

第 1 章	数学(2 年)	名前:	日 付	No.02
	式の計算1			

[問題 1]

次の計算をなさい。

- (1) $4x \times (-6y)$ (2) $(-4x)^2$ (3) $(-2) \times (-5x)^2$
 (4) $16x^2y \div (-4xy)$ (5) $2x^2y \div \left(-\frac{2}{3}y\right)$ (6) $4x \times 3y^2 \div 6xy$

[解答欄]

(1) $-24xy$	(2) $16x^2$	(3) $-50x^2$	(4) $-4x$
(5) $-3x^2$	(6) $2y$		

[解説]

乗法：並べかえて、数字は数字どうし、それぞれの文字は文字どうしかけ算

除法：逆数を使ってかけ算に直す($\div A \rightarrow \times \frac{1}{A}$)($\div \frac{A}{B} \rightarrow \times \frac{B}{A}$)

$$(1) 4x \times (-6y) = 4 \times x \times (-6) \times y = 4 \times (-6) \times x \times y = -24xy$$

$$(2) (-4x)^2 = (-4x) \times (-4x) = (-4) \times x \times (-4) \times x = (-4) \times (-4) \times x \times x = 16x^2$$

$$(3) (-2) \times (-5x)^2 = (-2) \times (-5x) \times (-5x) = (-2) \times (-5) \times x \times (-5) \times x \\ = (-2) \times (-5) \times (-5) \times x \times x = -50x^2$$

$$(4) 16x^2y \div (-4xy) = 16x^2y \times \left(\frac{1}{-4xy}\right) = \frac{16x^2y}{-4xy} = \frac{16 \times x \times x \times y}{-4 \times x \times y} = -4x$$

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

$$(6) 4x \times 3y^2 \div 6xy = 4x \times 3y^2 \times \frac{1}{6xy} = \frac{4x \times 3y^2}{6xy} = \frac{4 \times x \times 3 \times y \times y}{6 \times x \times y} = 2y$$

[問題 2]

次の計算をなさい。

- (1) $2b \times (-5a)$ (2) $-14x^2y \div 7x$ (3) $9x^2 \times (-xy) \div 3y$

[解答欄]

(1) $-10ab$	(2) $-2xy$	(3) $-3x^3$
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[解説]

乗法：並べかえて、数字は数字どうし、それぞれの文字は文字どうしかけ算

除法：逆数を使ってかけ算に直す($\div A \rightarrow \times \frac{1}{A}$)($\div \frac{A}{B} \rightarrow \times \frac{B}{A}$)

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

$$(2) -14x^2y \div 7x = -14x^2y \times \frac{1}{7x} = \frac{-14x^2y}{7x} = \frac{-14 \times x \times x \times y}{7 \times x} = -2xy$$

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

[問題 3]

次の計算をなさい。

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

$$(2) -18xy^3 \div (-3xy)$$

$$(3) 12a^2b^3 \div \frac{6}{5}ab^2$$

$$(4) 2x^2y \times (-3y)^2 \div (-9xy)$$

$$(5) \frac{1}{9}x^3y^2 \div \left(\frac{1}{3}xy\right)^2 \times (-x^2y)^3$$

[解答欄]

(1) $-6ab^3$	(2) $6y^2$	(3) $10ab$
(4) $-2xy^2$	(5) $-x^7y^3$	

[解説]

乗法：並べかえて、数字は数字どうし、それぞれの文字は文字どうしかけ算

除法：逆数を使ってかけ算に直す($\div A \rightarrow \times \frac{1}{A}$)($\div \frac{A}{B} \rightarrow \times \frac{B}{A}$)

$$(1) 2ab \times (-3b^2) = 2 \times a \times b \times (-3) \times b \times b = 2 \times (-3) \times a \times b \times b \times b = -6ab^3$$

$$(2) -18xy^3 \div (-3xy) = -18xy^3 \times \left(\frac{1}{-3xy}\right) = \frac{-18xy^3}{-3xy} = \frac{-18 \times x \times y \times y \times y}{-3 \times x \times y} = 6y^2$$

$$(3) 12a^2b^3 \div \frac{6}{5}ab^2 = 12a^2b^3 \div \frac{6ab^2}{5} = 12a^2b^3 \times \frac{5}{6ab^2} = \frac{12a^2b^3 \times 5}{6ab^2} \\ = \frac{12 \times a \times a \times b \times b \times b \times 5}{6 \times a \times b \times b} = 10ab$$

$$(4) 2x^2y \times (-3y)^2 \div (-9xy) = 2x^2y \times (-3y) \times (-3y) \times \left(\frac{1}{-9xy}\right) \\ = \frac{2x^2y \times (-3y) \times (-3y)}{-9xy} = \frac{2 \times x \times x \times y \times (-3) \times y \times (-3) \times y}{-9 \times x \times y} = -2xy^2$$

$$(5) \frac{1}{9}x^3y^2 \div \left(\frac{1}{3}xy\right)^2 \times (-x^2y)^3 = \frac{x^3y^2}{9} \div \frac{x^2y^2}{9} \times (-x^6y^3) = \frac{x^3y^2}{9} \times \frac{9}{x^2y^2} \times (-x^6y^3) \\ = \frac{x^3y^2 \times 9 \times (-x^6y^3)}{9 \times x^2y^2} = -x^7y^3$$

[問題 4]

次の計算をなさい。

- (1) $3(a+2b)$ (2) $(12a-36b) \div 6$
 (3) $3(x+2y)-2(3x-4y)$ (4) $\frac{3x-y}{2} - \frac{3x-2y}{8}$

[解答欄]

(1) $3a+6b$	(2) $2a-6b$	(3) $-3x+14y$	(4) $\frac{9x-2y}{8}$
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[解説]

- (1) $3(a+2b) = 3 \times a + 3 \times 2b = 3a+6b$
 (2) $(12a-36b) \div 6 = (12a-36b) \times \frac{1}{6} = 12a \times \frac{1}{6} - 36b \times \frac{1}{6} = 2a-6b$
 (3) $3(x+2y)-2(3x-4y) = 3x+6y-6x+8y = 3x-6x+6y+8y = -3x+14y$
 (4) $\frac{3x-y}{2} - \frac{3x-2y}{8} = \frac{(3x-y) \times 4}{2 \times 4} - \frac{3x-2y}{8} = \frac{4(3x-y)-(3x-2y)}{8} = \frac{12x-4y-3x+2y}{8}$
 $= \frac{12x-3x-4y+2y}{8} = \frac{9x-2y}{8}$

[問題 5]

次の計算をなさい。

- (1) $(3x-2y)+(x+5y)$ (2) $\begin{array}{r} 4a+3b-c \\ +) 2a-5b+3c \end{array}$ (3) $\begin{array}{r} 2a-5b \\ -) -5a-7b \end{array}$
 (4) $-5(3x-y+2)$ (5) $(-9a+12b) \div (-3)$ (6) $4(2x-y)-3(2x-5y)$
 (7) $\frac{2x+y}{3} - \frac{x-2y}{6}$

[解答欄]

(1) $4x+3y$	(2) $6a-2b+2c$	(3) $7a+2b$	(4) $-15x+5y-10$
(5) $3a-4b$	(6) $2x+11y$	(7) $\frac{3x+4y}{6}$	

[解説]

- (1) $(3x-2y)+(x+5y) = 3x-2y+x+5y = 3x+x-2y+5y = 4x+3y$
 $4a+3b-c$
 (2) $\begin{array}{r} +) 2a-5b+3c \\ 6a-2b+2c \end{array}$
 $2a-5b$ $2a-5b$
 (3) $\begin{array}{r} -) -5a-7b \\ +) +5a+7b \end{array}$
 $7a+2b$
 (4) $-5(3x-y+2) = -5 \times 3x - 5 \times (-y) - 5 \times 2 = -15x+5y-10$

$$(5) (-9a+12b) \div (-3) = (-9a+12b) \times \left(-\frac{1}{3}\right) = -9a \times \left(-\frac{1}{3}\right) + 12b \times \left(-\frac{1}{3}\right) = 3a - 4b$$

$$(6) 4(2x-y) - 3(2x-5y) = 8x - 4y - 6x + 15y = 8x - 6x - 4y + 15y = 2x + 11y$$

$$(7) \frac{2x+y}{3} - \frac{x-2y}{6} = \frac{(2x+y) \times 2}{3 \times 2} - \frac{x-2y}{6} = \frac{2(2x+y) - (x-2y)}{6} = \frac{4x+2y-x+2y}{6} \\ = \frac{4x-x+2y+2y}{6} = \frac{3x+4y}{6}$$

[問題 6]

次の計算を下さい。

$$(1) 2x + 4y - 3x$$

$$(2) x^2 - 4x - 3 + 2x^2 + 4x - 3$$

$$(3) 3x \times 5y$$

$$(4) \begin{array}{r} 3x+2y \\ +) -4x+y \\ \hline \end{array}$$

$$(5) \begin{array}{r} -x+2y \\ -) 4x-2y \\ \hline \end{array}$$

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

$$(7) 2(x+2y) - 4(2x-y)$$

$$(8) (-4x+12y) \div (-4)$$

$$(9) 16x^2 \div \left(-\frac{4}{5}x\right)$$

$$(10) 2x^3 \div x^2 \times x$$

$$(11) x - \frac{x-2y}{3}$$

[解答欄]

(1) $-x + 4y$	(2) $3x^2 - 6$	(3) $15xy$	(4) $-x + 3y$
(5) $-5x + 4y$	(6) $x - 8y$	(7) $-6x + 8y$	(8) $x - 3y$
(9) $-20x$	(10) $2x^2$	(11) $\frac{2x+2y}{3}$	

[解説]

$$(1) 2x + 4y - 3x = 2x - 3x + 4y = -x + 4y$$

$$(2) x^2 - 4x - 3 + 2x^2 + 4x - 3 = x^2 + 2x^2 - 4x + 4x - 3 - 3 = 3x^2 - 6$$

$$(3) 3x \times 5y = 3 \times x \times 5 \times y = 3 \times 5 \times x \times y = 15xy$$

$$(4) \begin{array}{r} 3x+2y \\ +) -4x+y \\ \hline \end{array} \quad (5) \begin{array}{r} -x+2y \\ -) 4x-2y \\ \hline \end{array} \rightarrow \begin{array}{r} -x+2y \\ +) -4x+2y \\ \hline \end{array}$$

$$(6) (3x-5y) - (2x+3y) = 3x - 5y - 2x - 3y = 3x - 2x - 5y - 3y = x - 8y$$

$$(7) 2(x+2y) - 4(2x-y) = 2x + 4y - 8x + 4y = 2x - 8x + 4y + 4y = -6x + 8y$$

$$(8) (-4x+12y) \div (-4) = (-4x+12y) \times \left(-\frac{1}{4}\right) = -4x \times \left(-\frac{1}{4}\right) + 12y \times \left(-\frac{1}{4}\right) = x - 3y$$

$$(9) 16x^2 \div \left(-\frac{4}{5}x\right) = 16x^2 \div \left(-\frac{4x}{5}\right) = 16x^2 \times \left(-\frac{5}{4x}\right) = \frac{16x^2 \times 5}{-4x} = \frac{16 \times x \times x \times 5}{-4 \times x} = -20x$$

$$(10) 2x^3 \div x^2 \times x = 2x^3 \times \frac{1}{x^2} \times x = \frac{2x^3 \times x}{x^2} = 2x^2$$