

Note: Only turn back to page number if you have difficulty

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Q1. Simplify each of these expressions by collecting like terms:

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(a) $7m + 6m + 2m - 3m$

(b) $3x + 5x - 2x + 6x$

(c) $5ab + 2a + 3ba - 2ba$

(d) $5a^2 + 2a^2 - 3a^2 + a^2$

(e) $11m - 5n + 6m + 7n$

(f) $4x + 3y + 6x - y$

(g) $9xy - 4yx + 5xy$

(h) $5x^2 - 4x - 3x^2 + 7x$

(i) $3mn + 9m^2 + 6nm$

Q2. Simplify the following expressions:

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(a) $5 \times 3a$

(b) $6ab \times 3a$

(c) $x \times 4x$

(d) $16a \div 4$

(e) $4a \div 2a$

(f) $2a \times 5 \times 3a$

(g) $9ab \div 3a$

(h) $8x \times 3x \times 2$

(i) $27x^2 \div 3x$

(j) $6xy \div 2y$

(k) $7x \times x \times 2$

(l) $24mn \div 6m$

Q3. Simplify these products using index laws:

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(a) $b^2 \times b^5$

(b) $3x \times x \times 4x$

(c) $a^7 \times 4a^6$

(d) $5y^4 \times 6y^3 \times y^2$

(e) $3x^7 \times 4x^5$

(f) $8b^6 \times 5b^8$

(g) $6x^3 \times 2x^4 \times 3x^5$

(h) $9m^7 \times 2m^6 \times m^5$

(i) $6ab \times 4ba^2$

(j) $9xy \times 3x^2y^2$

(k) $5x^5 \times 4y^4$

(l) $9x \times 3y \times 2x^3y^3$

Q4. Simplify these divisions using index laws:

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(a) $x^7 \div x^5$

(b) $15x^4 \div 3x^3$

(c) $3a^7 \div a$

(d) $5m^5 \div m^3$

(e) $8b^6 \div 2b^4$

(f) $24a^9 \div 6a^6$

(g) $25m^{10} \div 5m^7$

(h) $12x^8 \div 6x^5$

(i) $3x^{12} \div 4x^9$

(j) $5x^5 \div 7x^5$

(k) $6y^{15} \div 2y^9$

(l) $9b^{17} \div 2b^5$

Q5. Simplify these expressions using index laws:

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(a) $(x^3)^2$

(b) $(a^5)^6$

(c) $(2m^5)^3$

(d) $(6x^7)^2$

(e) $(5a^7)^2$

(f) $(9x^9)^2$

(g) $(3ab)^2$

(h) $(m^{15})^9$

(i) $(4x^2y^2)^2$

(j) $(a^2b^3)^5$

(k) $(3x^5y^9)^3$

(l) $(m^5n^{10})^6$

Q6. Rewrite the following expressions without grouping symbols:

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(a) $5(x + 2)$

(b) $3(2a - 5)$

(c) $6(4x - 2)$

(d) $3(9 - 4x)$

(e) $9(6 + 7m)$

(f) $(5a + 8)7$

(g) $2y(y - 3)$

(h) $10a(4 - 3b)$

(i) $6(2a + 3b)$

(j) $10(x - 3y)$

(k) $5x(x - 1)$

(l) $3m(2n + 6)$

Q7. Complete the following by finding the missing HCF:

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(a) $5x + 10 = \underline{\hspace{1cm}} (x + 2)$

(b) $4m + 16 = \underline{\hspace{1cm}} (m + 4)$

(c) $8x - 24 = \underline{\hspace{1cm}} (x - 3)$

(d) $a^2 - 2a = \underline{\hspace{1cm}} (a - 2)$

(e) $ab - a = \underline{\hspace{1cm}} (b - 1)$

(f) $6m + 8 = \underline{\hspace{1cm}} (3m + 4)$

(g) $6x + x^2 = \underline{\hspace{1cm}} (6 + x)$

(h) $4m - 10 = \underline{\hspace{1cm}} (2m - 5)$

(i) $6a + 15 = \underline{\hspace{1cm}} (2a + 5)$

Level 1 — Algebra (ANSWERS)

- Q1. (a) $12m$ (b) $12x$ (c) $6ab + 2a$ (d) $5a^2$ (e) $17m + 2n$
 (f) $10x + 2y$ (g) $10xy$ (h) $2x^2 + 3x$ (i) $9mn + 9m^2$
- Q2. (a) $15a$ (b) $18a^2b$ (c) $4x^2$ (d) $4a$ (e) 2 (f) $30a^2$
 (g) $3b$ (h) $48x^2$ (i) $9x$ (j) $3x$ (k) $14x^2$ (l) $4n$
- Q3. (a) b^7 (b) $12x^3$ (c) $4a^{13}$ (d) $30y^9$ (e) $12x^{12}$ (f) $40b^{14}$
 (g) $36x^{12}$ (h) $18m^{18}$ (i) $24a^3b^2$ (j) $27x^3y^3$ (k) $20x^5y^4$ (l) $54x^4y^4$
- Q4. (a) x^2 (b) $5x$ (c) $3a^6$ (d) $5m^2$ (e) $4b^2$ (f) $4a^3$
 (g) $5m^3$ (h) $2x^3$ (i) $\frac{3x^3}{4}$ (j) $\frac{5}{7}$ (k) $3y^6$ (l) $\frac{9b^{12}}{2}$
- Q5. (a) x^6 (b) a^{30} (c) $8m^{15}$ (d) $36x^{14}$ (e) $25a^{14}$ (f) $81x^{18}$
 (g) $9a^2b^2$ (h) m^{135} (i) $16x^4y^4$ (j) $a^{10}b^{15}$ (k) $27x^{15}y^{27}$ (l) $m^{30}n^{60}$
- Q6. (a) $5x + 10$ (b) $6a - 15$ (c) $24x - 12$ (d) $27 - 12x$ (e) $54 + 63m$
 (f) $35a + 56$ (g) $2y^2 - 6y$ (h) $40a - 30ab$ (i) $12a + 18b$ (j) $10x - 30y$
 (k) $5x^2 - 5x$ (l) $6mn + 18m$
- Q7. (a) 5 (b) 4 (c) 8 (d) a (e) a (f) 2 (g) x (h) 2 (i) 3