SIGNED NUMBERS AND LIKE TERMS

EXERCISE A – SIGNED NUMBERS

Work out the following

1) $+5+1$
2) $+6-2$
3) $+4-8$
4) $-5+5$
5) $-3-3$
6) $-1+7$
7) $+4-4$
8) $-2+9$
9) $-7-3$
10) $+6+6$
11) $-8+8$
12) $+7-1$
13) $+1-7$
14) $-4+10$
15) $-6-8$
16) $+2-9$
17) $+23-14$
18) $-14+23$
19) $-14-23$
20) $-23+14$

EXERCISE A – SOLUTIONS

1) $+5 + 1 = +6$

2) $+6 - 2 = +4$

3) $+4 - 8 = -4$

4) $-5 + 5 = 0$

5) $-3 - 3 = -6$

6) $-1 + 7 = +6$

7) $+4 - 4 = 0$

8) $-2 + 9 = +7$

9) $-7 - 3 = -10$

10) $+6 + 6 = +12$

11) $-8 + 8 = 0$

12) $+7 - 1 = +6$

13) $+1 - 7 = -6$

14) $-4 + 10 = +6$

15) $-6 - 8 = -14$

16) $+2 - 9 = -7$

17) $+23 - 14 = +9$

18) $-14 + 23 = +9$

19) $-14 - 23 = -37$

20) $-23 + 14 = -9$

EXERCISE B – LIKE TERMS

Simplify the following by collecting like terms together.

1) $3m + 2n + 3m + 2n$

2) $8x - 3y + 2x + 5y$

3) $5p - 3q - p - 2q$

4) $8x + 3 + 5x - 7$

5) $-2c + 4d + 5c - 4d$

6) $2hk + 5pq + 3hk - pq$

7) $2xy + 3yx$

8) $5x^2 - 3y^2 + 2x^2 - y^2$

9) $7p^2 + 5pq + p^2 - pq$

10) $2p + 3q + 4r - p - 2q - 3r$

SIGNED NUMBERS AND LIKE TERMS

EXERCISE B – SOLUTIONS

1) $3m + 2n + 3m + 2n = 6m + 4n$

2) $8x - 3y + 2x + 5y = 10x + 2y$

3) $5p - 3q - p - 2q = 4p - 5q$

4) $8x + 3 + 5x - 7 = 13x - 4$

5) $-2c + 4d + 5c - 4d = 3c$

6) $2hk + 5pq + 3hk - pq = 5hk + 4pq$

7) $2xy + 3yx = 5xy$

8) $5x^2 - 3y^2 + 2x^2 - y^2 = 7x^2 - 4y^2$

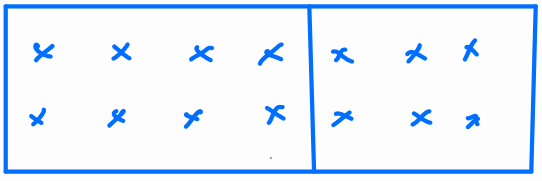
9) $7p^2 + 5pq + p^2 - pq = 8p^2 + 4pq$

10) $2p + 3q + 4r - p - 2q - 3r = p + q + r$

Expanding Brackets

Consider $2 \times (4+3)$

$= 2(4+3) = 2 \times 7 = 14$



$2 \times 4 + 2 \times 3$

$8 + 6 = 14$

$2(x+3) = 2x + 2 \times 3 = 2x + 6$

$$-2(3p-2q) = -6p+4q$$

Multiplying Brackets

Ex 1

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

Ex 2

$$(a+b)(c+d)$$
$$= ac + bc + ad + bd$$

Ex 3

$$(x+2y)(x+3y)$$
$$= x^2 + 2xy + 3xy + 6y^2$$
$$= x^2 + 5xy + 6y^2$$

Exercise Expand and Simplify

1) $(2x+1)(x+1)$

$$= 2x^2 + x + 2x + 1 \quad = 2x^2 + 3x + 1$$

2) $(3p+q)(p-2q)$

$$= 3p^2 + pq - 6pq - 2q^2 = 3p^2 - 5pq - 2q^2$$

3) $(a+b)(a+b)$

$= a^2 + ab + ab + b^2 = a^2 + 2ab + b^2$

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

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

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

$= x^2 + 3xy + 5x + 2x + 6y + 10$

$= x^2 + 3xy + 7x + 6y + 10$

Expanding a Trinomial

Example 1

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

$= \left[x^2 + 2x + 7x + 14\right](x+3)$

$= \left[x^2 + 9x + 14\right](x+3)$

$= x^3 + 9x^2 + 14x$
$\quad + 3x^2 + 27x + 42$

$= x^3 + 12x^2 + 41x + 42$

Ex2

$$(2x-3)(x+1)(3x-4)$$

$$\left[2x^2-3x+2x-3\right](3x-4)$$

$$\left[2x^2-x-3\right](3x-4)$$

$$= 6x^3-3x^2-9x$$
$$-8x^2+4x+12$$

$$= 6x^3-11x^2-5x+12$$