

A 1. Simplify.

- (a) $(x^3)(x^5)$ (b) $(a^2)(a^{10})$
 (c) $(b)(b)(b)$ (d) $(m^2)(m^3)(m)$
 (e) $(a^2)(a^3)(b)(b^4)$ (f) $(a)(b)(a^2)(b^3)$

2. Simplify.

- (a) $a^7 \div a^2$ (b) $b^3 \div b^2$ (c) $n^{12} \div n^3$
 (d) $x^8 \div x^5$ (e) $a^5 \div a$ (f) $x^{10} \div x^9$

3. Simplify.

- (a) $(x^4)^2$ (b) $(a^3)^3$ (c) $(a^2b)^3$
 (d) $(xy^2)^5$ (e) $(abc)^5$ (f) $(b^8)^3$
 (g) $(2x^2)^3$ (h) $(a^5b^2)^3$ (i) $(3a^5)^2$
 (j) $(3xy^2)^3$ (k) $(5a^8)^3$ (l) $(4x^2yz)^3$

4. Simplify.

- (a) $\left(\frac{x}{y}\right)^5$ (b) $\left(\frac{a^2}{3}\right)^2$ (c) $\left(\frac{x^2}{y}\right)^3$ (d) $\left(\frac{a}{b^5}\right)^4$
 (e) $\left(\frac{3x}{y}\right)^2$ (f) $\left(\frac{2x^2}{w}\right)^3$ (g) $\left(\frac{5a^2}{2b^3}\right)^2$ (h) $\left(\frac{3a}{b^3}\right)^2$

B 5. Simplify.

- (a) $(5a^2)(3a^6)$ (b) $(4x^2)(-2x^3)$
 (c) $(3a^2b^3)(2ab^2)$ (d) $(2x)(5x^3)$
 (e) $(5mn)(3m)$ (f) $(-4x^3)(-3x^2)$
 (g) $(3y)(5y)(2y^2)$ (h) $(a)(2a^2)(-3a^5)$
 (i) $(-7x^3)(-2x^3)(-x^2)$

6. Simplify.

- (a) $12a^5 \div 3a^3$ (b) $21x^2y^5 \div 7xy$
 (c) $8a^2 \div 8a$ (d) $48m^2n \div 6mn$
 (e) $30m^2 \div (-6m^2)$
 (f) $(-18ab^3) \div (-2ab)$
 (g) $56pqr \div 8pr$
 (h) $(-24a^2b^2) \div (8a^2b^2)$
 (i) $(15x^{10}y^2) \div (-5xy)$

7. Simplify.

- (a) $(-2a^3)^3$ (b) $[(3x)(x^2)]^2$
 (c) $\left(\frac{12x^5}{4x^3}\right)^2$ (d) $[(2a^3b)(3a^4)]^2$
 (e) $\left(\frac{a^5b}{c^4}\right)^3$ (f) $\left(\frac{-32a^5b}{-16ab}\right)^3$
 (g) $\left(\frac{48x^3y^2}{-12xy}\right)^3$ (h) $\left(\frac{5a^2x}{15a^2}\right)^3$

8. Simplify.

- (a) $(2x^2)^3(2x^5)$ (b) $\frac{(8ab^2)(3a^2b)}{12a^3}$
 (c) $\frac{(3x^2y^5)^3}{9xy^2}$ (d) $\frac{(12m^2n^5)(-5mn^3)}{15m^3n^2}$
 (e) $\frac{(-12x^2)(-4x^2y)}{(-6x^3)}$ (f) $\frac{-32m^{10}n^3}{(8m^5)(mn)}$

Scrambled Answers

Handwritten solutions for the problems above, including:

- a^4 , x , a^3b^4 , $64x^6y^3z^3$, x^8 , $-4m^4n^2$, $-3x^9y$, $-4n^6y$, x^8 , x^9y^{15} , $\frac{x^5}{y^5}$, $15a^9$, $-8a^9$, $16x^{11}$, $8m$, -3 , $\frac{9a^2}{b^6}$, $\frac{a^4}{b^{20}}$, $\frac{x}{27}$, $4a^2$, $-6a^8$, $9b^2$, $\frac{15}{a^3c}$, $-8xy$
- a^5b^5 , x^3 , $6a^3b^5$, n^9 , m^6 , $3x^5y^{13}$, $\frac{x^6}{y^3}$, $10x^4$, $9x^6$, $\frac{x^5}{y^5}$, b^3 , a^{12} , a^4b^3 , a , b , $36a^4b^2$, 9 , $9x^4$, $\frac{a^4}{9}$, $2b^3$, $-8x^5$, $3xy^4$, $7qy$, $-64x^6y^{18}$, $\frac{x^5}{y^5}$
- $\frac{25a^4}{4b^6}$, $9x^{10}$, $64x^6y^3z^3$, -5 , x , $\frac{9x^2}{y^2}$, $\frac{9a^2}{b^6}$, a^5b^5c , $\frac{8x^6}{w^2}$, $15m^2n$, a^3b^4 , $27x^3y^6$, $30y^4$, $b^{24}y^4$, $12x^5$, a^4 , $8x^9$, $a^{15}b^6$, $125a^{24}$, $-14x^8$, $-5x^9y$, $8a^4$, $\frac{x^3}{27}$, $8a^{12}$