

Signed Numbers and Like Terms

Consider

$$+7 -3 -8 +5 -2 +3 +6 -4 -7 +1$$

Working along the line gives an answer of -2

$$\text{or } +7 +5 +3 +6 +1 -3 -8 -2 -4 -7$$

$$= \quad \quad \quad +22 \quad \quad \quad -24$$

$$= \quad \quad \quad -2$$

$$+6 +8 = +14$$

$$-3 -5 = -8$$

$$+5 -1 = +4$$

$$+5 -7 = -2$$

$$-4 +1 = -3$$

$$-4 +6 = +2$$

$$-5 +5 = 0$$

Exercise

$$-3 +7 = +4$$

$$+5 -8 = -3$$

$$-2 -2 = -4$$

$$-3 +3 = 0$$

$$+6 +5 = +11$$

$$+9 -3 = +6$$

$$-8 +3 = -5$$

$$-2 +6 = +4$$

$$+4 -4 = 0$$

$$-5 -5 = -10$$

Multiplying and Dividing Signed Numbers

Abbreviations +ve means positive
 -ve means negative

$$\begin{array}{l}
 +ve \times +ve \rightarrow +ve \\
 -ve \times -ve \rightarrow +ve \\
 +ve \times -ve \rightarrow -ve \\
 -ve \times +ve \rightarrow -ve
 \end{array}$$

$$\begin{array}{l}
 +ve \div +ve \rightarrow +ve \\
 -ve \div -ve \rightarrow +ve \\
 +ve \div -ve \rightarrow -ve \\
 -ve \div +ve \rightarrow -ve
 \end{array}$$

Examples

- | | |
|-----------------------------|----------------------------|
| 1) $(+3) \times (+2) = +6$ | 5) $(+10) \div (+2) = +5$ |
| 2) $(+5) \times (-3) = -15$ | 6) $(+12) \div (-3) = -4$ |
| 3) $(-4) \times (+5) = -20$ | 7) $(-30) \div (-3) = +10$ |
| 4) $(-1) \times (-3) = +3$ | 8) $(-18) \div (+6) = -3$ |
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Exercise

- | | |
|------------------------------|---------------------------|
| 1) $(-3) \times (-3) = +9$ | 5) $(-8) \div (-2) = +4$ |
| 2) $(+6) \times (-2) = -12$ | 6) $(+6) \div (+2) = +3$ |
| 3) $(-10) \times (+4) = -40$ | 7) $(-15) \div (+5) = -3$ |
| 4) $(+7) \times (+3) = +21$ | 8) $(+14) \div (-2) = -7$ |
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Collecting Like Terms

Examples

$$1) 6x - 3y + 2x + 5y$$

$$= 8x + 2y$$

$$2) 7p - 5q - 6p + 4q$$

$$= p - q$$

$$3) 4pq + 2qr + 3pq - qr$$

$$= 7pq + qr$$

$$4) 5x^2y - 3xy + 4xy^2 + x^2y$$

$$= 6x^2y - 3xy + 4xy^2$$

$$5) 7 + 2qpr - 5 + 3rqp$$

$$= 2 + 5pqr$$

SIGNED NUMBERS AND LIKE TERMSEXERCISESEXERCISE A - SIGNED NUMBERS

Work out the following

- | | |
|--------------------|----------------------|
| 1) $+5 + 1 = +6$ | 11) $-8 + 8 = 0$ |
| 2) $+6 - 2 = +4$ | 12) $+7 - 1 = +6$ |
| 3) $+4 - 8 = -4$ | 13) $+1 - 7 = -6$ |
| 4) $-5 + 5 = 0$ | 14) $-4 + 10 = +6$ |
| 5) $-3 - 3 = -6$ | 15) $-6 - 8 = -14$ |
| 6) $-1 + 7 = +6$ | 16) $+2 - 9 = -7$ |
| 7) $+4 - 4 = 0$ | 17) $+23 - 14 = +9$ |
| 8) $-2 + 9 = +7$ | 18) $-14 + 23 = +9$ |
| 9) $-7 - 3 = -10$ | 19) $-14 - 23 = -37$ |
| 10) $+6 + 6 = +12$ | 20) $-23 + 14 = -9$ |

EXERCISE B - LIKE TERMS

Simplify the following by collecting like terms together.

- 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) $5x^2 - 3y^2 + 2z^2 - y^2 = 7x^2 - 4y^2$
- 9) $7p^2 + 5pq + p^2 - pq = 8p^2 + 4pq$
- 10) $2p + 3q + 4r - p - 2q - 3r = p + q + r$