^2 - a^2 + 2ab) - (a^2 - 3ab - 6b^2)$
$= 2b^2 - a^2 + 2ab - a^2 + 3ab + 6b^2$
$= -a^2 - a^2 + 2ab + 3ab + 2b^2 + 6b^2$
$= -2a^2 + 5ab + 8b^2$

ix) $(-3y^2 + 5xy^2 - 7x^2 - 9x^2y) - (4x^2 - 5x^2y + y^2)$
$= -3y^2 + 5xy^2 - 7x^2 - 9x^2y - 4x^2 + 5x^2y - y^2$
$= -7x^2 - 9x^2y + 5x^2y - 4x^2 - 3y^2 - y^2$
$= -7x^2 - 14x^2y - 4x^2 - 4y^2$
$= -11x^2 - 4y^2$

ix) $(-3y^2 + 5xy^2 - 7x^2 - 9x^2y) - (4x^2 - 5x^2y + y^2)$
$= -3y^2 + 5xy^2 - 7x^2 - 9x^2y - 4x^2 + 5x^2y - y^2$
$= -7x^2 - 4x^2 - 3y^2 - y^2 - 9x^2y + 5x^2y + 5xy^2$
$= -11x^2 - 4y^2 - 4x^2y + 5xy^2$

x) $(3m^3 + 4) - (6m^3 + 4m^2 + 7m - 3)$
$= 3m^3 + 4 - 6m^3 - 4m^2 - 7m + 3$
$= 3m^3 - 6m^3 - 4m^2 - 7m + 3 + 4$
$= -3m^3 - 4m^2 - 7m + 7$