



[解 説]

(1)	$5ab$
(2)	$-2x^2y$
(3)	$2ab$
(4)	$16y^2$
(5)	$6a-3b$
(6)	$\frac{2}{a}$
(7)	$-11x-y$
(8)	$-10x^2-11x$
(9)	$9a-16b-8$
(10)	$a-5b+4$

$$\begin{aligned} (1) \quad & 5a \times b \\ &= 5 \times 1 \times a \times b \\ &= 5ab \end{aligned}$$

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

$$\begin{aligned} (5) \quad & \frac{3}{4}(8a-4b) \\ &= \frac{3}{4} \times 8a + \frac{3}{4} \times (-4b) \\ &= 6a-3b \end{aligned}$$

$$\begin{aligned} (7) \quad & (11x^2+xy) \div (-x) \\ &= 11x^2 \times \left(-\frac{1}{x}\right) + xy \times \left(-\frac{1}{x}\right) \\ &= -11x-y \end{aligned}$$

$$\begin{aligned} (9) \quad & 2(3a-5b+2) + 3(a-2b-4) \\ &= 6a-10b+4+3a-6b-12 \\ &= 9a-16b-8 \end{aligned}$$

$$\begin{aligned} (2) \quad & 4xy \times \left(-\frac{1}{2}x\right) \\ &= 4 \times \left(-\frac{1}{2}\right) \times x \times x \times y \\ &= -2x^2y \end{aligned}$$

$$\begin{aligned} (4) \quad & 8xy \div \left(-\frac{1}{2}x\right) \times (-y) \\ &= 8xy \times \left(-\frac{2}{x}\right) \times (-y) \\ &= \frac{8xy \times 2 \times y}{x} \\ &= 16y^2 \end{aligned}$$

$$\begin{aligned} (6) \quad & 12a^2 \div 2a \div 3a^2 \\ &= \frac{12a^2}{2a \times 3a^2} \\ &= \frac{2}{a} \end{aligned}$$

$$\begin{aligned} (8) \quad & -3(2x^2+x) - 4(2x+x^2) \\ &= -6x^2-3x-8x-4x^2 \\ &= -10x^2-11x \end{aligned}$$

$$\begin{aligned} (10) \quad & (3a-15b+12) \div 3 \\ &= 3a \times \frac{1}{3} + (-15b) \times \frac{1}{3} + 12 \times \frac{1}{3} \\ &= a-5b+4 \end{aligned}$$



[解 説]

(1)	$36ab$
(2)	$-6xy^2$
(3)	$4a$
(4)	$-64y^2$
(5)	$7a-11b$
(6)	$\frac{2}{a}$
(7)	$-13x-5y^2$
(8)	$-26x^2-55x$
(9)	$19a+6b-56$
(10)	$3a-6b+1$

$$\begin{aligned}
 (1) \quad & 12a \times 3b \\
 &= 12 \times 3 \times a \times b \\
 &= 36ab
 \end{aligned}$$

$$\begin{aligned}
 (3) \quad & 5a^2 \times 8a \div 10a^2 \\
 &= \frac{5a^2 \times 8a}{10a^2} \\
 &= 4a
 \end{aligned}$$

$$\begin{aligned}
 (5) \quad & \frac{1}{2}(14a-22b) \\
 &= \frac{1}{2} \times 14a + \frac{1}{2} \times (-22b) \\
 &= 7a-11b
 \end{aligned}$$

$$\begin{aligned}
 (7) \quad & (13x^2+5xy^2) \div (-x) \\
 &= 13x^2 \times \left(-\frac{1}{x}\right) + 5xy^2 \times \left(-\frac{1}{x}\right) \\
 &= -13x-5y^2
 \end{aligned}$$

$$\begin{aligned}
 (9) \quad & 3(5a+6b+8)+4(a-3b-20) \\
 &= 15a+18b+24+4a-12b-80 \\
 &= 19a+6b-56
 \end{aligned}$$

$$\begin{aligned}
 (2) \quad & -18xy \times \frac{1}{3}y \\
 &= -18 \times \frac{1}{3} \times x \times y \times y \\
 &= -6xy^2
 \end{aligned}$$

$$\begin{aligned}
 (4) \quad & 16xy \div \left(-\frac{1}{4}x\right) \times y \\
 &= 16xy \times \left(-\frac{4}{x}\right) \times y \\
 &= -\frac{16xy \times 4 \times y}{x} \\
 &= -64y^2
 \end{aligned}$$

$$\begin{aligned}
 (6) \quad & 24a^2 \div 4a \div 3a^2 \\
 &= \frac{24a^2}{4a \times 3a^2} \\
 &= \frac{2}{a}
 \end{aligned}$$

$$\begin{aligned}
 (8) \quad & -7(3x^2+5x)-5(4x+x^2) \\
 &= -21x^2-35x-20x-5x^2 \\
 &= -26x^2-55x
 \end{aligned}$$

$$\begin{aligned}
 (10) \quad & (21a-42b+7) \div 7 \\
 &= 21a \times \frac{1}{7} + (-42b) \times \frac{1}{7} + 7 \times \frac{1}{7} \\
 &= 3a-6b+1
 \end{aligned}$$



[解 説]

(1)	$\frac{23a-18b}{14} \left[\frac{23}{14}a - \frac{9}{7}b \right]$
(2)	$\frac{x+7y}{30}$
(3)	$\frac{4x+11y}{3}$
(4)	$\frac{11a+9b}{4}$
(5)	$\frac{10x-9y}{6} \left[\frac{5}{3}x - \frac{3}{2}y \right]$
(6)	$-4x-7y$
(7)	$6a-5b$
(8)	$\frac{1}{2}x + \frac{5}{3}y + 2$
(9)	$-5x-5y$
(10)	$\frac{14x+9y}{6} \left[\frac{7}{3}x + \frac{3}{2}y \right]$

※ []は別解

$$\begin{aligned}
 (1) \quad & \frac{3a-2b}{2} + \frac{a-2b}{7} \\
 &= \frac{7(3a-2b)}{14} + \frac{2(a-2b)}{14} \\
 &= \frac{21a-14b+2a-4b}{14} \\
 &= \frac{23a-18b}{14}
 \end{aligned}$$

$$\begin{aligned}
 (3) \quad & 2x+4y - \frac{2x+y}{3} \\
 &= \frac{3(2x+4y)}{3} - \frac{2x+y}{3} \\
 &= \frac{6x+12y-2x-y}{3} \\
 &= \frac{4x+11y}{3}
 \end{aligned}$$

$$\begin{aligned}
 (5) \quad & 2x + \frac{2x-y}{2} - \frac{4x+3y}{3} \\
 &= \frac{12}{6}x + \frac{3(2x-y)}{6} - \frac{2(4x+3y)}{6} \\
 &= \frac{12x+6x-3y-8x-6y}{6} \\
 &= \frac{10x-9y}{6}
 \end{aligned}$$

$$\begin{aligned}
 (7) \quad & \frac{1}{3}(6a+9b) + 4a-8b \\
 &= 2a+3b+4a-8b \\
 &= 6a-5b
 \end{aligned}$$

$$\begin{aligned}
 (9) \quad & \frac{1}{2}(2x-4y) + 3(-2x-y) \\
 &= x-2y-6x-3y \\
 &= -5x-5y
 \end{aligned}$$

$$\begin{aligned}
 (10) \quad & 2x + \frac{2x+5y}{2} - \frac{2x+3y}{3} \\
 &= \frac{12}{6}x + \frac{3(2x+5y)}{6} - \frac{2(2x+3y)}{6} \\
 &= \frac{12x+6x+15y-4x-6y}{6} \\
 &= \frac{14x+9y}{6}
 \end{aligned}$$

$$\begin{aligned}
 (2) \quad & \frac{x+2y}{5} - \frac{x+y}{6} \\
 &= \frac{6(x+2y)}{30} - \frac{5(x+y)}{30} \\
 &= \frac{6x+12y-5x-5y}{30} \\
 &= \frac{x+7y}{30}
 \end{aligned}$$

$$\begin{aligned}
 (4) \quad & \frac{7a-b}{4} - \frac{-2a-5b}{2} \\
 &= \frac{7a-b}{4} - \frac{2(-2a-5b)}{4} \\
 &= \frac{7a-b+4a+10b}{4} \\
 &= \frac{11a+9b}{4}
 \end{aligned}$$

$$\begin{aligned}
 (6) \quad & x-6y - \frac{1}{2}(10x+2y) \\
 &= x-6y-5x-y \\
 &= -4x-7y
 \end{aligned}$$

$$\begin{aligned}
 (8) \quad & \frac{1}{3}(3x+2y) - \frac{1}{2}(x-2y-4) \\
 &= x + \frac{2}{3}y - \frac{1}{2}x + y + 2 \\
 &= \frac{1}{2}x + \frac{5}{3}y + 2
 \end{aligned}$$



[解 説]

(1)	$\frac{56a+b}{6} \left[\frac{28}{3}a + \frac{1}{6}b \right]$
(2)	$\frac{5x-18y}{12} \left[\frac{5}{12}x - \frac{3}{2}y \right]$
(3)	$\frac{11x+2y}{3}$
(4)	$\frac{5a+5b}{4}$
(5)	$\frac{25x-9y}{6} \left[\frac{25}{6}x - \frac{3}{2}y \right]$
(6)	$x+11y$
(7)	$-5b$
(8)	$x-5y-6$
(9)	$-\frac{13}{4}x-7y$
(10)	$\frac{30x-9y}{8} \left[\frac{15}{4}x - \frac{9}{8}y \right]$

※ []は別解

$$\begin{aligned}
 (1) \quad & \frac{12a+b}{2} + \frac{10a-b}{3} \\
 &= \frac{3(12a+b)}{6} + \frac{2(10a-b)}{6} \\
 &= \frac{36a+3b+20a-2b}{6} \\
 &= \frac{56a+b}{6}
 \end{aligned}$$

$$\begin{aligned}
 (3) \quad & 3x+y + \frac{2x-y}{3} \\
 &= \frac{3(3x+y)}{3} + \frac{2x-y}{3} \\
 &= \frac{9x+3y+2x-y}{3} \\
 &= \frac{11x+2y}{3}
 \end{aligned}$$

$$\begin{aligned}
 (5) \quad & 4x + \frac{x-y}{2} - \frac{x+3y}{3} \\
 &= \frac{24}{6}x + \frac{3(x-y)}{6} - \frac{2(x+3y)}{6} \\
 &= \frac{24x+3x-3y-2x-6y}{6} \\
 &= \frac{25x-9y}{6}
 \end{aligned}$$

$$\begin{aligned}
 (7) \quad & \frac{1}{6}(6a-18b) - a - 2b \\
 &= a - 3b - a - 2b \\
 &= -5b
 \end{aligned}$$

$$\begin{aligned}
 (9) \quad & \frac{1}{4}(3x+4y) - 2(2x+4y) \\
 &= \frac{3}{4}x + y - 4x - 8y \\
 &= -\frac{13}{4}x - 7y
 \end{aligned}$$

$$\begin{aligned}
 (10) \quad & 3x + \frac{2x-y}{2} - \frac{2x+5y}{8} \\
 &= \frac{24}{8}x + \frac{4(2x-y)}{8} - \frac{2x+5y}{8} \\
 &= \frac{24x+8x-4y-2x-5y}{8} \\
 &= \frac{30x-9y}{8}
 \end{aligned}$$

$$\begin{aligned}
 (2) \quad & \frac{2x-3y}{3} - \frac{x+2y}{4} \\
 &= \frac{4(2x-3y)}{12} - \frac{3(x+2y)}{12} \\
 &= \frac{8x-12y-3x-6y}{12} \\
 &= \frac{5x-18y}{12}
 \end{aligned}$$

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

$$\begin{aligned}
 (6) \quad & 6x+y - \frac{1}{2}(10x-20y) \\
 &= 6x+y-5x+10y \\
 &= x+11y
 \end{aligned}$$

$$\begin{aligned}
 (8) \quad & \frac{1}{4}(16x-4y) + \frac{1}{2}(-6x-8y-12) \\
 &= 4x-y-3x-4y-6 \\
 &= x-5y-6
 \end{aligned}$$



1

(1)	7
(2)	20
(3)	-8

[解説]

$$\begin{aligned}
 1 \quad (1) \quad & x = \frac{1}{3}, y = -4 \text{ のとき,} \\
 & 6x - 2y - 3 \\
 & = 6 \times \frac{1}{3} + (-2) \times (-4) - 3 \\
 & = 7
 \end{aligned}$$

$$\begin{aligned}
 (2) \quad & 3(-2x - y) - (6x + 3y) \\
 & = -6x - 3y - 6x - 3y \\
 & = -12x - 6y \\
 & x = \frac{1}{3}, y = -4 \text{ のとき,} \\
 & -12x - 6y = -12 \times \frac{1}{3} + (-6) \times (-4) \\
 & = 20
 \end{aligned}$$

$$\begin{aligned}
 (3) \quad & 6x^2y^2 \times 3x \div xy = \frac{6x^2y^2 \times 3x}{xy} \\
 & = 18x^2y \\
 & x = \frac{1}{3}, y = -4 \text{ のとき,} \\
 & 18x^2y = 18 \times \left(\frac{1}{3}\right)^2 \times (-4) \\
 & = -8
 \end{aligned}$$

2

(1)	$y = -\frac{5}{2}x + 4$ $\left[\frac{-5x+8}{2} \right]$
(2)	$S = \frac{3V}{h}$
(3)	$c = -\frac{4}{3}a + \frac{1}{3}b$ $\left[\frac{-4a+b}{3} \right]$

$$\begin{aligned}
 2 \quad (1) \quad & 5x + 2y = 8 \\
 & 2y = -5x + 8 \\
 & y = \frac{-5x+8}{2} \\
 & y = -\frac{5}{2}x + 4
 \end{aligned}$$

$$\begin{aligned}
 (2) \quad & V = \frac{1}{3}Sh \\
 & \frac{1}{3}Sh = V \\
 & Sh = 3V \\
 & S = \frac{3V}{h}
 \end{aligned}$$

$$\begin{aligned}
 (3) \quad & a = \frac{1}{4}(b - 3c) \\
 & \frac{1}{4}(b - 3c) = a \\
 & b - 3c = 4a \\
 & -3c = 4a - b \\
 & c = \frac{-4a+b}{3} \\
 & c = -\frac{4}{3}a + \frac{1}{3}b
 \end{aligned}$$

※ [] は別解

3 (解答例)

もとの数の十の位の数を x 、一の位の数を y とすると、この数は $10x + y$ と表される。
また、十の位の数と一の位の数を入れかえてできる数は、 $10y + x$ となる。

このとき、2数の和は、

$$\begin{aligned}
 (10x + y) + (10y + x) &= 11x + 11y \\
 &= 11(x + y)
 \end{aligned}$$

$x + y$ は整数だから、 $11(x + y)$ は 11 の倍数である。

したがって、2けたの自然数と、その数の十の位の数と一の位の数を入れかえてできる数との和は、11 の倍数になる。



1

(1)	18
(2)	19
(3)	32

[解 説]

$$\begin{aligned}
 1 \quad (1) \quad & x = \frac{1}{2}, \quad y = -4 \text{ のとき,} \\
 & 4x - y + 12 \\
 & = 4 \times \frac{1}{2} + (-1) \times (-4) + 12 \\
 & = 18
 \end{aligned}$$

$$\begin{aligned}
 (2) \quad & 3(x - 2y) - (5x - y) \\
 & = 3x - 6y - 5x + y \\
 & = -2x - 5y \\
 & x = \frac{1}{2}, \quad y = -4 \text{ のとき,} \\
 & -2x - 5y = -2 \times \frac{1}{2} + (-5) \times (-4) \\
 & = 19
 \end{aligned}$$

$$\begin{aligned}
 (3) \quad & 8xy^2 \div 2x^2y \times x^2y = \frac{8xy^2 \times x^2y}{2x^2y} \\
 & = 4xy^2 \\
 & x = \frac{1}{2}, \quad y = -4 \text{ のとき,} \\
 & 4xy^2 = 4 \times \frac{1}{2} \times (-4)^2 \\
 & = 32
 \end{aligned}$$

2

(1)	$x = \frac{y}{2} + \frac{9}{2}$ $\left[\frac{y+9}{2} \right]$
(2)	$a = \frac{3V}{\pi h}$
(3)	$n = -4p + m$

$$\begin{aligned}
 2 \quad (1) \quad & 4x - 2y = 18 \\
 & 4x = 2y + 18 \\
 & x = \frac{2y + 18}{4} \\
 & x = \frac{y + 9}{2} \\
 & x = \frac{y}{2} + \frac{9}{2}
 \end{aligned}$$

$$\begin{aligned}
 (2) \quad & V = \frac{1}{3} \pi a h \\
 & \frac{1}{3} \pi a h = V \\
 & \pi a h = 3V \\
 & a = \frac{3V}{\pi h}
 \end{aligned}$$

$$\begin{aligned}
 (3) \quad & \frac{1}{4} (m - n) = p \\
 & m - n = 4p \\
 & -n = 4p - m \\
 & n = -4p + m
 \end{aligned}$$

※ [] は別解

3 (解答例)

連続する3つの整数のうち、もっとも小さい整数を x とすると、連続する3つの整数は、
 $x, x+1, x+2$

と表される。それらの和は、

$$\begin{aligned}
 x + (x+1) + (x+2) &= 3x + 3 \\
 &= 3(x+1)
 \end{aligned}$$

$x+1$ は整数だから、 $3(x+1)$ は3の倍数である。

したがって、連続する3つの整数の和は3の倍数である。