

Algebra Review Answers A

$$\begin{aligned} \mathbf{1} \quad (\text{a}) \quad 4xy + 3xz - 6zy - 5zx + yx &= 4xy + xy + 3xz - 5xz - 6yz \\ &= 5xy - 2xz - 6yz \end{aligned}$$

Notice that the characters are written in alphabetic order.

$$\begin{aligned} (\text{b}) \quad -2a + 4ab + a - 4ba &= -2a + a + 4ab - 4ab \\ &= -a \end{aligned}$$

$$\begin{aligned} (\text{c}) \quad 3rst - 10str + 8ts - 5rt + 2st &= 3rst - 10rst + 8st + 2st - 5rt \\ &= -7rst + 10st - 5rt \end{aligned}$$

$$\begin{aligned} (\text{d}) \quad 2pq - 4pr + qr - 2rq + 3qp &= 2pq + 3pq - 4pr + qr - 2qr \\ &= 5pq - 4pr - qr \end{aligned}$$

$$\begin{aligned} (\text{e}) \quad 5lmn - 6ml + 7lm + 8mnl - 4ln &= 5lmn + 8lmn - 6lm + 7lm - 4ln \\ &= 13lmn + lm - 4ln \end{aligned}$$

$$\begin{aligned} \mathbf{2} \quad (\text{a}) \quad 4xy + 3xz - 6zy - 5zx + yx &= 5xy - 2xz - 6yz \\ &= x(5y - 2z) - 6yz \text{ or} \\ &= 5xy - 2z(x + 3y) \text{ or} \\ &= y(5x - 6z) - 2xz \end{aligned}$$

$$\begin{aligned} (\text{b}) \quad 3rst - 10str + 8ts - 5rt + 2st &= -7rst + 10st - 5rt \\ &= st(10 - 7r) - 5rt \text{ or} \\ &= 10st - rt(7s + 5) \text{ or} \\ &= t(10s - 7rs - 5r) = t(s[10 - 7r] - 5r) \end{aligned}$$

$$\begin{aligned} (\text{c}) \quad 2pq - 4pr + qr - 2rq + 3qp &= 5pq - 4pr - qr \\ &= p(5q - 4r) - qr \text{ or} \\ &= q(5p - r) - 4pr \text{ or} \\ &= 5pq - r(4p + q) \end{aligned}$$

$$\begin{aligned} (\text{d}) \quad 5lmn - 6ml + 7lm + 8mnl - 4ln &= 13lmn + lm - 4ln \\ &= l(13mn + m - 4n) \\ &= l(m[13n + 1] - 4n) \text{ or} \\ &= l(n[13m - 4] + m) \end{aligned}$$

$$\begin{aligned} \mathbf{3} \quad (\text{a}) \quad 8x(y - z) + 2y(7x + z) &= 8xy - 8xz + 14xy + 2yz \\ &= 22xy - 8xz + 2yz \\ &= 2(x[11y - 4z] + yz) \end{aligned}$$

$$\begin{aligned} (\text{b}) \quad (3a - b)(b - 3a) + b^2 &= 3a(b - 3a) - b(b - 3a) + b^2 \\ &= 3ab - 9a^2 - b^2 + 3ab + b^2 \\ &= 6ab - 9a^2 \\ &= 3a(2b - 3a) \end{aligned}$$

$$\begin{aligned} (\text{c}) \quad -3(w - 7[x - 8(3 - z)]) &= -3(w - 7[x - 24 + 8z]) \\ &= -3(w - 7x + 168 - 56z) \\ &= -3w + 21x - 504 + 168z \end{aligned}$$

$$\begin{aligned} (\text{d}) \quad \frac{2a-3}{4b} + \frac{3a+2}{6b} &= \frac{2a}{4b} - \frac{3}{4b} + \frac{3a}{6b} + \frac{2}{6b} \\ &= \frac{a}{2b} - \frac{3}{4b} + \frac{a}{2b} + \frac{1}{3b} \\ &= \frac{a}{b} - \frac{5}{12b} \\ &= \frac{1}{12b}(12a - 5) \end{aligned}$$

Algebra Review Answers B

- 1** (a) $4pq - pr - 2qr$ (b) $mn(8l^2 + ln - m)$ (c) w^{4+a-b} (d) $s^{\frac{1}{2}}t^{\frac{7}{4}}$
2 (a) $8xy^2 - 4x^2y - 24x^3$ (b) $6a^3 - 29a^2b + 46ab^2 - 24b^3$ (c) $2x - 6y + 5z + 54$

Algebra Review Questions C

- 1** (a) $18xy^3 - 8x^3y = 2xy(9y^2 - 4x^2)$
 $= 2xy(3y - 2x)(3y + 2x)$
(b) $x^3 - 6x^2y - 2xy + 12y^2 = x^2(x - 6y) - 2y(x - 6y)$
 $= (x^2 - 2y)(x - 6y)$
(c) $16x^2 - 24xy - 18x + 27y = (16x^2 - 24xy) - (18x - 27y)$
 $= 8x(2x - 3y) - 9(2x - 3y)$
 $= (8x - 9)(2x - 3y)$
(d) $(x - 2y)^2 - (2x - y)^2 = x^2 - 4xy + 4y^2 - 4x^2 + 4xy - y^2$
 $= 3y^2 - 3x^2$
 $= 3(y^2 - x^2)$
 $= 3(y - x)(y + x)$
(e) $x^2 + 7x - 30 = x^2 + (10 - 3)x + (10) \times (-3)$
 $= (x + 10)(x - 3)$
(f) $4x^2 - 36 = (2x)^2 - (6)^2$
 $= (2x - 6)(2x + 6)$
(g) $x^2 + 10x + 25 = x^2 + (2 \times 5)x + 5^2$
 $= (x + 5)^2$
(h) $3x^2 - 11x - 4 = 3x(x - 4) + (x - 4)$
 $= (3x + 1)(x - 4)$