

文字と式（単項式の乗除）解答と解説

1 解答 (1) $10ab$ (2) $-8xy$ (3) $-3abc$ (4) $14xyz$

$$(1) \quad 5a \times 2b = 5 \times 2 \times a \times b \\ = 10ab$$

$$(2) \quad 4y \times (-2x) = 4 \times (-2) \times x \times y \\ = -8xy$$

$$(3) \quad (-3ab) \times c = (-3) \times a \times b \times c \\ = -3abc$$

$$(4) \quad (-7z) \times (-2xy) = (-7) \times (-2) \times x \times y \times z \\ = 14xyz$$

2 解答 (1) $14ab$ (2) $48xy$ (3) $-6ab$ (4) $-32xyz$

$$(1) \quad 7a \times 2b = 7 \times 2 \times a \times b \\ = 14ab$$

$$(2) \quad (-6x) \times (-8y) = (-6) \times (-8) \times x \times y \\ = 48xy$$

$$(3) \quad (-4a) \times \frac{3}{2}b = (-4) \times \frac{3}{2} \times a \times b \\ = -6ab$$

$$(4) \quad 4xy \times (-8z) = 4 \times (-8) \times x \times y \times z \\ = -32xyz$$

3 解答 (1) $-6x^2$ (2) $-8ab^2$ (3) x^2 (4) $-27a^3$

$$(1) \quad (-3x) \times 2x = (-3) \times 2 \times x \times x \\ = -6x^2$$

$$(2) \quad 4ab \times (-2b) = 4 \times (-2) \times a \times b \times b \\ = -8ab^2$$

$$(3) \quad (-x)^2 = (-x) \times (-x) \\ = x^2$$

$$(4) \quad (-3a)^3 = (-3a) \times (-3a) \times (-3a) \\ = (-3) \times (-3) \times (-3) \times a \times a \times a \\ = -27a^3$$

4 解答 (1) $6m^2$ (2) $-20x^2y$ (3) $-\frac{1}{8}a^3$ (4) $-49a^3b^2$

$$(1) \quad 6m \times m = 6 \times m \times m \\ = 6m^2$$

$$(2) \quad 4x \times (-5xy) = 4 \times (-5) \times x \times x \times y \\ = -20x^2y$$

$$(3) \quad \left(-\frac{1}{2}a\right)^3 = \left(-\frac{1}{2}a\right) \times \left(-\frac{1}{2}a\right) \times \left(-\frac{1}{2}a\right) \\ = \left(-\frac{1}{2}\right) \times \left(-\frac{1}{2}\right) \times \left(-\frac{1}{2}\right) \times a \times a \times a \\ = -\frac{1}{8}a^3$$

$$(4) \quad (-a) \times (7ab)^2 = (-a) \times (7ab) \times (7ab) \\ = (-1) \times 7 \times 7 \times a \times a \times a \times b \times b \\ = -49a^3b^2$$

5 解答 (1) $3b$ (2) $4x$ (3) $-2a$ (4) $-3x$

$$\begin{aligned}(1) \quad 18ab \div 6a &= \frac{18ab}{6a} \\ &= \frac{18 \times a \times b}{6 \times a} \\ &= 3b\end{aligned}$$

$$\begin{aligned}(2) \quad -12xy \div (-3y) &= \frac{-12xy}{-3y} \\ &= \frac{12xy}{3y} \\ &= \frac{12 \times x \times y}{3 \times y} \\ &= 4x\end{aligned}$$

$$\begin{aligned}(3) \quad 6a^2 \div (-3a) &= \frac{6a^2}{-3a} \\ &= -\frac{6a^2}{3a} \\ &= -\frac{6 \times a \times a}{3 \times a} \\ &= -2a\end{aligned}$$

$$\begin{aligned}(4) \quad (-15x^3) \div 5x^2 &= \frac{-15x^3}{5x^2} \\ &= -\frac{15x^3}{5x^2} \\ &= -\frac{15 \times x \times x \times x}{5 \times x \times x} \\ &= -3x\end{aligned}$$

6 解答 (1) $7y$ (2) $-a$ (3) $-3a^2$ (4) $3m^2n$

$$\begin{aligned}(1) \quad 21xy \div 3x &= \frac{21xy}{3x} \\ &= 7y\end{aligned}$$

$$\begin{aligned}(2) \quad 8abc \div (-8bc) &= \frac{8abc}{-8bc} \\ &= -a\end{aligned}$$

$$(3) \quad (-6a^3) \div 2a = \frac{-6a^3}{2a}$$

$$= -3a^2$$

$$\begin{aligned}(4) \quad 36m^3n^2 \div 12mn &= \frac{36m^3n^2}{12mn} \\ &= 3m^2n\end{aligned}$$

7 解答 (1) $15b$ (2) $-9x$

$$\begin{aligned}(1) \quad 12ab \div \frac{4}{5}a &= 12ab \div \frac{4a}{5} \\ &= 12ab \times \frac{5}{4a} \\ &= \frac{12 \times 5 \times a \times b}{4 \times a} \\ &= 15b\end{aligned}$$

$$\begin{aligned}(2) \quad -15x^2 \div \frac{5}{3}x &= -15x^2 \div \frac{5x}{3} \\ &= -15x^2 \times \frac{3}{5x} \\ &= \frac{-15 \times 3 \times x \times x}{5 \times x} \\ &= -9x\end{aligned}$$

8 解答 (1) $-6ab$ (2) $4xyz$ (3) $25a^2b^2$ (4) $-2m^3n$ (5) $-20x^3$

(6) $-9a$ (7) $-15y$

$$(1) \frac{3}{5}a \times (-10b) = \frac{3}{5} \times (-10) \times a \times b \\ = -6ab$$

$$(2) -\frac{6}{7}xy \times \left(-\frac{14}{3}z\right) = -\frac{6}{7} \times \left(-\frac{14}{3}\right) \times x \times y \times z \\ = 4xyz$$

$$(3) (-5ab)^2 = (-5ab) \times (-5ab) \\ = (-5) \times (-5) \times a \times a \times b \times b \\ = 25a^2b^2$$

$$(4) (-m)^2 \times (-2mn) = (-m) \times (-m) \times (-2mn) \\ = (-1) \times (-1) \times (-2) \times m \times m \times n \\ = -2m^3n$$

$$(5) -5x \times (-2x)^2 = -5x \times (-2x) \times (-2x) \\ = -5 \times (-2) \times (-2) \times x \times x \times x \\ = -20x^3$$

$$(6) 6a^2b \div \left(-\frac{2}{3}ab\right) = 6a^2b \div \left(-\frac{2ab}{3}\right) \\ = 6a^2b \times \left(-\frac{3}{2ab}\right) \\ = -\frac{6a^2b \times 3}{2ab} \\ = -9a$$

$$(7) -\frac{5}{3}x^2y^2 \div \frac{1}{9}x^2y = -\frac{5x^2y^2}{3} \div \frac{x^2y}{9} \\ = -\frac{5x^2y^2}{3} \times \frac{9}{x^2y} \\ = -\frac{5x^2y^2 \times 9}{3 \times x^2y} \\ = -15y$$

9 解答 (1) $50x^2y$ (2) $6x$ (3) $-b$

$$(1) (-5x)^2 \times 2y = (-5x) \times (-5x) \times 2y \\ = (-5) \times (-5) \times 2 \times x \times x \times y$$

$$= 50x^2y$$

$$(2) 9xy \div \frac{3}{2}y = 9xy \div \frac{3y}{2} \\ = 9xy \times \frac{2}{3y} \\ = \frac{9xy \times 2}{3y} \\ = 6x$$

$$(3) 20abc \div 4a \div (-5c) = -\frac{20abc}{4a \times 5c} \\ = -b$$

10 解答 (1) $18a^3b^2$ (2) $10b^2$ (3) $-\frac{9y}{x}$

$$(1) (-3ab)^2 \times 2a = (-3ab) \times (-3ab) \times 2a \\ = (-3) \times (-3) \times 2 \times a \times a \times a \times b \times b \\ = 18a^3b^2$$

$$(2) -14a^2b^4 \div \left(-\frac{7}{5}a^2b^2\right) = -14a^2b^4 \div \left(-\frac{7a^2b^2}{5}\right) \\ = -14a^2b^4 \times \left(-\frac{5}{7a^2b^2}\right) \\ = \frac{14a^2b^4 \times 5}{7a^2b^2} \\ = 10b^2$$

$$(3) -15xy^2 \div \left(-\frac{5}{2}x^2\right) \div \left(-\frac{2}{3}y\right) = -15xy^2 \div \left(-\frac{5x^2}{2}\right) \div \left(-\frac{2y}{3}\right) \\ = -15xy^2 \times \left(-\frac{2}{5x^2}\right) \times \left(-\frac{3}{2y}\right) \\ = -\frac{15xy^2 \times 2 \times 3}{5x^2 \times 2y} \\ = -\frac{9y}{x}$$

11 解答 (1) $-6a$ (2) $2x$ (3) $8a^2b$ (4) $-3y^2$

$$(1) 9ab \times 4b \div (-6b^2) = -\frac{9ab \times 4b}{6b^2}$$

$$= -6a$$

$$(2) 40x^3 \div (-5x) \div (-4x) = \frac{40x^3}{5x \times 4x}$$

$$= 2x$$

$$(3) 4a^2 \div 5b \times 10b^2 = \frac{4a^2 \times 10b^2}{5b}$$

$$= 8a^2b$$

$$(4) -5xy^2 \div 15x^2y \times 9xy = -\frac{5xy^2 \times 9xy}{15x^2y}$$

$$= -3y^2$$

12 解答 (1) $-3a^2$ (2) $3x^2y$ (3) 14 (4) $-12xy$

$$(1) 9ab \times 6a \div (-18b) = -\frac{9ab \times 6a}{18b}$$

$$= -3a^2$$

$$(2) 12x^3y \div 20xy^2 \times 5y^2 = \frac{12x^3y \times 5y^2}{20xy^2}$$

$$= 3x^2y$$

$$(3) (-6a) \div \left(-\frac{9}{7}ab\right) \times 3b = (-6a) \times \left(-\frac{7}{9ab}\right) \times 3b$$

$$= \frac{6a \times 7 \times 3b}{9ab}$$

$$= 14$$

$$(4) 2x^2y \times 3xy^2 \div \left(-\frac{1}{2}x^2y^2\right) = 2x^2y \times 3xy^2 \times \left(-\frac{2}{x^2y^2}\right)$$

$$= -\frac{2x^2y \times 3xy^2 \times 2}{x^2y^2}$$

$$= -12xy$$

13 解答 (1) $-3a^3$ (2) $4xy$ (3) $3a$ (4) $-2x^2y$ (5) $4b^2$ (6) $-y^3$

(7) $-24a^3b$ (8) $9x^3$ (9) $-10x^3y$ (10) a^2

$$(1) 9a^2 \times ab \div (-3b) = -\frac{9a^2 \times ab}{3b} = -3a^3$$

$$(2) 16x^2 \div (-4xy) \times (-y^2) = \frac{16x^2 \times y^2}{4xy}$$

$$= 4xy$$

$$(3) -2a^2 \times 6b \div (-4ab) = \frac{2a^2 \times 6b}{4ab}$$

$$= 3a$$

$$(4) 8xy^2 \div (-12y) \times 3x = -\frac{8xy^2 \times 3x}{12y}$$

$$= -2x^2y$$

$$(5) 12ab \times (-2ab^2) \div (-6a^2b) = \frac{12ab \times 2ab^2}{6a^2b}$$

$$= 4b^2$$

$$(6) -5xy^3 \div 10x^3y^2 \times 2x^2y^2 = -\frac{5xy^3 \times 2x^2y^2}{10x^3y^2}$$

$$= -y^3$$

$$(7) 3ab^2 \times 4a^2b \div \left(-\frac{1}{2}b^2\right) = 3ab^2 \times 4a^2b \times \left(-\frac{2}{b^2}\right)$$

$$= -\frac{3ab^2 \times 4a^2b \times 2}{b^2}$$

$$= -24a^3b$$

$$(8) x^2 \times (-3xy)^2 \div xy^2 = x^2 \times 9x^2y^2 \div xy^2$$

$$= \frac{x^2 \times 9x^2y^2}{xy^2}$$

$$= 9x^3$$

$$(9) (-4x)^2 \times 5x^4y \div (-2x)^3 = 16x^2 \times 5x^4y \div (-8x^3)$$

$$= -\frac{16x^2 \times 5x^4y}{8x^3}$$

$$= -10x^3y$$

$$(10) \frac{27}{2}ab \div (-3b)^2 \times \frac{2}{3}ab = \frac{27ab}{2} \div 9b^2 \times \frac{2ab}{3}$$

$$= \frac{27ab}{2} \times \frac{1}{9b^2} \times \frac{2ab}{3}$$

$$= \frac{27ab \times 1 \times 2ab}{2 \times 9b^2 \times 3} = a^2$$