

Notes for Marking Level H Worksheets

1. It is important that students write correct intermediate steps. Remind them that doing so will help them in the longer term, and also when doing corrections.
2. The form of the answer may vary depending on the order of the terms. Equivalent answers are acceptable.
3. In the simultaneous equations exercises (H41-120), it is important that students label their equations carefully, and note down how each new equation has been arrived at (see example boxes on worksheets).
4. On worksheet H52, students are shown how to check their answers by substitution. It is normally sufficient to check using one equation only. For example, if the student substituted into equation ② in the last stage of their solution, they should check using equation ①, or vice versa.
5. In the section on functions and graphs (H141-180), the main focus is straight line graphs. The curved graphs in H145-149 do not need to be drawn precisely. Instead, the student should, from the table of values, do their best to draw a smooth curve (or set of curves).

Further Notes on Equivalent Answers

A general feature of algebra is that the exact form of any answer can vary depending on the order of letters and signs. The following are some examples of equivalent answers:

Examples	Notes
$b - a$ or $-a + b$ $3 - x - x^2$ or $-x^2 - x + 3$	Terms may be added in a different order. Note: it is normally recommended to write answers in alphabetic order. Answers with powers are normally written in descending order of powers.
$\frac{1}{3}x - \frac{2}{5}y$ or $\frac{x}{3} - \frac{2y}{5}$	Fractions may be written either as coefficients or incorporated into algebraic fractions.

Formal Definition of Equivalent Answers

Two answers are equivalent if they give the same result no matter which values are substituted:

- $a + b$ and $b + a$ **are** equivalent, e.g. substituting $a = 10$ and $b = 1$ gives

$$\left. \begin{array}{l} a + b = 10 + 1 = 11 \\ b + a = 1 + 10 = 11 \end{array} \right\} \text{agree (also agree for other values of } a \text{ and } b)$$

- $a - b$ and $b - a$ are **not** equivalent, e.g. substituting $a = 10$ and $b = 1$ gives

$$\left. \begin{array}{l} a - b = 10 - 1 = 9 \\ b - a = 1 - 10 = -9 \end{array} \right\} \text{disagree (also disagree for most other values of } a \text{ and } b)$$

H 1-2

1		2	
I (1) 7 (5) 11 (2) 5 (6) 11 (3) -3 (7) -0.4 (4) -2 (8) -1		I (1) -10 (4) $-2\frac{7}{9}$ (2) $-\frac{2}{5}$ (5) $-\frac{4}{15}$ (3) $\frac{4}{9}$ (6) 18	
II <div style="display: flex; justify-content: space-around; width: 100%;"> -4 -2 2 </div>		II <div style="display: flex; justify-content: space-around; width: 100%;"> $-3\frac{1}{4}$ $-2\frac{3}{4}$ $-1\frac{3}{4}$ $-1\frac{1}{4}$ </div>	
1		2	
III (1) 6 4 3 $\frac{5}{12}$ (4) $-\frac{3}{5}$ (2) $\frac{17}{24}$ (5) $-\frac{11}{12}$ (3) $\frac{1}{9}$ (6) $1\frac{5}{6}$		III (1) 3 $-\frac{1}{3}$ (4) -4 (2) $-1\frac{5}{6}$ (5) $5\frac{1}{2}$ (3) -1 (6) 3	
IV <div style="display: flex; justify-content: space-around; width: 100%;"> $-3\frac{1}{2}$ $-1\frac{1}{2}$ $\frac{1}{2}$ $2\frac{1}{2}$ </div>		IV <div style="display: flex; justify-content: space-around; width: 100%;"> $-3\frac{1}{4}$ $-1\frac{3}{4}$ $-1\frac{1}{2}$ $-\frac{1}{2}$ $-\frac{3}{4}$ </div>	

3		4	
I		I	
(1) 9	(6) 25	(1) 4	(4) -4
(2) 27	(7) -25		
(3) -27	(8) 13	(2) 4	(5) 27
(4) -27	(9) -117		
(5) 25	(10) 0	(3) -4	(6) $\frac{3}{4}$
II		II	
<input type="text" value="-1.2"/>	<input type="text" value="-0.8"/>	<input type="text" value="-1.23"/>	<input type="text" value="-1.16"/>
<input type="text" value="-0.3"/>	<input type="text" value="0.3"/>	<input type="text" value="-1.03"/>	<input type="text" value="-0.84"/>
3		4	
III		III	
(1) 16	(4) 4	(1) -24	(4) -32
(2) 16	(5) -48	(2) $\frac{1}{2}$	(5) -12
(3) 8	(6) -27	(3) $\frac{1}{24}$	
IV		IV	
<input type="text" value="-4.2"/>	<input type="text" value="-3.6"/>	<input type="text" value="-1.1"/>	<input type="text" value="-<math>\frac{9}{10}</math>"/>
<input type="text" value="-1.7"/>	<input type="text" value="-1.1"/>	<input type="text" value="-<math>\frac{3}{5}</math>"/>	<input type="text" value="-0.1"/>
<input type="text" value="-0.2"/>			

H 5-7

5		6	7
(1) $7a$	(7) $\frac{5}{2}ab$	(1) $10a - 20b$	(1) $\boxed{3}$
(2) $3a$	(8) $2x + 3$	(2) $\frac{1}{4}a - \frac{1}{2}b$	$\boxed{10} \boxed{3} \frac{x-13}{6}$
(3) $-a$	(9) $-8x + 3$	(3) $-a + \frac{2}{5}$	(2) $\frac{3}{4}$
(4) 0	(10) $a + 4b$	(4) $2x + 30$	(3) $\frac{-8x + 17}{12}$
(5) $-\frac{1}{6}x$	(11) 0	(5) 2	(4) $\frac{-2x - 11}{6}$
(6) $\frac{17}{12}xy$	(12) $\frac{5}{6}a - \frac{1}{3}b$	(6) $x + 4$	(5) $\frac{-5x + 19}{6}$
(7) $-5x + 14$		(7) $-5x + 14$	
(8) $-\frac{1}{2}a - \frac{2}{3}b$		(8) $-\frac{1}{2}a - \frac{2}{3}b$	
5		6	7
(13) $4x^2 + x - 1$	(9) $\boxed{10} \boxed{6} \frac{x+16}{4}$	(6) $\frac{11x+3}{20}$	
(14) $\frac{7}{6}a^2 + \frac{5}{12}a$	(10) $\frac{9x+8y}{12}$	(7) $\frac{-23x+1}{15}$	
(15) $4a + 2b$	(11) $\frac{3x+y}{6}$	(8) $\frac{-7x+8}{8}$	
(16) $-4x - 12$	(12) $-\frac{7}{12}$	(9) $\frac{-9a+19b}{12}$	
(17) $7a - 5b$	(13) $-\frac{x}{6}$	(10) $\frac{-x-19}{24}$	
(18) $-2x + 4y$	(14) $\frac{19x+7}{18}$		
(19) $-8y$			
(20) $-\frac{2}{3}x + \frac{13}{15}$			

8	9	10
(1) $\frac{x-5}{6}$ (2) $\frac{2x-11}{6}$ (3) $\frac{-19x-18}{15}$ (4) $\frac{-13x+8y}{12}$	(1) $\boxed{4} \frac{x-\boxed{2}}{3}$ (2) $\boxed{2} \boxed{5} \boxed{5} \frac{\boxed{x-1}}{2}$ (3) $\frac{x-y}{3}$ (4) $\frac{11x+1}{8}$	(1) $\frac{9x+2}{6}$ (2) $\frac{-2x+3y}{15}$ (3) $\frac{x+y}{2}$
8	9	10
(5) $\frac{-22x+12}{15}$ (6) $\frac{19a+b}{15}$ (7) $\frac{-5x+15}{12}$ (8) $\frac{-7x+10y}{9}$ (9) $\frac{5}{24}$	(5) $\frac{-2x-3}{9}$ (6) $-\frac{13}{24}$ (7) $\frac{10}{3}$ (8) $\frac{-x+5}{3}$	(4) $\frac{3x-2}{3}$ (5) $\frac{13a-7b}{24}$ (6) $\frac{6a+6b+41}{20}$

H 11–14

11	12	13	14
(1) 5	(1) 10	(1) $\boxed{2} \boxed{4}$ - 12	(1) 7
(2) 4	(2) 20	(2) 12	(2) 2
(3) 2	(3) 4		
(4) $-\frac{5}{2}$	(4) 2	(3) 0	(3) $-\frac{3}{5}$
(5) -3	(5) $\frac{2}{3}$	(4) 0	(4) 12
(6) -3	(6) -3		
11	12	13	14
(7) 3	(7) $-\frac{5}{2}$	(5) $\boxed{2} \boxed{21}$ 1	(5) -24
(8) 3	(8) 7	(6) -16	(6) $-\frac{1}{24}$
(9) $\frac{9}{2}$	(9) 0		
(10) 8	(10) 60	(7) -8	(7) $\frac{1}{5}$
(11) -20	(11) $\frac{5}{2}$	(8) 2	(8) 2
(12) $\frac{11}{7}$	(12) 1		

H 15–18

15	16	17	18
(1) 9	(1) 8	(1) $\frac{9}{4}$	(1) -1
(2) 12	(2) 3	(2) 3	(2) 8
(3) -12	(3) $\frac{7}{6}$	(3) 2	(3) 1
(4) -11	(4) 23	(4) 9	(4) -5
15	16	17	18
(5) 5	(5) 3	(5) 0	(5) 5
(6) 2	(6) 30	(6) $\frac{13}{12}$	(6) 6
(7) 16	(7) -5	(7) 5	(7) 2
(8) 3			

H 19–21

19	20	21
(1) -2 (2) $\frac{11}{7}$	(1) -1 (2) 4	(1) $b - \boxed{5}$ (2) $b + \boxed{4}$ (3) $a - \boxed{b}$ (4) $-a + \boxed{b}$
(3) 2 (4) $-\frac{1}{4}$	(3) $\frac{4}{3}$	(5) $a + b$ $[b + a]$ (6) $a - \boxed{3}$ (7) $a - b$ (8) $a + b$ (9) $a + b$ $[b + a]$ (10) a
19	20	21
(5) 2 (6) $\frac{12}{5}$ (7) $-\frac{2}{5}$	(4) $\frac{7}{5}$ (5) $\boxed{12}$ $-\frac{5}{3}$ (6) $\boxed{3}$ $\boxed{20}$ -5 (7) $\boxed{10}$ $\boxed{30}$ $\boxed{5}$ $-\frac{5}{3}$	(11) $a + \boxed{b}$ (12) $a - \boxed{b}$ (13) $a + b$ (14) 0 (15) a (16) a (17) $-\boxed{a} + 3$ (18) $-a - \boxed{b}$ (19) $a + b$ (20) $\boxed{a} - 5$ (21) $a + b$ (22) $-a - b$

NOTE: EQUIVALENT ANSWERS SHOULD BE MARKED CORRECT

22		23	
(1) $\frac{b}{\boxed{a}}$	(6) $\frac{c}{\boxed{a+b}}$	(1) $\boxed{a+b}$ $\boxed{1}$	(4) 1
(2) $\frac{a+b}{\boxed{2}}$	(7) $\frac{c}{a-b}$	(2) \boxed{b} \boxed{b} $-\boxed{1}$	(5) $\boxed{a-b}$ $\boxed{-1}$
(3) $\frac{b+c}{\boxed{a}}$	(8) \boxed{c} $\frac{b-c}{a}$	(3) $\boxed{a+b}$ $\boxed{1}$	(6) -1
(4) $\frac{a-c}{b}$	(9) $\frac{a+c}{b}$		
(5) $\frac{-b-c}{a}$	(10) $\frac{a+3}{c}$		
22		23	
(11) $-\frac{\boxed{a}}{2}$	(16) $-\frac{b+c}{\boxed{a}}$	(7) \boxed{b} \boxed{b} $\boxed{1}$	(11) 1
(12) $-\frac{b}{a}$	(17) $-\frac{a-b}{3} \left[\frac{-a+b}{3} \right]$	(8) \boxed{b} \boxed{b} $-\boxed{1}$	(12) -1
(13) $-\frac{b}{a}$	(18) $-\frac{-a+c}{b} \left[\frac{a-c}{b} \right]$	(9) -1	(13) -1
(14) $\frac{\boxed{b}}{3}$	(19) $-\frac{-b-c}{a} \left[\frac{b+c}{a} \right]$	(10) -1	(14) -1
(15) $\frac{b}{a}$	(20) $-\frac{-a+c}{b} \left[\frac{a-c}{b} \right]$		

NOTE: EQUIVALENT ANSWERS SHOULD BE MARKED CORRECT

H 24–25

24		25	
(1) $\frac{\boxed{a} \boxed{b}}{a-b}$	(4) $\frac{\boxed{cx}}{a-c}$	(1) $\frac{\boxed{ab} \boxed{ab}}{\boxed{a} \boxed{abc}}$ $\frac{\boxed{a} \boxed{abc}}{\frac{\boxed{abc}}{-\boxed{a}+b}}$	(3) $\frac{\boxed{a} \boxed{a}}{\boxed{a}}$ $\frac{\boxed{a}}{-\frac{ac}{\boxed{a}+1}}$
(2) $\frac{c}{-a+b}$	(5) $\frac{b}{-a+c}$	(2) $\frac{abc}{a+c}$	(4) $\frac{3ac}{a+3}$
(3) $\frac{b}{a+3}$	(6) $\frac{b}{-a+3}$		
24		25	
(7) $\frac{b}{a+1}$	(11) $\frac{c}{a-1}$	(5) $\frac{\boxed{bc} \boxed{bc}}{\boxed{b}}$ $\frac{\boxed{b}}{\frac{abc}{-b+c}}$	(8) $\frac{c}{ab+1}$
(8) $\frac{b}{a-1}$	(12) $\frac{c}{-a-1}$ $\left[-\frac{c}{a+1} \right]$	(6) $\frac{ab}{a-1}$	(9) $\frac{ac}{-2a+1}$
(9) $\frac{b}{-a+1}$	(13) 1	(7) $\frac{3a}{a+3}$	(10) $\frac{ab}{-3a+1}$
(10) $\frac{b}{-a-1}$ $\left[-\frac{b}{a+1} \right]$	(14) -1		

NOTE: EQUIVALENT ANSWERS SHOULD BE MARKED CORRECT

26		27	
<p>(1) \boxed{a}</p> <p>\boxed{a}</p> $\frac{2ab}{\boxed{a} + b}$ <p>(2) $\boxed{ab} \quad \boxed{ab}$</p> $\frac{2ab}{-a + b}$ <p>(3) $\frac{ac}{3a - 1}$</p>	<p>(4) $\frac{ab}{b - 1}$</p> <p>(5) $\frac{ab}{ac - 1}$</p> <p>(6) $\frac{ac + abd}{b}$</p>	<p>(1) $\boxed{15}$</p> $\frac{6b - 15}{5}$ <p>(2) $\frac{5a}{6}$</p> <p>(3) $\frac{5a + 15}{6}$</p>	<p>(4) $\frac{3V}{S}$</p> <p>(5) $\frac{2S}{a + b}$</p> <p>(6) $-3a + 1$</p>
26		27	
<p>(7) $\boxed{ac} \quad \boxed{ac}$</p> <p>$\boxed{ad}$</p> $\frac{ad}{bc}$ <p>(8) $\frac{ad + ac}{bc}$</p> <p>(9) $\frac{ac}{b - d}$</p>	<p>(10) $\boxed{ac} \quad \boxed{ac}$</p> <p>$\boxed{ad}$</p> $\frac{bc}{\boxed{ad}}$ <p>(11) $\frac{ac}{d}$</p> <p>(12) $\frac{ac}{b}$</p>	<p>(7) $\boxed{2}$</p> $\frac{a - 2b}{2}$ <p>(8) $\frac{ab + c}{a}$</p> <p>(9) $\frac{a - bc}{c - 1}$</p>	<p>(10) $\boxed{1 + x}$</p> <p>$2a - 1$</p> <p>(11) $\frac{7a - 15}{3}$</p> <p>(12) $\frac{5c + 6}{2}$</p>

NOTE: EQUIVALENT ANSWERS SHOULD BE MARKED CORRECT

H 28–30

28	29	30
(1) $\frac{3a}{2}$ (2) $\frac{2a+b}{a}$ (3) $\frac{a-c}{bc}$	(1) $\frac{a}{b}$ (2) $\frac{ab}{c}$ (3) $\frac{a}{a-bc}$	(1) $-a+b$ (2) $-\frac{b-c}{a}$ (3) 1
(4) $\frac{3a-2}{2}$ (5) $\frac{-ab+3S}{a}$ (6) $-\frac{a}{3}$	(4) $\frac{a-ab}{b}$ (5) $\frac{ac-b}{c}$ (6) $\frac{-a+ab}{b}$	(4) $\frac{5ac}{a+5}$ (5) $\frac{ab-ac}{c}$ (6) $\frac{3a+b}{3}$
28	29	30
(7) $\frac{bx}{ac+c}$ $\frac{b}{b}$ (8) $2a+1$ (9) 1	(7) $\frac{ab}{b+1}$ (8) $\frac{a}{2}$ (9) $\frac{dw-w}{d}$	(7) $\frac{a-ab}{b}$ (8) $\frac{ab-c}{a}$ (9) -1
(10) $\frac{a}{bc+1}$ (11) $\frac{bc+S}{b+c}$ (12) $\frac{-2ab+S}{2a+2b}$	(10) $\frac{dw}{d-1}$	(10) $\frac{ab}{-2a+1}$ (11) $\frac{3a}{b}$ (12) $\frac{2a-6}{3}$

NOTE: EQUIVALENT ANSWERS SHOULD BE MARKED CORRECT

31	32	33
(1) $-\boxed{a} + c$ (2) $-b + c$ (3) $a + c$ (4) $-a + c$	(1) -1 (2) $-\frac{5}{a}$ (3) -1 (4) 1	(1) $\boxed{3b}$ $\frac{a}{c-3}$ (2) $-3b + 3c$ (3) 15
(5) $\boxed{-a-b}$ (6) $-b - c$ (7) $-a - c$ (8) $b + c$	(5) $\frac{3a+5}{a}$ (6) $\boxed{b-3} \frac{5}{b-3}$ (7) $\frac{1}{b+3}$ (8) $\frac{3}{b+5}$	(4) $b - \frac{a}{d} \left[\frac{-a+bd}{d} \right]$ (5) $-b$ (6) $a - \frac{a}{b} \left[\frac{-a+ab}{b} \right]$
31	32	33
(9) $-\frac{5}{3}$ (10) $-\frac{a}{3}$ (11) $\frac{-b+c}{3}$ (12) $3a + b$ (13) $-3a + c$	(9) 1 (10) -1 (11) $\frac{-2b+3}{b}$	(7) $\frac{3b}{b-1}$ (8) $-\frac{14}{5}a$ (9) $-\frac{5}{14}b$
(14) $b - c$ (15) $-a + b$ (16) $a + c$ (17) $2b + c$ (18) $a - 2b$	(12) $\frac{3}{a+2}$ (13) -1 (14) 1	(10) $\frac{a}{a-c}$ (11) $\frac{ac}{-3a+1} \left[-\frac{ac}{3a-1} \right]$ (12) $\frac{b}{3b+c}$

NOTE: EQUIVALENT ANSWERS SHOULD BE MARKED CORRECT

H 34–36

34	35	36
(1) $\frac{5}{3}$ (2) $3a + 15$ (3) -3	(1) $\frac{3y+5}{2}$ (2) $\frac{2x-5}{3}$ (3) $\frac{a}{2}$	I (1) $\boxed{20}$ $\underline{100 \text{ cm}^2}$ (2) $\frac{\boxed{2A}}{\boxed{h}}$
(4) $\frac{-3b+5}{3}$ (5) $5a + 5b$ (6) $\frac{b-15}{3}$	(4) $\frac{6}{5} b$ (5) $\frac{6b-15}{5} \left[\frac{6}{5} b - 3 \right]$ (6) $\frac{a-c}{bc}$	(3) $\underline{5 \text{ cm}}$
34	35	36
(7) $-\frac{15}{2}$ (8) $\frac{a-ac}{c}$ (9) $\frac{bc}{-c+1}$	(7) $\frac{c+15}{3}$ (8) $\frac{ax-2S}{x}$ (9) $\frac{2S}{a+b}$	II (1) $\underline{62.8 \text{ cm}}$ (2) $\frac{c}{2\pi}$
(10) 0 (11) $a - c$ (12) $\frac{ac}{c+1}$	(10) $\frac{V}{bc}$ (11) $\frac{S}{2b+2x}$ (12) $\frac{dl-l}{d}$	(3) $\underline{3 \text{ cm}}$

NOTE: EQUIVALENT ANSWERS SHOULD BE MARKED CORRECT

37	38	39
<div style="border: 1px solid black; display: inline-block; padding: 2px; margin-bottom: 5px;">I</div> <p>(1) $\frac{2}{3}$</p> <p>(2) $2ab$</p> <p>(3) 14</p> <div style="border: 1px solid black; display: inline-block; padding: 2px; margin-top: 10px; width: 20px;">II</div> <p>(1) $\frac{10}{3}$</p> <p>(2) $\frac{3V}{B}$</p> <p>(3) 9</p>	<div style="border: 1px solid black; display: inline-block; padding: 2px; margin-bottom: 5px;">I</div> <p>(1) 9</p> <p>(2) <div style="border: 1px solid black; display: inline-block; padding: 2px; margin-right: 5px;">2</div> <div style="border: 1px solid black; display: inline-block; padding: 2px; margin-right: 5px;">m</div></p> <p style="margin-left: 40px;"><div style="border: 1px solid black; display: inline-block; padding: 2px; margin-right: 5px;">2</div> <div style="border: 1px solid black; display: inline-block; padding: 2px; margin-right: 5px;">m</div></p> <p style="margin-left: 40px;">$\frac{2l - m}{m}$</p> <p>(3) $-\frac{6}{5}$</p> <div style="border: 1px solid black; display: inline-block; padding: 2px; margin-top: 10px; width: 20px;">II</div> <p>(1) 5</p> <p>(2) $S - (n - 1)d$</p> <p>(3) -9</p>	<div style="border: 1px solid black; display: inline-block; padding: 2px; margin-bottom: 5px;">I</div> <p>(1) $a - \frac{a - b}{b}$</p> <p>(2) $\frac{7}{3}$</p> <p>(3) <div style="border: 1px solid black; display: inline-block; padding: 2px; margin-right: 5px;">b</div></p> <p style="margin-left: 40px;"><div style="border: 1px solid black; display: inline-block; padding: 2px; margin-right: 5px;">b</div></p> <p style="margin-left: 40px;"><div style="border: 1px solid black; display: inline-block; padding: 2px; margin-right: 5px;">l</div> <div style="border: 1px solid black; display: inline-block; padding: 2px; margin-right: 5px;">c</div></p> <p style="margin-left: 40px;"><math>\frac{a}{a - \text{c + l}}</math></p> <p>(4) -1</p>
37	38	39
<div style="border: 1px solid black; display: inline-block; padding: 2px; margin-bottom: 5px;">III</div> <p>(1) 10</p> <p>(2) $a - bc$</p> <p>(3) $\frac{1}{2}$</p> <p>(4) $\frac{a - d}{c}$</p> <p>(5) $-\frac{2}{3}$</p>	<div style="border: 1px solid black; display: inline-block; padding: 2px; margin-bottom: 5px;">III</div> <p>(1) $\frac{4}{21}$</p> <p>(2) $\frac{b}{b^p + 1}$</p> <p>(3) 2</p>	<div style="border: 1px solid black; display: inline-block; padding: 2px; margin-bottom: 5px;">II</div> <p>(1) $\frac{1}{3}$</p> <p>(2) $p - kp$</p> <p>(3) $\frac{4}{3}$</p>

NOTE: EQUIVALENT ANSWERS SHOULD BE MARKED CORRECT

H 40-42

40	41	42
<p>I</p> <p>(1) $\frac{2b}{a}$</p> <p>(2) 14</p> <p>II</p> <p>(1) $\frac{3a}{(m+1)(n+2)}$</p> <p>(2) $\frac{1}{4}$</p>	<p>(1) $\boxed{9}$</p> <p>$x = \boxed{3}$</p> <p>$\boxed{24}$</p> <p>$\boxed{6}$</p> <p>$y = \boxed{2}$</p> <p>$(\boxed{3}, \boxed{2})$</p> <p>(2) $\boxed{2} \boxed{4}$</p> <p>$x = \boxed{2}$</p> <p>$(2, -1)$</p>	<p>(1) $\boxed{8}$</p> <p>$x = \boxed{4}$</p> <p>$\boxed{20}$</p> <p>$\boxed{-6}$</p> <p>$y = \boxed{3}$</p> <p>$(\boxed{4}, \boxed{3})$</p> <p>(2) $(3, -2)$</p>
40	41	42
<p>III</p> <p>(1) $\boxed{lkm} \boxed{k}$</p> <p>$\boxed{lkm} \boxed{km} \boxed{k}$</p> <p>$\boxed{lkm} \boxed{k}$</p> <p>$\frac{m}{lm+1}$</p> <p>(2) $\frac{3}{7}$</p>	<p>(3) $\boxed{9}$</p> <p>$y = \boxed{3}$</p> <p>$\boxed{12}$</p> <p>$\boxed{4}$</p> <p>$x = \boxed{2}$</p> <p>$(2, 3)$</p> <p>(4) $\boxed{4} \boxed{-8}$</p> <p>$y = -2$</p> <p>$(1, -2)$</p> <hr/> <p>(5) $(8, 3)$</p> <p>(6) $(1, 2)$</p>	<p>(3) $(2, 1)$</p> <p>(4) $(-1, 2)$</p> <hr/> <p>(5) $(1, -2)$</p> <p>(6) $(-2, 1)$</p>

43	44	45	46
(1) $\boxed{4}$ $\boxed{8}$ $x = \boxed{2}$ $\boxed{6}$ $\boxed{2}$ $y = \boxed{1}$ $(\boxed{2}, \boxed{1})$ (2) $(2, 1)$	(1) $\boxed{8}$ $y = \boxed{2}$ $\boxed{10}$ $(1, 2)$ (2) $(4, 5)$	(1) $\boxed{-2}$ $(-2, -3)$ (2) $(-2, 0)$	(1) $\boxed{4}$ $x = \boxed{2}$ $\boxed{10}$ $\boxed{-2}$ $y = \boxed{1}$ $(\boxed{2}, \boxed{1})$ (2) $(2, 1)$
43	44	45	46
(3) $\boxed{-2}$ $\boxed{4}$ $y = \boxed{-2}$ $(1, -2)$ (4) $(-1, -2)$	(3) $\boxed{5}$ $(-1, 2)$ (4) $(6, 0)$	(3) $\boxed{-2}$ $\boxed{4}$ $(-2, 1)$ (4) $(1, 3)$	(3) $\boxed{7}$ $x = \boxed{1}$ $\boxed{5}$ $y = \boxed{2}$ $(\boxed{1}, \boxed{2})$ (4) $(2, 1)$
(5) $(1, 3)$ (6) $(2, 3)$	(5) $(2, -1)$ (6) $(3, -1)$	(5) $(2, 1)$ (6) $(-2, 3)$	(5) $(5, 4)$ (6) $(2, 3)$

51	52	53	54
(1) $\boxed{2}$ $\boxed{28}$ $\boxed{54}$ $x = \boxed{6}$ $\boxed{12}$ $y = \boxed{2}$ $(6, 2)$ (2) $\boxed{6}$ $\boxed{14}$ $(2, 1)$	(1) $\boxed{5}$ $\boxed{20}$ $\boxed{-23}$ $y = \boxed{1}$ $\boxed{4}$ $x = \boxed{2}$ $(2, 1)$ (2) $(3, -4)$	(1) $(6, 2)$ (2) $(1, 2)$	(1) $\boxed{6}$ $\boxed{6}$ $\boxed{33}$ $x = \boxed{3}$ $\boxed{6}$ $y = \boxed{2}$ $(3, 2)$ (2) $\boxed{4}$ $\boxed{12}$ $\boxed{3}$ $\boxed{12}$ $(-2, 8)$
51	52	53	54
(3) $\boxed{4}$ $\boxed{16}$ $y = \boxed{-5}$ $(18, -5)$ (4) $(1, 3)$ (5) $(18, 5)$ (6) $(-18, -5)$	(3) $(1, 2)$ (4) $(1, 3)$ (5) $(2, 1)$ (6) $(6, -2)$	(3) $(2, 1)$ (4) $(4, -2)$ (5) $(2, -3)$ (6) $(6, -5)$	(3) $(4, 2)$ (4) $(4, -2)$ (5) $(1, 2)$

H 55–58

55	56	57	58
(1) (3, 4)	(1) $\boxed{14}$ $\boxed{54}$ $\boxed{9}$ $\boxed{54}$ $y = \boxed{6}$ $\boxed{30}$ $x = \boxed{5}$ (5, 6)	(1) (2, 0)	(1) (1, 3)
(2) (4, -3)	(2) $\boxed{20}$ $\boxed{28}$ $\boxed{27}$ $\boxed{66}$ $\boxed{47}$ $\boxed{94}$ $x = \boxed{2}$ (2, -1)	(2) (6, 10)	(2) (-1, 2)
55	56	57	58
(3) (1, 2)	(3) (2, -1)	(3) (2, 3)	(3) (1, 2)
(4) (-5, 6)	(4) (2, -1)	(4) (-4, -3)	(4) (1, -2)
	(5) (4, 6)	(5) (-1, 2)	(5) (-2, 3)

59	60	61	62
<p>(1) $(-3, 4)$</p> <p>(2) $(-6, -5)$</p>	<p>(1) $(3, 7)$</p> <p>(2) $(3, -2)$</p>	<p>(1) $\boxed{4}$ $\boxed{15}$ $\boxed{19}$ $y = \boxed{2}$ $\boxed{4}$ $x = \boxed{1}$ $(1, 2)$</p> <p>(2) $\boxed{2y}$ \boxed{y} $(3, -4)$</p>	<p>(1) $\boxed{4y}$ $\boxed{-4}$ $(1, 2)$</p> <p>(2) $(3, 7)$</p>
59	60	61	62
<p>(3) $(2, -4)$</p> <p>(4) $(4, -3)$</p>	<p>(3) $(0, \frac{3}{7})$</p> <p>(4) $(6, -11)$</p>	<p>(3) $\boxed{3y}$ $(6, 10)$</p> <p>(4) $(2, 0)$</p>	<p>(3) $(6, -2)$</p> <p>(4) $(-3, -5)$</p>

67	68	69	70
(1) $\boxed{2}$ $\boxed{-47}$ $\boxed{7}$ $\boxed{11}$ $(5, -6)$	(1) $\boxed{20}$ $\boxed{4}$ $(5, 2)$ (2) $(5, -2)$	(1) $\boxed{3}$ $\boxed{3}$ $\boxed{3}$ $(9, -4)$ (2) $\boxed{3}$ $\boxed{3}$ $\boxed{2}$ $\boxed{5}$ $(3, -2)$	(1) $\left(\frac{3}{2}, -\frac{1}{2}\right)$ (2) $(30, -40)$
67	68	69	70
(2) $(7, 4)$ (3) $(-1, 3)$	(3) $\boxed{8}$ $\boxed{3}$ $\boxed{9}$ $\boxed{3}$ $(4, -1)$ (4) $(4, 1)$	(3) $\boxed{-4}$ \boxed{y} $(5, 24)$ (4) $(5, 12)$	(3) $(6, 2)$ (4) $(-6, 2)$

H 71-74

71	72	73	74
(1) $\boxed{0}$ $\boxed{2}$ $(6, -4)$	(1) $(3, -2)$ (2) $(-3, 6)$	(1) $\boxed{5}$ $\boxed{3} \boxed{-12}$ $\boxed{8} \boxed{-12}$ $(4, 2)$ (2) $(4, 2)$	(1) $(-4, 2)$
71	72	73	74
(2) $\boxed{6} \boxed{3}$ $\boxed{3}$ $(5, 2)$ (3) $(3, 6)$	(3) $(23, 5)$ (4) $(-23, 5)$	(3) $(-2, -1)$ (4) $(0, 1)$	(2) $(-1, 1)$ (3) $\left(-\frac{1}{2}, \frac{1}{2}\right)$

75	76	77	78
<p>(1) $\boxed{2}$ $\boxed{7}$ (3, 2)</p> <p>(2) $\boxed{-7}$ $\boxed{-6}$ (9, 16)</p>	<p>(1) $\boxed{3}$ $\boxed{3}$ $\boxed{-2}$ $\boxed{6}$ $\boxed{5}$ $\boxed{6}$ (7, -3)</p>	<p>(1) $(\frac{1}{2}, 1)$</p>	<p>(1) $(-\frac{1}{2}, \frac{1}{2})$</p>
75	76	77	78
<p>(3) (3, -3)</p>	<p>(2) (-13, 11)</p> <p>(3) (6, 2)</p>	<p>(2) (3, 7)</p> <p>(3) $(-\frac{1}{2}, -3)$</p>	<p>(2) (10, -5)</p> <p>(3) $(-1, \frac{5}{2})$</p>

83	84	85	86
<p>(1) $\boxed{3}$</p> <p>$\boxed{7}$</p> <p>$x = \boxed{-7}$</p> <p>$\boxed{-7}$</p> <p>$(-7, -11)$</p> <p>(2) $(-2, \frac{5}{2})$</p>	<p>(1) $\boxed{7}$</p> <p>$\boxed{7}$</p> <p>$\boxed{7}$</p> <p>$\boxed{21}$</p> <p>$\boxed{-1}$</p> <p>$y = \boxed{1}$</p> <p>$\boxed{1}$ $\boxed{7}$</p> <p>$(2, 1)$</p> <p>(2) $(2, -1)$</p>	<p>(1) $\boxed{2}$</p> <p>$(4, -2)$</p> <p>(2) $(3, 1)$</p>	<p>$\boxed{\text{I}}$</p> <p>(1) $\boxed{3}$</p> <p>$\boxed{16}$</p> <p>$x = \boxed{2}$</p> <p>$\boxed{2}$</p> <p>$(2, -1)$</p> <p>(2) $(-2, -4)$</p>
83	84	85	86
<p>(3) $\boxed{1}$</p> <p>$\boxed{1}$</p> <p>$x = \boxed{2}$</p> <p>$\boxed{2}$ $\boxed{1}$</p> <p>$(2, 5)$</p> <p>(4) $(-2, 4)$</p> <hr style="border-top: 1px dotted black;"/> <p>(5) $(2, 2)$</p> <p>(6) $(3, \frac{7}{2})$</p>	<p>(3) $\boxed{1}$</p> <p>$\boxed{1}$</p> <p>$\boxed{2}$</p> <p>$(1, 2)$</p> <p>(4) $(3, 3)$</p>	<p>(3) $(-1, -2)$</p> <p>(4) $(2, 5)$</p>	<p>$\boxed{\text{II}}$</p> <p>(1) $(4, -6)$</p> <p>(2) $(5, -2)$</p>

91	92	93	94
<p>(1) $\boxed{8}$</p> <p>$\boxed{14}$</p> <p>$\boxed{-6}$</p> <p>$z = \boxed{3}$</p> <p>$\boxed{6}$ $\boxed{8}$</p> <p>$y = \boxed{2}$</p> <p>$\boxed{2}$ $\boxed{3}$</p> <p>$\boxed{2}$ $\boxed{3}$ $\boxed{6}$</p> <p>$x = \boxed{1}$</p> <p>$(\boxed{1}, \boxed{2}, \boxed{3})$</p>	<p>(1) $\boxed{-10}$</p> <p>$y = \boxed{2}$</p> <p>$\boxed{6}$</p> <p>$\boxed{14}$</p> <p>$x = \boxed{7}$</p> <p>$\boxed{7}$ $\boxed{2}$</p> <p>$\boxed{7}$ $\boxed{2}$ $\boxed{13}$</p> <p>$z = \boxed{4}$</p> <p>$(\boxed{7}, \boxed{2}, \boxed{4})$</p>	<p>(1) $(3, 2, -1)$</p>	<p>(1) $\boxed{2}$ $\boxed{4}$</p> <p>$\boxed{5}$ $\boxed{6}$</p> <p>$\boxed{5}$ $\boxed{-2}$</p> <p>$(2, -3, -4)$</p>
91	92	93	94
<p>(2) $\boxed{4}$</p> <p>$\boxed{6}$</p> <p>$\boxed{-2}$</p> <p>$z = \boxed{-1}$</p> <p>$(3, 2, -1)$</p>	<p>(2) $(5, -1, -2)$</p>	<p>(2) $(-2, 3, 4)$</p>	<p>(2) $(1, -2, 5)$</p>

H 95-97

95	96	97
<p>(1) $\boxed{15}$ $\boxed{84}$ $\boxed{3}$</p> <p>$\boxed{12}$ $\boxed{3}$ $\boxed{6}$</p> <p>$\boxed{3}$ $z = \boxed{2}$</p> <p>$\boxed{12}$ $\boxed{3}$ $\boxed{2}$</p> <p>$\boxed{15}$ $\boxed{6}$ $\boxed{6}$</p> <p>$\boxed{15}$ $\boxed{30}$</p> <p>$\boxed{-333}$ $x = \boxed{5}$</p> <p>$y = \boxed{3}$ $(5, 3, 2)$</p>	<p>(1) $\boxed{6}$ $\boxed{24}$ $\boxed{2}$ $\boxed{-1}$</p> <p>$\boxed{7}$ $\boxed{27}$ $\boxed{4}$ $\boxed{3}$</p> <p>$\boxed{11}$ $\boxed{5}$</p> <p>$\boxed{2}$ $\boxed{22}$ $z = \boxed{-5}$</p> <p>$\boxed{-5}$ $\boxed{5}$</p> <p>$y = \boxed{-1}$</p> <p>$\boxed{1}$ $\boxed{11}$</p> <p>$\boxed{10}$</p> <p>$x = \boxed{2}$ $(2, -1, -5)$</p>	<p>(1) $\boxed{4}$ $\boxed{10}$</p> <p>$\boxed{13}$ $\boxed{31}$</p> <p>$\boxed{6}$ $\boxed{15}$</p> <p>$\boxed{8}$ $\boxed{-20}$</p> <p>$\boxed{16}$ $\boxed{-40}$</p> <p>$\boxed{-3}$ $\boxed{-9}$</p> <p>$z = \boxed{3}$</p> <p>$\boxed{39}$ $\boxed{31}$</p> <p>$x = \boxed{-1}$</p> <p>$\boxed{-1}$ $\boxed{3}$</p> <p>$(-1, \frac{1}{2}, 3)$</p>
95	96	97
<p>(2) $(3, 2, 1)$</p>	<p>(2) $(-2, \frac{3}{2}, 4)$</p>	<p>(2) $(3, 2, 1)$</p>

H 98–101

98	99	100	101
(1) $(1, -2, 5)$	(1) $(1, 3, -2)$	(1) $(2, -4, 3)$	(1) $\boxed{4}$ $\boxed{2}$ $\boxed{5}$ $\boxed{-6}$ $\boxed{15}$ $\boxed{-18}$ $\boxed{15}$ $\boxed{20}$ $\boxed{-38}$ $x = \boxed{-2}$ $\boxed{-8}$ $(-2, \frac{3}{2}, 4)$
98	99	100	101
(2) $(1, -2, 4)$	(2) $(2, -3, -4)$	(2) $(-1, 2, 4)$	(2) $(-1, 2, 4)$

H 102–105

102	103	104	105
<p>(1) $(-5, 4, 6)$</p>	<p>(1) $(6, 2, 1)$</p>	<p>(1) $\bar{z} = \bar{-1}$</p> <p>$\bar{8}$</p> <p>$x = \bar{4}$</p> <p>$(4, 1, 5)$</p> <p>(2) $\bar{6}$</p> <p>$(2, 1, 6)$</p>	<p>(1) $\bar{8}$</p> <p>$x = \frac{1}{\bar{4}}$</p> <p>$(\frac{1}{4}, \frac{1}{5}, \frac{1}{6})$</p>
102	103	104	105
<p>(2) $\bar{0}$</p> <p>$\bar{1}$</p> <p>$(2, 5, 3)$</p>	<p>(2) $(3, 1, 1)$</p>	<p>(3) $(9, -3, -2)$</p>	<p>(2) $(\frac{1}{4}, -\frac{1}{2}, \frac{1}{3})$</p>

106	107	108	109
(1) $(1, -2, -3)$	(1) $(1, 2, 3)$	(1) $(3, 2, 1)$	(1) $(7, 2, 4)$
106	107	108	109
(2) $\boxed{5}$ $\boxed{-4}$ $\boxed{2}$ $\boxed{6} \boxed{-8}$ $\boxed{3} \boxed{7}$ $\boxed{12} \boxed{-16}$ $\boxed{-9} \boxed{-9}$ $w = \boxed{1}$ $\boxed{6} \boxed{-8}$ $z = \boxed{2}$	$\boxed{1} \boxed{2}$ $\boxed{2} \boxed{1} \boxed{-4}$ $y = \boxed{3}$ $\boxed{1} \boxed{2} \boxed{3}$ $\boxed{3} \boxed{2} \boxed{1}$ $x = \boxed{4}$ $(\boxed{4}, \boxed{3}, \boxed{2}, \boxed{1})$	(2) $\boxed{3}$ $\boxed{3} \boxed{-11}$ $\boxed{4} \boxed{15}$ $(4, 3, -2, 1)$	(2) $(3, 2, 1, 0)$ (2) $(4, 3, 2, 1)$

H 110–112

110	111	112
<p>(1) $(\frac{2}{9}, -\frac{1}{9}, \frac{1}{3})$</p>	<p>(1)</p> <p>[Sol] $\begin{cases} x + y = 13 \\ 3x + 4y = \boxed{44} \end{cases}$</p> <p>$\underline{(8, 5)}$</p> <p>(2)</p> <p>[Sol] $\begin{cases} x - y = \boxed{17} \\ \boxed{2}x + \boxed{5}y = 62 \end{cases}$</p> <p>$\underline{(21, 4)}$</p>	<p>(1)</p> <p>[Sol] If there are x students in class A and y students in class B,</p> $\begin{cases} x = y + \boxed{18} \\ x - \frac{1}{8}x = y + \boxed{\frac{1}{8}x} \end{cases}$ <p>$\left\{ \begin{array}{l} \text{Class A : 72 students} \\ \text{Class B : 54 students} \end{array} \right.$</p>
110	111	112
<p>(2) $\boxed{3} \boxed{3} \boxed{3} \boxed{15}$</p> <p>$\boxed{y} \boxed{z} \boxed{w} \boxed{5}$</p> <p>$(-3, 7, 1, 0)$</p>	<p>(3)</p> <p>[Sol] $\begin{cases} 3(x - y) = -30 \\ \frac{2}{3}x + \boxed{\frac{1}{2}}y = 19 \end{cases}$</p> <p>$\underline{(12, 22)}$</p> <p>(4)</p> <p>[Sol] $\begin{cases} x + \frac{1}{5}y = 14 \\ \frac{1}{2}x + \frac{1}{5}y = 5 \end{cases}$</p> <p>$\underline{(18, -20)}$</p>	<p>(2)</p> <p>[Sol] If the bottle alone weighs x g and the water in the full bottle weighs y g,</p> $\begin{cases} x + y = \boxed{1000} \\ x + \frac{1}{3}y = \boxed{640} \end{cases}$ <p>$\underline{460 \text{ g}}$</p>

H 115-116

115	116
<p>(1)</p> <p>[Sol] If there were x cows and y bulls at the farm last year,</p> $\begin{cases} \frac{90}{100}x + \frac{150}{100}y = 660 & \dots\textcircled{1} \\ \frac{110}{100}(x + y) = \boxed{660} & \dots\textcircled{2} \end{cases}$ <p>$\textcircled{1} \times 100$: $90x + \boxed{150}y = 66000 \dots\textcircled{1}'$</p> <p>$\textcircled{1}' \div 30$: $3x + \boxed{5}y = 2200 \dots\textcircled{1}''$</p> <p>$\textcircled{2} \times \frac{100}{110}$: $x + y = \boxed{600} \dots\textcircled{2}'$</p> <p>$\textcircled{2}' \times 3$: $3x + \boxed{3}y = \boxed{1800} \dots\textcircled{2}''$</p> <p>$\textcircled{1}'' - \textcircled{2}''$: $\boxed{2}y = \boxed{400}$</p> <p style="text-align: center;">$y = 200$</p> <p><u>400 cows 200 bulls</u></p>	<p>(1)</p> <p>[Sol] If x is the ten's digit and y is the one's digit, the original number is $10x + y$. The number with reversed digits is $10y + x$.</p> $\begin{cases} x + y = 11 \\ 10x + y + \boxed{45} = 10y + x \end{cases}$ <p>$(x, y) = (3, 8)$</p> <p style="text-align: center;"><u>38</u></p>
115	116
<p>(2)</p> <p>[Sol] If there were x boys and y girls at the kindergarten last year,</p> $\begin{cases} \boxed{\frac{110}{100}}x + \boxed{\frac{140}{100}}y = 360 \\ \boxed{\frac{120}{100}}(x + y) = 360 \end{cases}$ <p style="text-align: center;"><u>200 boys 100 girls</u></p>	<p>(2)</p> <p>[Sol] Let the number be $10x + y$.</p> $\begin{cases} 10x + y = 6(x + y) + 1 \\ 10x + y - 9 = 10y + x \end{cases}$ <p>$(x, y) = (4, 3)$</p> <p style="text-align: center;"><u>43</u></p>

117

(1)

[Sol] If A weighs x g and B weighs y g,

$$\begin{cases} \frac{3}{4}x + \frac{1}{4}y = 15 \\ \frac{1}{4}x + \frac{3}{4}y = \boxed{9} \end{cases}$$

	Alloy A	Alloy B	Combined
Weight of Gold	$\frac{3}{4}x$	$\frac{1}{4}y$	15
Weight of Silver	$\frac{1}{4}x$	$\frac{3}{4}y$	9

$$\begin{cases} \text{A : 18 g} \\ \text{B : 6 g} \end{cases}$$

118

(1)

[Sol] If there are x km from A to B and y km from B to C,

$$\begin{cases} \frac{x}{4} + \frac{y}{6} = \frac{65}{12} & \dots \textcircled{1} \\ \frac{x}{6} + \frac{y}{4} = \boxed{5} & \dots \textcircled{2} \end{cases}$$

$$\textcircled{1} \times 12 : 3x + \boxed{2}y = 65 \quad \dots \textcircled{1}'$$

$$\textcircled{2} \times 12 : 2x + \boxed{3}y = \boxed{60} \quad \dots \textcircled{2}'$$

$$\begin{cases} \text{From A to B : 15 km} \\ \text{From B to C : 10 km} \end{cases}$$

117

(2)

[Sol] If A weighs x kg and B weighs y kg,

$$\begin{cases} \frac{2}{3}x + \frac{1}{3}y = 10 \\ \frac{1}{3}x + \frac{2}{3}y = 8 \end{cases}$$

	Juice A	Juice B	Combined
Weight of apple juice	$\frac{2}{3}x$	$\frac{1}{3}y$	10
Weight of grape juice	$\frac{1}{3}x$	$\frac{2}{3}y$	8

$$\begin{cases} \text{A : 12 kg} \\ \text{B : 6 kg} \end{cases}$$

118

(2)

[Sol] If there are x km from A to P and y km from P to B,

$$\begin{cases} \frac{x}{6} + \frac{y}{3} = \frac{5}{3} \\ \frac{x}{3} + \frac{y}{2} = 3 \end{cases}$$

$$(x, y) = (6, 2)$$

The distance between A and B is $6 + 2 = 8$.

$$\underline{8 \text{ km}}$$

H 119–120

119	120
<p>(1)</p> <p>[Sol] Let x be the speed of the boat in still water and y the speed of the current (km/h). The speed of the boat going upstream is $(x - y)$ km/h and the speed of the boat going downstream is $(x + y)$ km/h.</p> $\begin{cases} 5(x - y) = 20 \\ 2.5(x + y) = \boxed{20} \end{cases}$ <p> $\left\{ \begin{array}{l} \text{The boat : } 6 \text{ km/h} \\ \text{The current : } 2 \text{ km/h} \end{array} \right.$ </p>	<p>(1)</p> <p>[Sol] If it takes A alone x hours and B alone y hours, A fills $\frac{1}{x}$ of the tank per hour, and B fills $\frac{1}{y}$ per hour.</p> $\begin{cases} \frac{1}{x} + \frac{1}{y} = \frac{1}{10} & \dots \textcircled{1} \\ \frac{6}{x} + \frac{18}{y} = \boxed{1} & \dots \textcircled{2} \end{cases}$ $\textcircled{1} \times 6: \frac{6}{x} + \frac{\boxed{6}}{y} = \frac{\boxed{3}}{5} \dots \textcircled{1}'$ $\textcircled{2} - \textcircled{1}': \frac{12}{y} = \frac{2}{5}$ <p> $\left\{ \begin{array}{l} \text{Pipe A : } 15 \text{ hours} \\ \text{Pipe B : } 30 \text{ hours} \end{array} \right.$ </p>
119	120
<p>(2)</p> <p>[Sol] Let x be the speed of Kent in still water and y the speed of the current (m/min).</p> $\begin{cases} 5(x - y) = 150 \\ 3(x + y) = 150 \end{cases}$ <p> $\left\{ \begin{array}{l} \text{Kent : } 40 \text{ m/min} \\ \text{The current : } 10 \text{ m/min} \end{array} \right.$ </p>	<p>(2)</p> <p>[Sol] If it takes A alone x hours and B alone y hours, A finishes $\frac{1}{x}$ of the project per hour, and B finishes $\frac{1}{y}$ per hour.</p> $\begin{cases} \frac{1}{x} + \frac{1}{y} = \frac{1}{8} \\ \frac{6}{x} + \frac{12}{y} = 1 \end{cases}$ <p> $\left\{ \begin{array}{l} \text{Worker A : } 12 \text{ hours} \\ \text{Worker B : } 24 \text{ hours} \end{array} \right.$ </p>

121	122	123	124
(1) $\boxed{3} x > 8$ (2) $x > 6$ (3) $x > 10$ (4) $x > -12$	(1) $\boxed{7}$ $\boxed{8}$ $x < \boxed{4}$ (2) $x < \frac{5}{2}$ (3) $x < \frac{5}{3}$	I (1) $x < -4$ (2) $x < 4$ (3) $x > 4$ (4) $x > -2$ (5) $x < 2$	(1) $\boxed{15}$ $x < \boxed{-5}$ (2) $x < -5$ (3) $x > -5$
(5) $x > \boxed{4}$ (6) $x > 2$ (7) $x > \frac{3}{\boxed{2}}$ (8) $x > \frac{2}{3}$	(4) $\boxed{2x} x < 1$ (5) $x < \frac{8}{3}$ (6) $x > 3$	(6) $x > -4$ (7) $x < 12$ (8) $x > 9$ (9) $x < -2$ (10) $x > -4$	(4) $x > -3$ (5) $x < -\frac{1}{3}$ (6) $x > -\frac{1}{2}$
121	122	123	124
(9) $\boxed{7} x > 4$ (10) $x > 7$ (11) $x > \frac{1}{3}$ (12) $x > \frac{5}{2}$	(7) $x > -3$ (8) $x > 5$ (9) $\boxed{3x} \boxed{4} x > 2$ (10) $x > -\frac{10}{7}$	II (1) $x > -2$ (2) $x < -3$ (3) $x > 3$ (4) $x < \frac{2}{5}$	(7) $x < -\frac{1}{3}$ (8) $x < -\frac{1}{2}$ (9) $x > -\frac{7}{2}$ (10) $x < 4$
(13) $\boxed{2x} x > 4$ (14) $x > \frac{7}{8}$ (15) $x > 3$ (16) $x > \frac{7}{3}$	(11) $x < 5$ (12) $x < -2$ (13) $x < \frac{3}{5}$ (14) $x < -3$	(5) $x < -3$ (6) $x > 1$ (7) $x > 2$ (8) $x < 5$	(11) $x > -2$ (12) $x > -\frac{5}{3}$ (13) $x > \frac{3}{2}$ (14) $x < 3$

129	130
<p>(1)</p> <p>[Sol] $x - \boxed{3} < 2x$ $x > -3$</p> <p>(2)</p> <p>[Sol] $3x \geq \boxed{6}$ $x \geq 2$</p>	<p>(1)</p> <p>[Sol] Let the smaller of the two integers be x, and the other equal $(x + 1)$.</p> $x + (\boxed{x + 1}) \leq 99$ $x \leq 49$ <p style="text-align: right;"><u>The two integers are $\boxed{49}$ and $\boxed{50}$.</u></p>
129	130
<p>(3)</p> <p>[Sol] $3x - 4 > x$ $x > 2$</p> <p>(4)</p> <p>[Sol] $6x + 3 < 8x - 6$ $x > \frac{9}{2}$</p> <p>(5)</p> <p>[Sol] $5(\boxed{x + 2}) \leq \boxed{2}(2x - 1)$ $x \leq -12$</p>	<p>(2)</p> <p>[Sol] Let the smallest of the three integers be x, and the others equal $(x + 1)$ and $(x + \boxed{2})$.</p> $x + (\boxed{x + 1}) + (\boxed{x + 2}) \leq \boxed{63}$ $x \leq 20$ <p style="text-align: right;"><u>The three integers are $\boxed{20}$, $\boxed{21}$ and $\boxed{22}$.</u></p>

H 131–134

131	132	133	134
(1) $x > \boxed{5}$	(1) $-2 < x < 3$	(1) $-\frac{7}{2} < x \leq 3$	(1) $-1 \leq x \leq 1$
(2) $x < \boxed{-2}$	(2) $-\frac{5}{3} < x < 3$		(2) $x = \boxed{2}$
			(3) $x < -1$
131	132	133	134
(3) $\boxed{-2} < x < \boxed{3}$	(3) $x < -4$	(2) No solution	(4) $\frac{1}{2} < x \leq 4$
(4) $x > 3$			
(5) No solution	(4) No solution	(3) $-1 \leq x \leq 2$	
(6) $x < -2$			(5) $-7 < x \leq -4$
(7) $x \geq \boxed{-2}$	(5) $x > -3$	(4) $-3 \leq x < 4$	
(8) $x < -3$			

H 138–139

138	139
<p>(1)</p> <p>[Sol] If they each give x cards, then</p> $700 - x \leq 3(500 - x)$ <p><u>400 cards or fewer</u></p>	<p>(1)</p> <p>[Sol] If the distance between home and school is x, then</p> $\frac{x}{30} + \frac{x}{45} \leq 30$ <p><u>540 m or less</u></p>
138	139
<p>(2)</p> <p>[Sol] If the number of students who study economics is x, the number of students who study computer science is $2x$. Therefore,</p> $x + 2x > 600$ <p><u>More than 200 students</u></p>	<p>(2)</p> <p>[Sol] If the distance he ran is x m, the distance he walked is $(1800 - x)$ m. Therefore,</p> $\frac{x}{210} + \frac{1800 - x}{70} \leq 20$ <p><u>600 m or more</u></p>

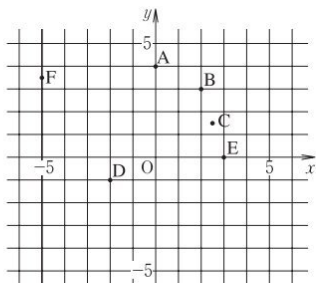
140	141		
<p>(1)</p> <p>[Sol] Let x be the number of students.</p> $\begin{cases} 4 \times 30 + 5(x - 30) < \boxed{200} \\ 4 \times 20 + 5(x - 20) > \boxed{200} \end{cases}$ <p style="margin-left: 40px;">$44 < x < 46$</p> <p style="margin-left: 40px;"><u>45 students</u></p>	<p style="text-align: center;">I</p> <p>(1) $\boxed{1}$</p> <p>(2) $\boxed{2}$</p> <p>(3) $\boxed{-2}$</p> <p>(4) $\boxed{-1}$ $\boxed{-2}$</p> <p>(5) $\boxed{2}$ $\boxed{-3}$</p> <p>(6) $\boxed{1}$</p>		
140	141		
<p>(2)</p> <p>[Sol] Let x be the number of 20 ton cars.</p> $380 \leq 15(\boxed{22 - x}) + 20x \leq 400$ <p style="margin-left: 40px;">$10 \leq x \leq 14$</p> <p style="margin-left: 40px;"><u>10 cars or more, 14 cars or less</u></p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding-right: 10px; vertical-align: top;"> <p style="text-align: center;">II</p> <p>(1)</p> <p>Point B $(1, \boxed{2})$</p> <p>(2)</p> <p>Point C $(\boxed{-2}, \frac{3}{2})$</p> <p>(3)</p> <p>Point D $(-\frac{3}{2}, \boxed{-2})$</p> <p>(4)</p> <p>Point E $(\boxed{2}, \boxed{-\frac{3}{2}})$</p> <p>(5)</p> <p>Point F $(0, \boxed{0})$</p> </td> <td style="width: 50%; padding-left: 10px; vertical-align: top;"> <p style="text-align: center;">III</p> <p>(1)</p> <p>Point A $(4, 1)$</p> <p>(2)</p> <p>Point B $(-3, \frac{5}{2})$</p> <p>(3)</p> <p>Point C $(-2, -3)$</p> <p>(4)</p> <p>Point D $(\frac{5}{2}, -4)$</p> <p>(5)</p> <p>Point E $(0, 4)$</p> </td> </tr> </table>	<p style="text-align: center;">II</p> <p>(1)</p> <p>Point B $(1, \boxed{2})$</p> <p>(2)</p> <p>Point C $(\boxed{-2}, \frac{3}{2})$</p> <p>(3)</p> <p>Point D $(-\frac{3}{2}, \boxed{-2})$</p> <p>(4)</p> <p>Point E $(\boxed{2}, \boxed{-\frac{3}{2}})$</p> <p>(5)</p> <p>Point F $(0, \boxed{0})$</p>	<p style="text-align: center;">III</p> <p>(1)</p> <p>Point A $(4, 1)$</p> <p>(2)</p> <p>Point B $(-3, \frac{5}{2})$</p> <p>(3)</p> <p>Point C $(-2, -3)$</p> <p>(4)</p> <p>Point D $(\frac{5}{2}, -4)$</p> <p>(5)</p> <p>Point E $(0, 4)$</p>
<p style="text-align: center;">II</p> <p>(1)</p> <p>Point B $(1, \boxed{2})$</p> <p>(2)</p> <p>Point C $(\boxed{-2}, \frac{3}{2})$</p> <p>(3)</p> <p>Point D $(-\frac{3}{2}, \boxed{-2})$</p> <p>(4)</p> <p>Point E $(\boxed{2}, \boxed{-\frac{3}{2}})$</p> <p>(5)</p> <p>Point F $(0, \boxed{0})$</p>	<p style="text-align: center;">III</p> <p>(1)</p> <p>Point A $(4, 1)$</p> <p>(2)</p> <p>Point B $(-3, \frac{5}{2})$</p> <p>(3)</p> <p>Point C $(-2, -3)$</p> <p>(4)</p> <p>Point D $(\frac{5}{2}, -4)$</p> <p>(5)</p> <p>Point E $(0, 4)$</p>		

H 142-143

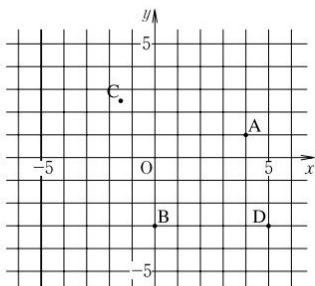
142

143

I



II



(5) B

I

(1) -3 (7) 9

(2) -1 (8) 4

(3) 1 (9) 6

(4) 3 (10) 8

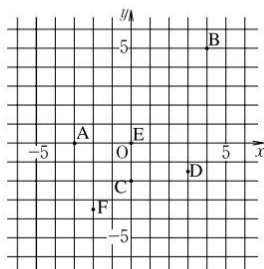
(5) 5 (11) 2

(6) 7

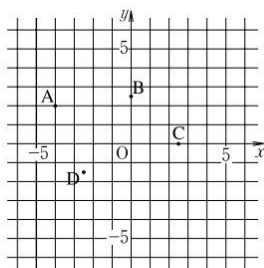
142

143

III



IV



(5) C B

II

(1) 28 (7) -2

(2) 18 (8) 0

(3) 10 (9) 4

(4) 4 (10) $6.75 \left[\frac{27}{4} \right]$

(5) 0 (11) $-2.25 \left[-\frac{9}{4} \right]$

(6) -2

144

I

(1) (A) 4 (2)

(B) 5

(C) 6

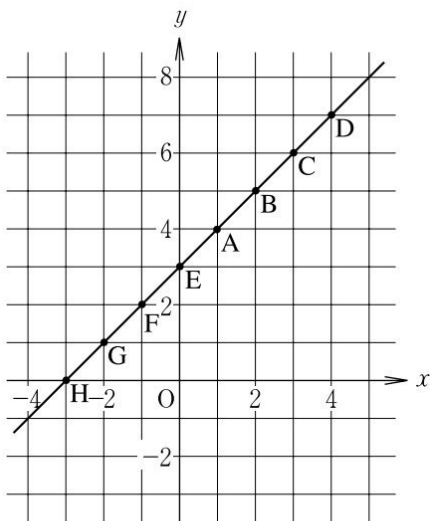
(D) 7

(E) 3

(F) 2

(G) 1

(H) 0

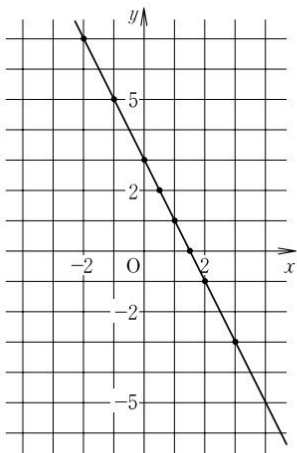


144

II

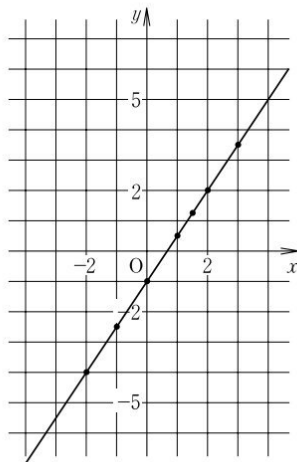
(1)

y
7
5
3
2
1
0
-1
-3



(2)

y
-4
$-\frac{5}{2}$
-1
$\frac{1}{2}$
$\frac{5}{2}$
$\frac{4}{2}$
2
$\frac{7}{2}$

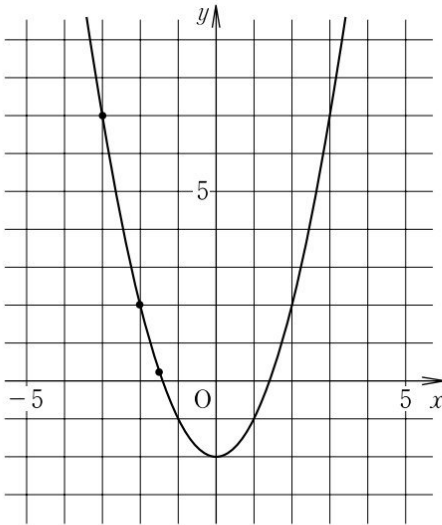


H 145

145

(1)

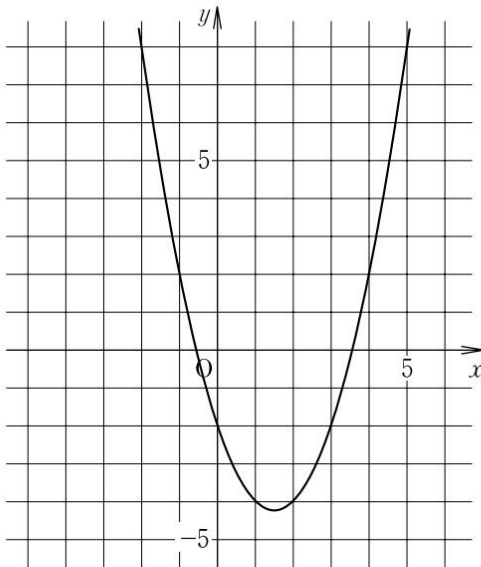
y
7
2
$\frac{1}{4}$
-1
-2
-1
$\frac{1}{4}$
2
7



145

(2)

y
8
2
-2
-4
$-\frac{17}{4}$
-4
-2
2
8

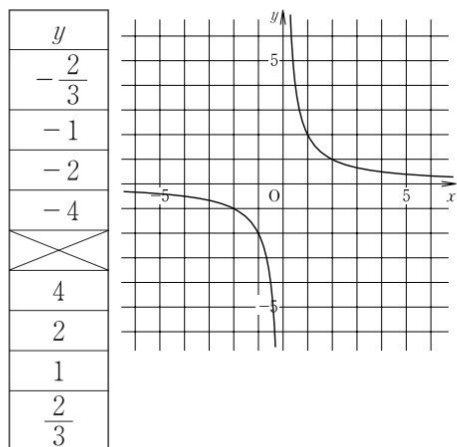


146

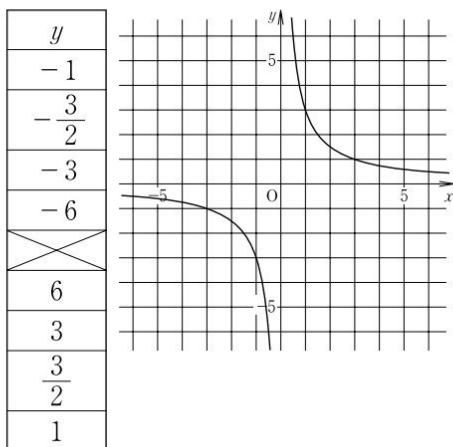
(No exercises)

146

(1)



(2)



H 147-148

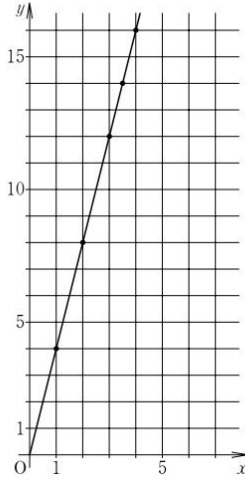
147

I

(1)

y (km)	4	8	12	14	16
----------	---	---	----	----	----

(2) $y = \boxed{4}x$ (3)



148

I

(1) $y = 80x$

(2) 2 times

II

24

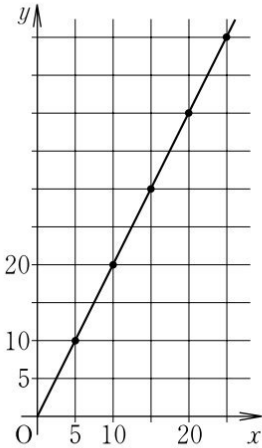
147

II

(1) $y = 2x$

(2) 34 cm

(3) 2 cm



148

III

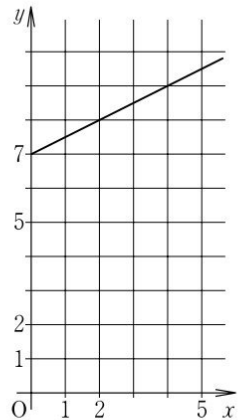
(1) $\boxed{7} + \frac{1}{2} \times \boxed{3} = \frac{17}{2}$

$\frac{17}{2}$ cm

(2) $y = \boxed{\frac{1}{2}}x + \boxed{7}$

(3) 4.4 kg

(accept only
answer close
to this value)



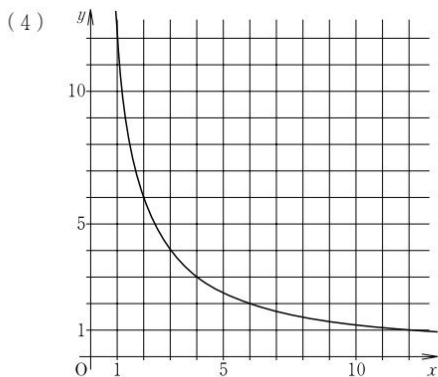
149

I

(1) 3 seconds

(2) 2 seconds

(3) $y = \frac{12}{x}$



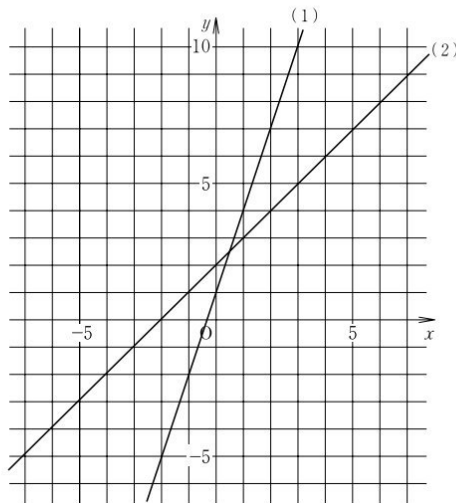
150

(1)

y	-5	-2	1	4	7	10
---	----	----	---	---	---	----

(2)

y	0	1	2	3	4	5
---	---	---	---	---	---	---

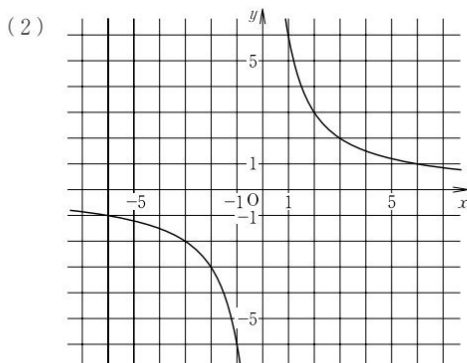


149

II

(1)

y	-1	-2	-6	X	6	2	1
---	----	----	----	---	---	---	---



(3) 6

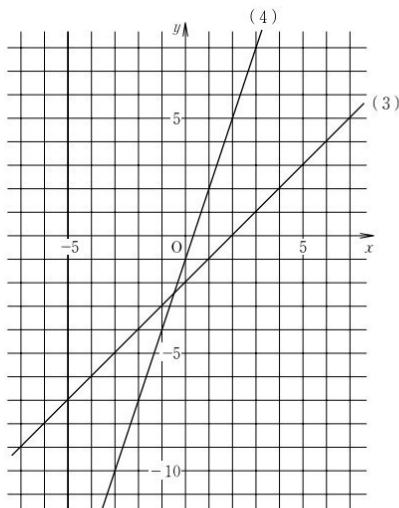
150

(3)

y	-5	-4	-3	-2	-1	0	1
---	----	----	----	----	----	---	---

(4)

y	-10	-7	-4	-1	2	5	8
---	-----	----	----	----	---	---	---



H 151-152

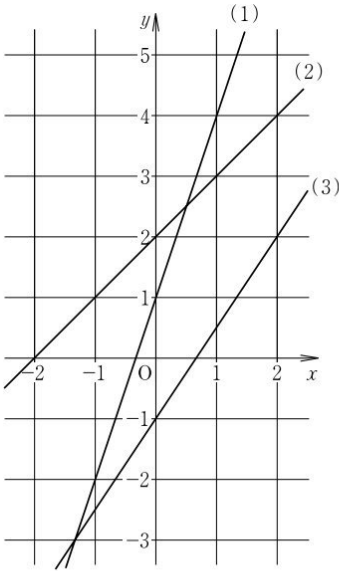
151

I

(1) $\boxed{1}$

(2) $\boxed{2}$

(3) $\boxed{-1}$



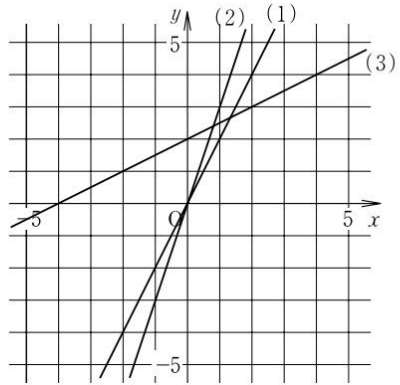
152

I

(1) $\boxed{2}$ $\begin{matrix} y & 0 & 2 \end{matrix}$

(2) $\boxed{3}$ $\begin{matrix} y & 0 & 3 \end{matrix}$

(3) $\boxed{\frac{1}{2}}$ $\begin{matrix} y & 2 & \frac{5}{2} & 3 \end{matrix}$



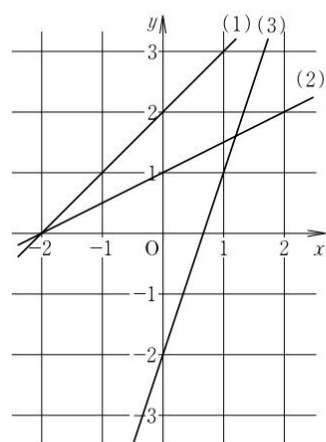
151

II

(1) $\boxed{2}$

(2) $\boxed{1}$

(3) $\boxed{-2}$



III

(1) $\boxed{\frac{3}{5}}$

(2) $\boxed{-2}$

(3) $\boxed{-1}$

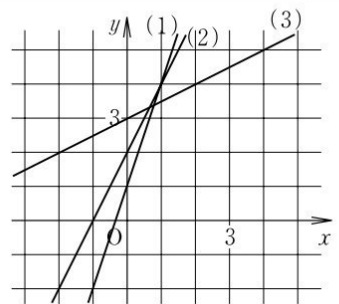
152

II

(1) $\boxed{3}$

(2) $\boxed{2}$

(3) $\boxed{\frac{1}{2}}$



III

(1) $\boxed{\frac{3}{5}}$

(2) $\boxed{4}$

(3) $\boxed{\frac{2}{3}}$

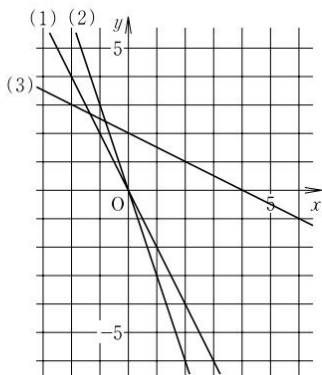
153

I

(1) $\boxed{-2}$ $\boxed{y \ 0 \ -2}$

(2) $\boxed{-3}$ $\boxed{y \ 0 \ -3}$

(3) $\boxed{-\frac{1}{2}}$ $\boxed{y \ 2 \ \frac{3}{2} \ 1}$



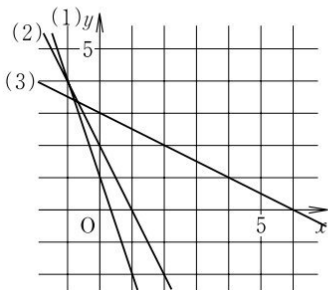
153

II

(1) $\boxed{-3}$

(2) $\boxed{-2}$

(3) $\boxed{-\frac{1}{2}}$



III

(1) $\boxed{-\frac{3}{5}}$

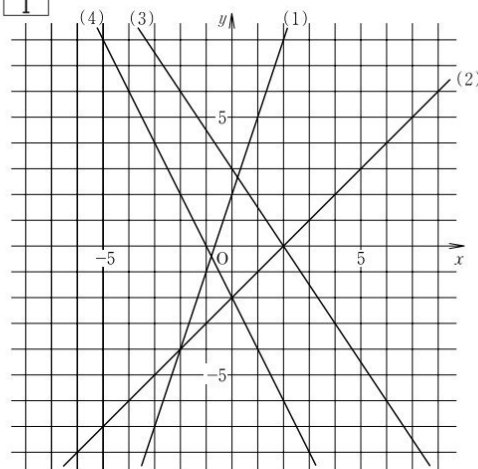
(2) $\boxed{-4}$

(3) $\boxed{-\frac{2}{3}}$

(4) $\boxed{\frac{2}{3}}$

154

I

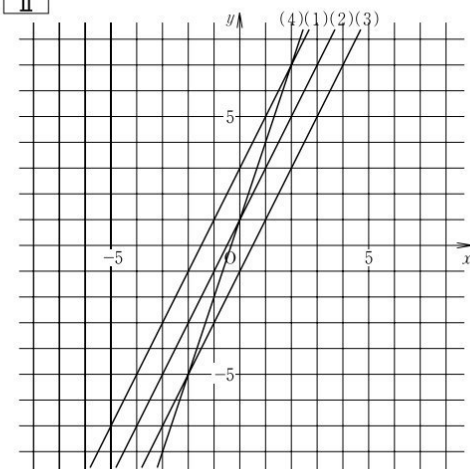


(1) 3, 2 (3) $-\frac{3}{2}, 3$

(2) 1, -2 (4) -2, -2

154

II



(1) 2, 3 (3) 2, -1

(2) 2, 1 (4) 3, 1

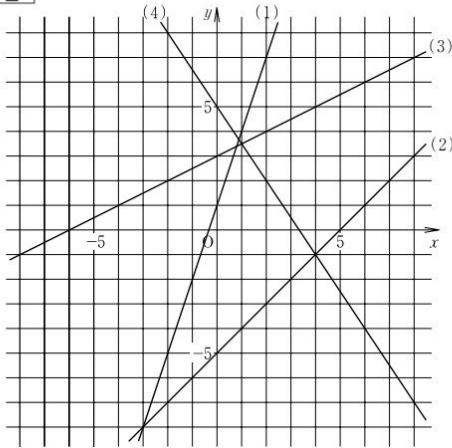
H 155–156

155

I

- (1) 3,1 (3) $\frac{1}{2} \cdot 3$
 (2) 1, -5 (4) $-\frac{3}{2} \cdot 5$

II



156

I

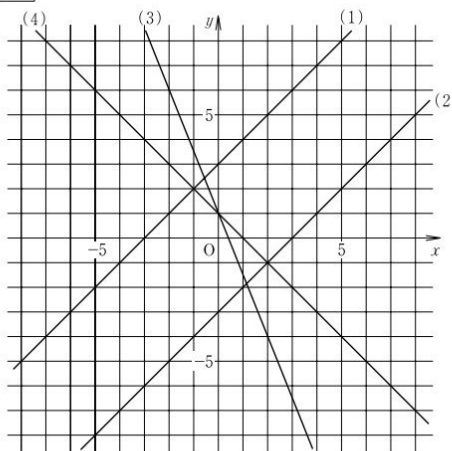
- (1)
 (2)
 (3)
 (4)
 (5)
 (6) $y = \text{}x + \text{}$

155

III

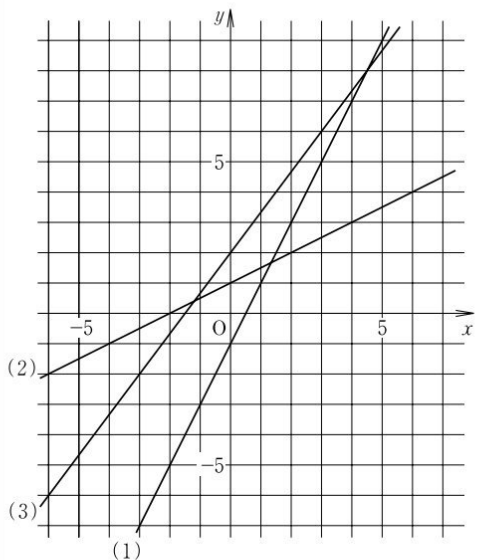
- (1) 1,3 (3) $-\frac{5}{2} \cdot 1$
 (2) 1, -3 (4) -1, 1

IV



156

II



157

I

(1) $\boxed{4}$

(2) $\boxed{3}$

(3) $\boxed{4}$ $\boxed{0}$

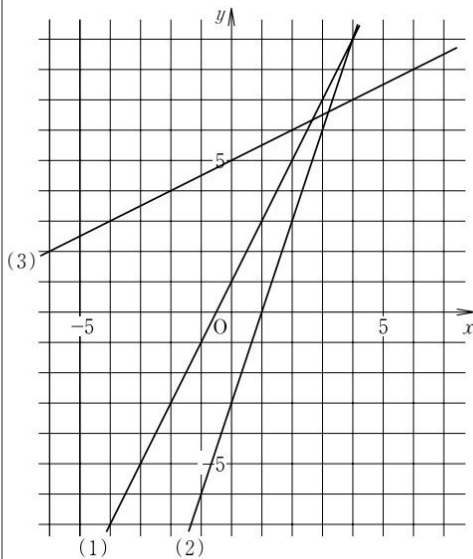
(4) $\boxed{\frac{4}{3}}$

(5) $\boxed{-\frac{4}{3}}$ $\boxed{4}$

(6) $y = \boxed{-\frac{4}{3}}x + \boxed{4}$

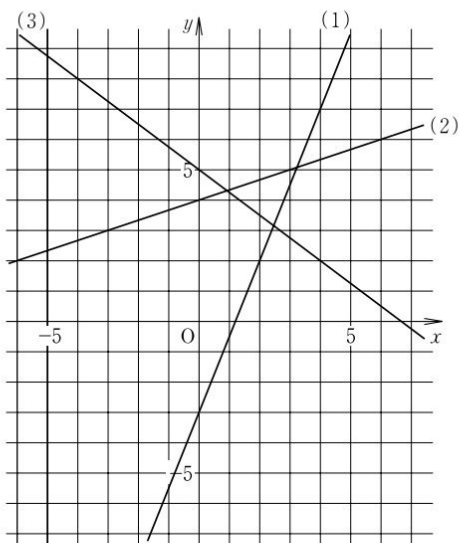
158

I



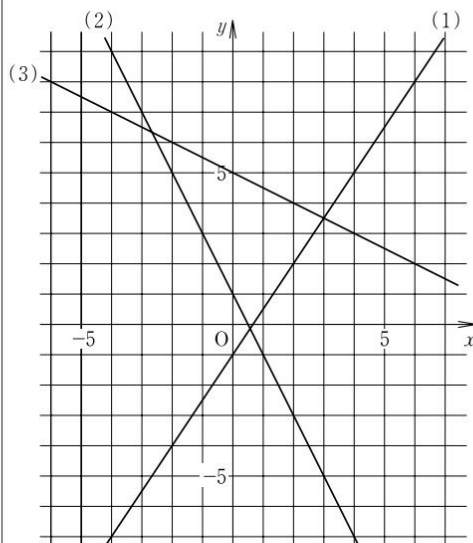
157

II



158

II

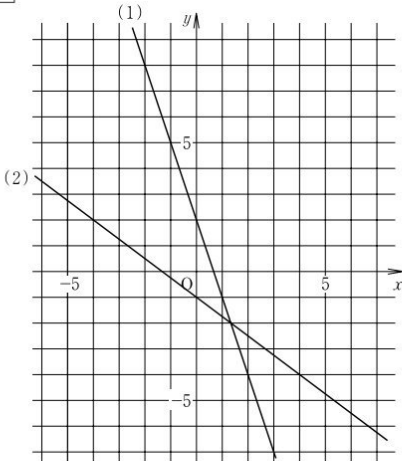


H 159-160

159

160

I



(1) $y = \boxed{-3}x + \boxed{2}$

(2) $y = \boxed{-\frac{3}{4}}x - \boxed{1}$

I

$\boxed{2}$

$\boxed{-2}$

$y = \boxed{2}x - \boxed{2}$

II

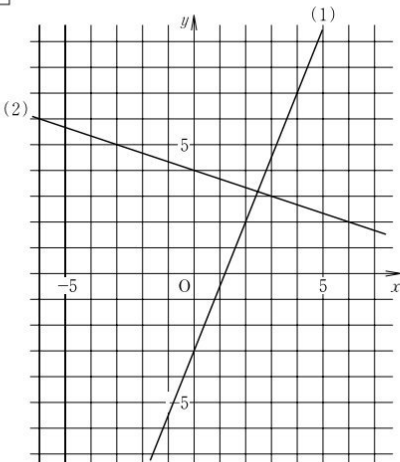
(1) $y = x + 1$

(2) $y = 3x - 2$

159

160

II



(1) $y = \boxed{\frac{5}{2}}x - \boxed{3}$

(2) $y = \boxed{-\frac{1}{3}}x + \boxed{4}$

III

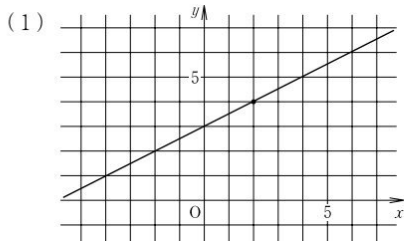
(1) $y = -2x + 2$

(2) $y = 3x + 4$

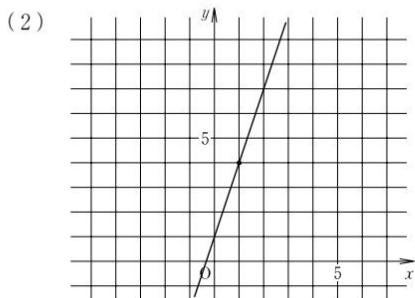
(3) $y = -x + 2$

(4) $y = \frac{1}{2}x - 1$

161

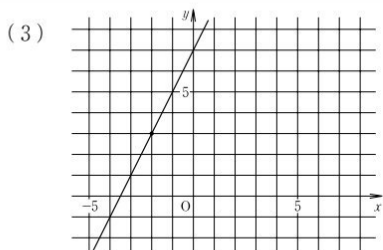


3

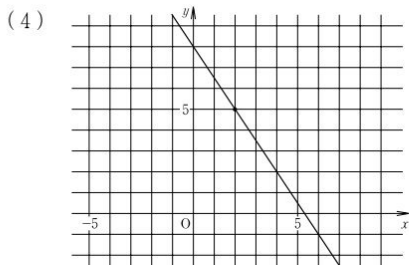


1

161



$$y = 2x + 7$$



$$y = -\frac{3}{2}x + 8$$

162

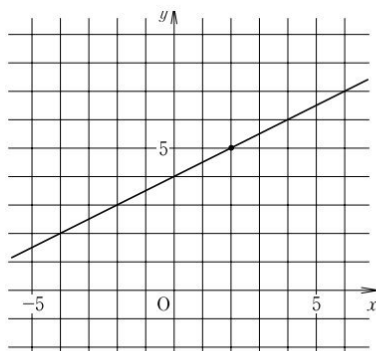
I

$$5 = \frac{1}{2} \times 2 + b$$

$$b = 4$$

$$y = \frac{1}{2}x + 4$$

II



162

III

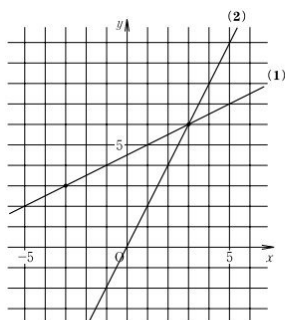
$$(1) y = \frac{1}{2}x + b \quad (2) y = 2x + b$$

$$3 = \frac{1}{2} \times (-3) + b \quad y = 2x$$

$$b = \frac{9}{2}$$

$$y = \frac{1}{2}x + \frac{9}{2}$$

IV

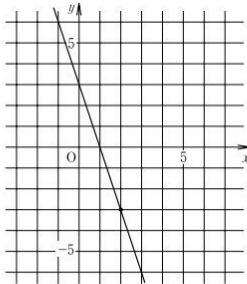


H 163–164

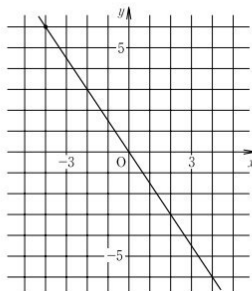
163

I

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

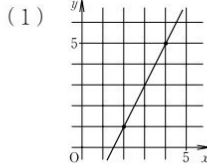


(2) $y = -\frac{3}{2}x$

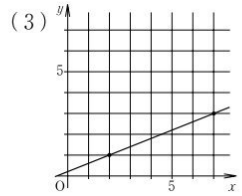


164

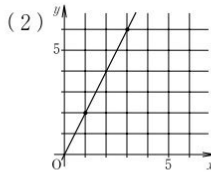
I



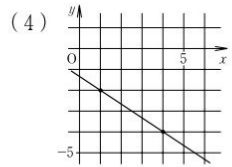
Gradient 2



Gradient $\frac{2}{5}$



Gradient 2



Gradient $-\frac{2}{3}$

163

II

(1) $y = \frac{1}{2}x + 7$

(2) $y = -3x + 7$

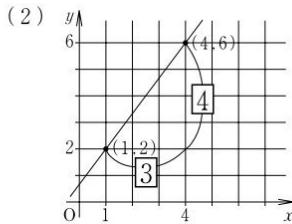
(3) $y = -\frac{1}{3}x - 4$

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

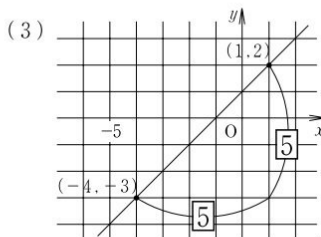
164

II

(1) Gradient $\frac{5}{4}$



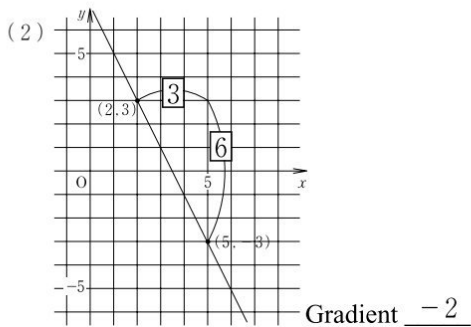
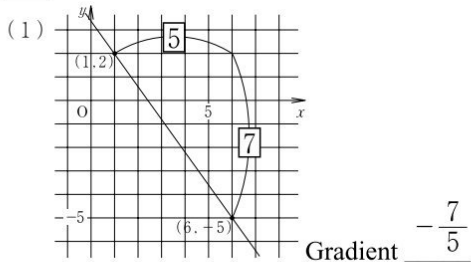
Gradient $\frac{4}{3}$



Gradient 1

165

I



166

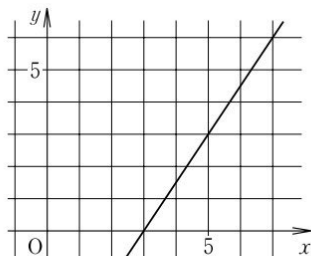
I

[Sol 1]

$$\boxed{3} = \frac{\boxed{15}}{2} + b$$

$$b = -\frac{9}{2}$$

$$y = \frac{3}{2}x - \frac{9}{2}$$



[Sol 2]

$$\boxed{6} = \frac{\boxed{21}}{2} + b$$

$$b = -\frac{9}{2}$$

$$y = \frac{3}{2}x - \frac{9}{2}$$

165

II

(1) $\boxed{1} \frac{2}{\boxed{3}}$ Gradient $\frac{2}{3}$

(2) $\boxed{1} -\frac{3}{\boxed{5}}$ Gradient $-\frac{3}{5}$

(3) Gradient $\underline{1}$

(4) Gradient $-\frac{1}{2}$

166

II

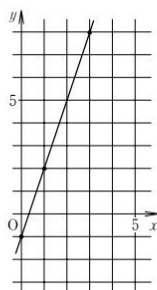
(1)

$$\frac{8-2}{3-1} = \boxed{3}$$

$$y = \boxed{3}x + b$$

$$b = -1$$

$$y = 3x - 1$$



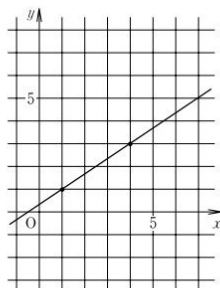
(2)

$$\frac{\boxed{2}}{\boxed{3}}$$

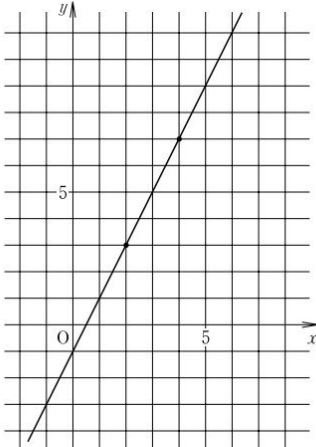
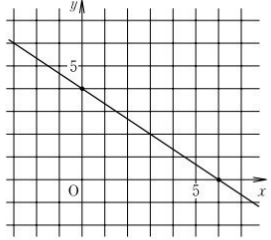
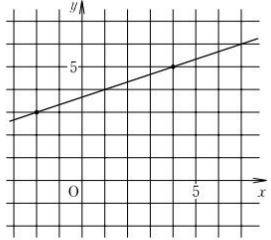
$$y = \frac{2}{3}x + b$$

$$b = \frac{1}{3}$$

$$y = \frac{2}{3}x + \frac{1}{3}$$



H 167-168

167	168
<p>(1)</p> <p>[Sol] Gradient = $\frac{1 - (-2)}{6 - 3} = 1$</p> $y = x + b$ $b = -5$ $y = x - 5$ <p>(2)</p> <p>[Sol] Gradient = $\frac{-7 - 2}{2 - (-1)} = -3$</p> $y = -3x + b$ $b = -1$ $y = -3x - 1$	<p>I</p> $2m = 4$ $m = 2$ $3 = 4 + b$ $b = -1$ $y = 2x - 1$ 
167	168
<p>(3)</p> <p>[Sol] Gradient = $\frac{-4 - 2}{5 - 3} = -3$</p> $y = -3x + b$ $b = 11$ $y = -3x + 11$ <p>(4)</p> <p>[Sol] Gradient = $\frac{2 - (-6)}{0 - (-2)} = 4$</p> $y = 4x + b$ $b = 2$ $y = 4x + 2$	<p>II</p> <p>(1)</p> <p>[Sol]</p> $\begin{cases} 0 = 6m + b \\ 4 = b \end{cases}$ $m = -\frac{2}{3}, b = 4$ $y = -\frac{2}{3}x + 4$  <p>(2)</p> <p>[Sol]</p> $\begin{cases} 3 = -2m + b \\ 5 = 4m + b \end{cases}$ $m = \frac{1}{3}, b = \frac{11}{3}$ $y = \frac{1}{3}x + \frac{11}{3}$ 

169	170
<p>(1)</p> <p>[Sol] $\begin{cases} 5 = -4m + b \\ 8 = 2m + b \end{cases}$</p> <p>$m = \frac{1}{2}, b = 7$</p> <p>$y = \frac{1}{2}x + 7$</p> <p>(2)</p> <p>[Sol] $\begin{cases} 4 = m + b \\ 7 = b \end{cases}$</p> <p>$m = -3, b = 7$</p> <p>$y = -3x + 7$</p>	<p>□ I</p> <p>(1)</p> <p>[Sol] Gradient = $\frac{-1-5}{4-0} = -\frac{3}{2}$</p> <p>$y = -\frac{3}{2}x + b$</p> <p>$b = 5$</p> <p>$y = -\frac{3}{2}x + 5$</p> <p>(2)</p> <p>[Sol] Gradient = $\frac{1-(-4)}{4-1} = \frac{5}{3}$</p> <p>$y = \frac{5}{3}x + b$</p> <p>$b = -\frac{17}{3}$</p> <p>$y = \frac{5}{3}x - \frac{17}{3}$</p>
169	170
<p>(3)</p> <p>[Sol] $\begin{cases} -2 = -6m + b \\ 1 = m + b \end{cases}$</p> <p>$m = \frac{3}{7}, b = \frac{4}{7}$</p> <p>$y = \frac{3}{7}x + \frac{4}{7}$</p> <p>(4)</p> <p>[Sol] $\begin{cases} -2 = 5m + b \\ 0 = 6m + b \end{cases}$</p> <p>$m = 2, b = -12$</p> <p>$y = 2x - 12$</p>	<p>□ II</p> <p>(1)</p> <p>[Sol] $\begin{cases} 2 = 2m + b \\ 7 = 4m + b \end{cases}$</p> <p>$m = \frac{5}{2}, b = -3$</p> <p>$y = \frac{5}{2}x - 3$</p> <p>(2)</p> <p>[Sol] $\begin{cases} 0 = -3m + b \\ -4 = 3m + b \end{cases}$</p> <p>$m = -\frac{2}{3}, b = -2$</p> <p>$y = -\frac{2}{3}x - 2$</p>

I

(1) $y = 3x$

(2) $y = x + 2$

(3) $y = -2x$

(4) $y = -\frac{1}{2}x + 3$

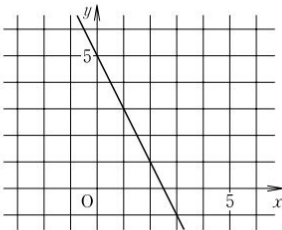
(5) $y = 3x + 3$

II

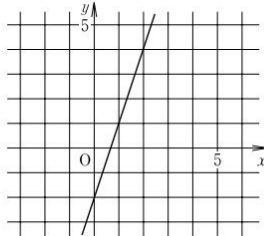
(1) $y = \boxed{-2}x + 5$

$\boxed{-2}$

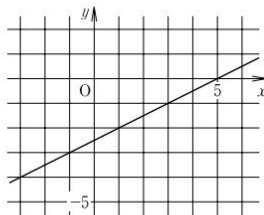
$\boxed{5}$



(2) $y = 3x - 2$ $\boxed{3}$, $\boxed{-2}$



(3) $y = \frac{1}{2}x - \frac{5}{2}$ $\boxed{\frac{1}{2}}$, $\boxed{-\frac{5}{2}}$



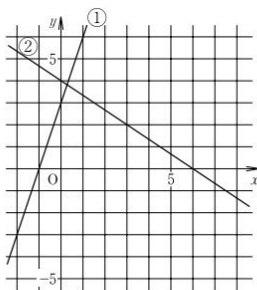
172

I

(1)

① $y = 3x + 3$

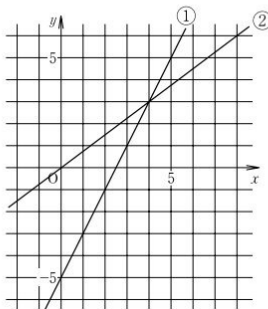
② $y = -\frac{2}{3}x + 4$



(2)

① $y = 2x - 5$

② $y = \frac{3}{4}x$



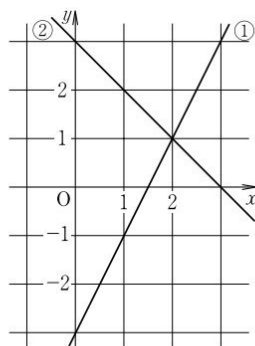
173

I

(1)

① $y = 2x - 3$

② $y = -x + 3$



(2, 1)

(2) (2, 1)

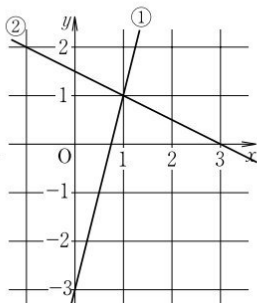
172

II

(1)

① $y = 4x - 3$

② $y = -\frac{1}{2}x + \frac{3}{2}$



(1, 1)

(2) (1, 1)

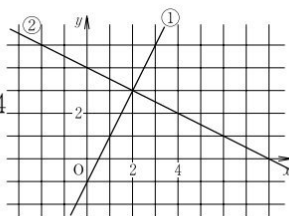
173

II

(1) (2, 3)

① $y = 2x - 1$

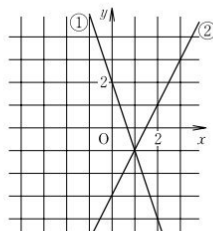
② $y = -\frac{1}{2}x + 4$



(2) (1, -1)

① $y = -3x + 2$

② $y = 2x - 3$



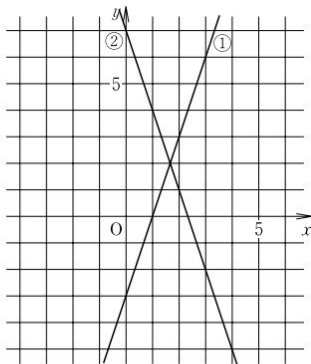
H 174-175

174

(1) $(\frac{5}{3}, 2)$

① $y = 3x - 3$

② $y = -3x + 7$

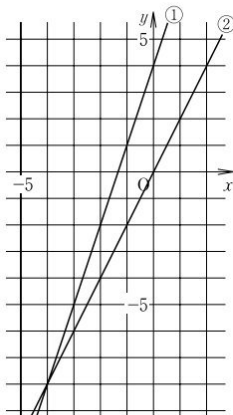


175

(1) $(-4, -8)$

① $y = 3x + 4$

② $y = 2x$

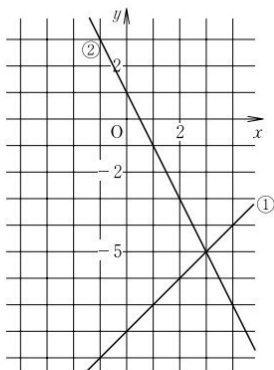


174

(2) $(3, -5)$

① $y = x - 8$

② $y = -2x + 1$

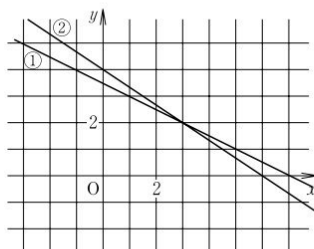


175

(2) $(3, 2)$

① $y = -\frac{1}{2}x + \frac{7}{2}$

② $y = -\frac{2}{3}x + 4$

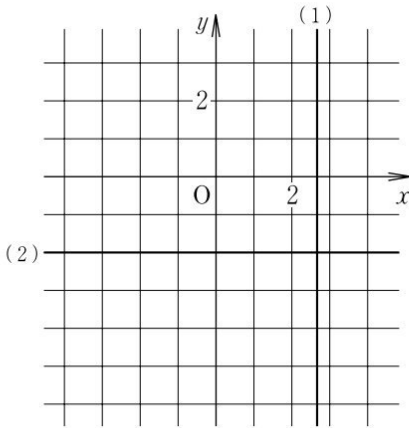


176

I

(1) $x = \frac{8}{3}$

(2) $y = -2$

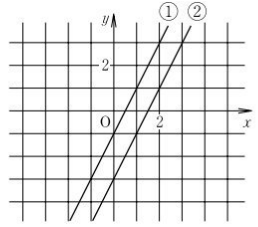


177

I

① $y = 2x - 1$

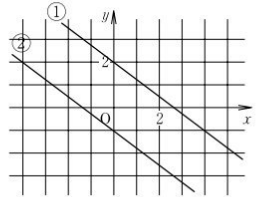
② $y = 2x - 3$



II

① $y = -\frac{3}{4}x + 2$

② $y = -\frac{3}{4}x - 1$

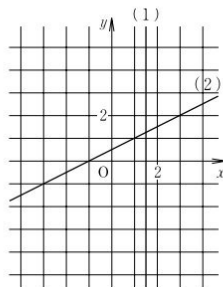


176

II

(1) $x = \frac{3}{2}$

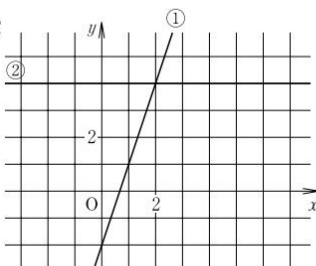
(2) $y = \frac{1}{2}x + \frac{1}{2}$



III (2, 4)

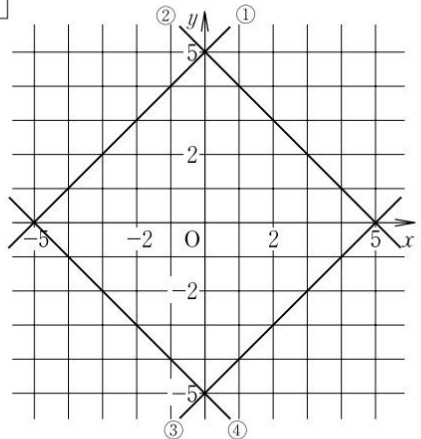
① $y = 3x - 2$

② $y = 4$



177

III



① $y = x + 5$

(1) (0, 5)

② $y = -x + 5$

(2) (5, 0)

③ $y = x - 5$

(3) (0, -5)

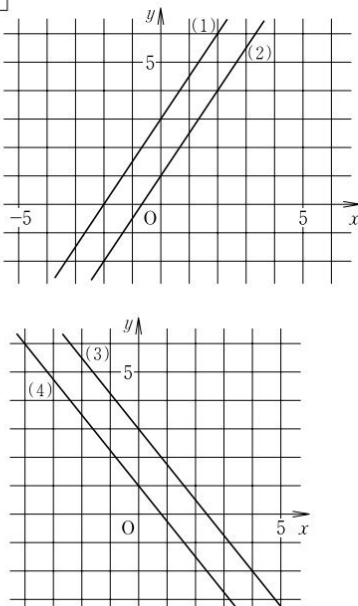
④ $y = -x - 5$

(4) (-5, 0)

H 178–179

178

I



II

179

I

(1) **①** and **⑥** ① $y = \frac{1}{4}x + 3$
 (2) **②** and **⑤** ② $y = -\frac{5}{4}$
 (3) **③** and **⑦** ③ $y = -x + 8$
 (4) **④** and **⑧** ④ $x = -2$
 ⑤ $y = 3$
 ⑥ $y = \frac{1}{4}x - 2$
 ⑦ $y = -x + 3$
 ⑧ $x = \frac{10}{3}$

II

(1)
 [Sol] $y = 2x + b$
 $b = 4$
 $y = 2x + 4$

178

II

(1) [Sol] $y = \frac{1}{2}x + b$
 $b = 7$ $y = \frac{1}{2}x + 7$

(2) [Sol] $y = -3x + b$
 $b = -7$ $y = -3x - 7$

(3) [Sol] $y = \frac{3}{2}x + b$
 $b = 11$ $y = \frac{3}{2}x + 11$

(4) [Sol] $y = -\frac{5}{4}x + b$
 $b = 0$ $y = -\frac{5}{4}x$

179

(2)
 [Sol] $y = -\frac{4}{3}x + b$
 $b = -4$ $y = -\frac{4}{3}x - 4$

(3)
 [Sol] First find the gradient of the line that passes through the points (4, 0) and (0, 3).
 Gradient = $-\frac{3}{4}$
 $y = -\frac{3}{4}x + b$
 $b = -2$ $y = -\frac{3}{4}x - 2$

180	181
<p>I</p> <p>(1) (The y-intercept is -1.) $y = -x - 1$</p> <p>(2) $y = \frac{2}{3}x - \frac{5}{3}$</p> <p>(3) (The line passes through the points that have the same x-coordinate, -4.) $x = -4$</p>	<p>(1) $\boxed{2}ab$</p> <p>(2) $15\boxed{ab}$</p> <p>(3) $\boxed{20}ab^2$</p> <p>(4) $24ac^2$</p> <p>(5) $\boxed{3}abc\boxed{x}y$</p> <p>(6) $\frac{5}{2}abxyz$</p> <p>(7) $6xyz$</p> <p>(8) $\frac{1}{2}abc^2$</p> <p>(9) $2a^2b^2c^2$</p> <p>(10) $-\boxed{6}xy$</p> <p>(11) $\boxed{-6}xy$</p> <p>(12) $-14xy$</p> <p>(13) $30xy$</p> <p>(14) $\boxed{-6}ab\boxed{x}$</p> <p>(15) $40abx$</p> <p>(16) $-\frac{8}{3}mxy$</p> <p>(17) $-\frac{1}{3}abc$</p> <p>(18) $-24xyz$</p>
180	181
<p>II</p> <p>(1) \boxed{y}-coordinate B</p> <p>(2) $\boxed{t} = ms + b$</p> <p>III</p> <p>(1) $\boxed{6}$</p> <p>(2) $\boxed{-3}$</p>	<p>(19) $\boxed{32}a^2$</p> <p>(20) $-\boxed{30}x^{\boxed{2}}$</p> <p>(21) $-18y^2$</p> <p>(22) $12x^2$</p> <p>(23) $-5a^2$</p> <p>(24) $\boxed{10}a^3$</p> <p>(25) $\boxed{6}x^{\boxed{3}}$</p> <p>(26) $-8y^3$</p> <p>(27) $3b^3$</p> <p>(28) $24a^4$</p>

H 182–183

182		183	
(1) $x^{\boxed{5}}$	(7) $b^{\boxed{7}}$	(1) $\boxed{-18}a^{\boxed{3}}b$	(6) $6a^7b^4$
(2) x^9	(8) c^5	(2) $\frac{\boxed{5}}{\boxed{4}}a^{\boxed{2}}b^{\boxed{6}}$	(7) $-\frac{5}{2}x^4y^5$
(3) x^4	(9) y^6	(3) $\boxed{-12}x^{\boxed{8}}y^{\boxed{6}}$	(8) $\frac{\boxed{6}}{5}a^{\boxed{2}}m n^{\boxed{2}}x$
(4) $y^{\boxed{4}}$	(10) z^8	(4) $\boxed{-18}x^{\boxed{6}}y^{\boxed{4}}$	(9) $\boxed{-8}a^{\boxed{2}}x^{\boxed{2}}y$
(5) $x^{\boxed{6}}$	(11) x^8	(5) $\boxed{0}$	(10) $\boxed{60}a^{\boxed{2}}b^{\boxed{3}}c$
(6) $a^{\boxed{9}}$			
182		183	
(12) $-\boxed{12}x^{\boxed{7}}$	(20) $21x^3$	(11) $\boxed{28}x^{\boxed{3}}y$	(17) $-8a^6b^6$
(13) $\boxed{15}a^{\boxed{6}}$	(21) $4a^4$	(12) $\boxed{-12}x^{\boxed{3}}y^{\boxed{2}}$	(18) $60a^3b^3$
(14) $\boxed{-6}a^{\boxed{5}}$	(22) $4a^7$	(13) $-16x^5y$	(19) $12x^5y^6$
(15) $\boxed{2}x^{\boxed{4}}$	(23) $\boxed{6}x^{\boxed{9}}$	(14) $3x^2y$	(20) $24a^9b^{10}$
(16) $\boxed{6}a^{\boxed{5}}$	(24) $\boxed{-6}x^{\boxed{9}}$	(15) $-20a^3x$	(21) $-30x^2y^2z^2$
(17) $10a^7$	(25) $-y^5$	(16) $3x^4y^4$	(22) $60x^6y^8z^4$
(18) $16a^8$	(26) $8a^6$		
(19) $-3x^3$	(27) $-27b^9$		

184		185	
(1) a^{15}		(1) $\boxed{-8}x^3$	
(2) a^8b^2		(2) $\boxed{16}a^8$	
(3) $\boxed{9}a^4$		(3) $\boxed{-27}a^6b^9$	
(4) $\boxed{25}a^6b^2$		(4) $\boxed{81}a^8b^{12}$	
(5) $\boxed{8}a^6$		(5) $-27a^3c^9$	
(6) $\boxed{8}a^6b^3c^9$		(6) $81a^8b^4$	
(7) $a^{12}b^{16}c^4$		(7) $\boxed{-243}a^5b^{10}c^{15}$	
(8) $\boxed{81}a^{12}b^8c^4$		(8) $64a^6b^{12}c^{18}$	
184		185	
(9) a^{12}	(14) $\frac{1}{8}a^3b^6c^9$	(9) $\boxed{-64}x^3$	(14) $-\frac{1}{32}a^{10}x^{15}$
(10) $\boxed{16}x^4y^8$	(15) $\frac{8}{27}x^6y^3z^9$	(10) $\boxed{16}a^{12}b^4$	(15) $-\frac{\boxed{8}}{27}a^6b^9$
(11) $\boxed{27}x^9y^3z^6$	(16) x^{24}	(11) $-\frac{1}{\boxed{32}}a^5b^{15}$	(16) $\frac{\boxed{16}}{81}a^8b^{12}$
(12) $16x^{16}y^4z^4$	(17) $\boxed{12}x^{24}$	(12) $\frac{1}{\boxed{16}}a^4b^8$	(17) $-\frac{27}{64}a^{12}b^9$
(13) $\frac{\boxed{1}}{4}a^2b^4c^6$	(18) $\boxed{4}^8$	(13) $\frac{1}{81}a^4b^{12}$	(18) $-\frac{32}{243}a^{10}b^5c^{15}$
	$\boxed{64}x^{24}$		

H 186–187

186		187	
(1) $x^{\boxed{5}}$	(6) $\boxed{5}x^{\boxed{4}}y^{\boxed{6}}$	(1) $x^{\boxed{2}}$	(6) $\boxed{16}^{\boxed{8}}\boxed{4}$ $64a^3b^8c^4$
(2) $x^{\boxed{6}}$	(7) $5a^2b^4c^{\boxed{6}}$	(2) $-x^{\boxed{3}}$	(7) $\boxed{16}^{\boxed{8}}$ $\boxed{48}a^5b^{\boxed{9}}$
(3) $2x^{\boxed{6}}$	(8) $2a^3b^{\boxed{3}}c^{\boxed{6}}$	(3) $\boxed{-27}x^{\boxed{6}}$	(8) $-54x^8y^7$
(4) $\boxed{4}x^{\boxed{6}}$	(9) $3xy^6z^{\boxed{6}}$	(4) $\boxed{-27}^{\boxed{6}}$ $\boxed{-54}x^{\boxed{6}}$	(9) $-18ax^4y^3$
(5) $\boxed{25}x^4y^{\boxed{6}}$	(10) $3a^2x^8y^4z^{12}$	(5) $\boxed{6} - 5xy^3z^{\boxed{6}}$	(10) $-\frac{8}{9}ab^5c^6$
186		187	
(11) $\boxed{3}^{\boxed{9}}$ $5x^9y^{\boxed{3}}z^{\boxed{9}}$	(16) $\boxed{8}^{\boxed{3}}$ $\boxed{72}a^{\boxed{5}}$	(11) $-a^3$	(16) $\boxed{6} - 2x^2y^{\boxed{3}}z^{\boxed{6}}$
(12) $2x^8y^2z^{\boxed{6}}$	(17) $72a^{12}$	(12) a^3	(17) $\frac{1}{2}a^4b^7$
(13) $\boxed{6}^{\boxed{4}}$ $18x^{\boxed{8}}y^{\boxed{4}}$	(18) $27x^9y^9$	(13) $\boxed{6} 3a^3b^6$	(18) $-\frac{1}{4}a^5b^9$
(14) $16x^3y^9$	(19) $32x^7y^8$	(14) $\boxed{4} - 3a^2b^4$	(19) $-\frac{1}{6}a^2x^3y$
(15) $48a^7b^6$	(20) x^6y^6	(15) $2ab^6c^3$	(20) $\frac{1}{12}a^3x^4y$

188	189	190
(1) 2^3 $-64x^7y^5$ (2) 25^6 4^4 8^8 $25^8 a^8 b^6 c^8$ (3) 9^2 4^4 -8^6 3^3 $-72x^8y^7$ (4) $-2x^7y^8$ (5) $a^6b^3x^6$ (6) $-\frac{3}{64}x^7y^8$	(1) x^9 (2) $24x^9$ (3) $-6x^6y^6$ (4) $12a^3b^4c$ (5) $-121a^4b^4c^4$ (6) $x^4y^4z^3$ (7) $-\frac{8}{21}a^6x^5y^6$	(1) $27x^3y^6z^9$ (2) $-\frac{8}{27}a^3b^6c^3$ (3) $-\frac{4}{3}a^2b^2x^7$ (4) $32x^5y^{10}z^3$ (5) 6^9 $64a^{12}b^{18}$ (6) 4^2 9^2 2^2 4^4 $45x^4y^6z^6$
188	189	190
(7) $25x^4y^6$ (8) $-5x^4y^6$ (9) a^2b^4 (10) $-a^2b^4$ (11) $16a^4b^8c^4$ (12) $-2a^4b^8c^4$ (13) $-3x^3y^6z^9$ (14) $-27x^3y^6z^9$	(8) $9a^6b^2c^4$ (9) $-64x^3y^9z^{12}$ (10) $-4x^3y^9z^{12}$ (11) 8^6 $\frac{8}{9}a^2b^6c^6$ (12) $\frac{4}{3}a^2b^5c^4$ (13) $-6a^{11}b^{13}$ (14) $-\frac{3}{64}x^7y^8$	(7) $a^2b^2c^2$ (8) $30a^6b^6c^4$ (9) $-3x^9y^3z^9$ (10) $-27a^5b^4c^6$ (11) $64x^6y^{18}$ (12) $20x^5y^3z^2$

H 191–193

191		192	193
(1) $a^{\boxed{3}}$		(1) $\boxed{4}b^{\boxed{5}}\boxed{c}$	(1) $\frac{8}{27}a^6b^9$
(2) $\frac{1}{a^3}$		(2) $4ab^6$	(2) $\frac{7}{3a^3}$
(3) a^3		(3) $6a^4b^4$	(3) $\frac{1}{\boxed{4}}a^{\boxed{3}}$
(4) $\frac{1}{a^4}$		(4) $3a^2b^2c^2$	(4) $\boxed{5ab^2} \frac{4}{5}ab^2$
(5) a^4		(5) $\boxed{2} 2a$	(5) $\boxed{9}^{\boxed{6}} \frac{x^5}{24y^3}$
(6) $\frac{1}{a^2}$		(6) $\boxed{9}^{\boxed{2}}\boxed{2} \frac{1}{9}b$	(6) $12yz^2$
(7) a^6		(7) $\frac{4}{3}xy^2$	
(8) a^9			
(9) a^8			
191		192	193
(10) $\boxed{3}$	(16) $2m^3$	(8) $\frac{\boxed{7}xy^{\boxed{2}}}{3z^{\boxed{2}}}$	(7) $-2x$
(11) -2	(17) $\boxed{6} a^{\boxed{3}}$	(9) $\frac{3a^3b^2}{2c^4}$	(8) $\boxed{ab} - 4b^2$
(12) $x^{\boxed{4}}$	(18) $\frac{1}{a}$	(10) $\frac{\boxed{4}x}{3y^{\boxed{2}}}$	(9) $-\frac{2x^2}{y^2}$
(13) $\frac{1}{x^2}$	(19) $3m$	(11) $\frac{3x^2}{2y^3}$	(10) $\boxed{36}^{\boxed{2}} \frac{\boxed{36}}{\boxed{2}}$
(14) $2x^{\boxed{2}}$	(20) $3x$	(12) $\frac{\boxed{8}a^{\boxed{2}}}{3b^{\boxed{2}}}$	$\frac{24b}{a}$
(15) $5a^2$		(13) $\frac{8a^6b^{12}}{3}$	(11) $\frac{a^4}{72b^6}$

194	195
<p>(1) $-\frac{3y^2}{2x}$</p> <p>(2) $\frac{2}{3y}$</p> <p>(3) $\frac{4x^4}{y^4}$</p> <p>(4) $-\frac{8a^2}{3b^2}$</p>	<p>(1) $2ab + \boxed{4}ac$</p> <p>(2) $3a^{\boxed{2}} - 12\boxed{ab}$</p> <p>(3) $-6a^2 - \boxed{15ab}$</p> <p>(4) $\boxed{-2}a^2 + 2\boxed{ab} + \boxed{2ac}$</p> <p>(5) $-3x^2 + 6xy - 15xz$</p> <p>(6) $-3a^{\boxed{2}}b + \boxed{6}ab^{\boxed{2}}$</p> <p>(7) $8a^2b - 12ab^2 + 16ab$</p> <p>(8) $-12x^3y + 4x^2y^2 - 8xy^3$</p>
194	195
<p>(5) $\boxed{a^5b^7} - \frac{\boxed{8}a}{\boxed{b^2}}$</p> <p>(6) $-\frac{10y^3}{x^3}$</p> <p>(7) $-48a^5b^2$</p> <p>(8) $\frac{1}{48}x^5y^4$</p>	<p>(9) $-6ab + \boxed{15}a$</p> <p>(10) $\boxed{-2}ab - \boxed{4}b^{\boxed{2}} + \boxed{10}b$</p> <p>(11) $-15a^2 - 20ab + 10a$</p> <p>(12) $20x^{\boxed{2}} - \boxed{10}xy$</p> <p>(13) $a^2 - 3ab + 2a$</p> <p>(14) $6x^2y + 9xy$</p> <p>(15) $12ab - 20b^2$</p> <p>(16) $-8a^4b^2 + 10ab^5$</p> <p>(17) $2x^2 - 3xy + 4x$</p>

H 196–198

196	197	198
<p>(1) $\boxed{12} \boxed{2}^{\boxed{2}} \boxed{10x}$ $\boxed{2}x^2 - \boxed{22}x$</p> <p>(2) $2x^2 + 9$</p> <p>(3) $\boxed{6} \boxed{2} \boxed{xy} \boxed{27x^2}$ $29x^2 - 21xy$</p> <p>(4) $-2x^2 - 3xy + 2y^2$</p> <p>(5) $x^4 - x$</p>	<p>(1) $x^2 - \boxed{7}$</p> <p>(2) $\boxed{8x} \boxed{3}x - \boxed{4}$</p> <p>(3) $2x - 1$</p> <p>(4) $2a^2 - 1$</p> <p>(5) $\boxed{6a}$ $4a^2 - 6a + 3$</p> <p>(6) $2x^2 - 4x + 1$</p>	<p>(1) $\boxed{a} + \boxed{b}$</p> <p>(2) $a - 2$</p> <p>(3) $a + 1$</p> <p>(4) $5x - 1$</p> <p>(5) $b - c + 1$</p> <p>(6) $3x^2 - x + 1$</p> <p>(7) $-3x + y$</p>
196	197	198
<p>(6) $\boxed{ab} \boxed{b^2}$ $a^2 - b^2$</p> <p>(7) $a^2 - 2ab + b^2$</p> <p>(8) 0</p> <p>(9) $-xy$</p> <p>(10) $a^3 + b^3$</p> <p>(11) $-4a - c$</p>	<p>(7) $-3a - 2$</p> <p>(8) $-3x - \frac{3}{2}$</p> <p>(9) $-2y + 3x$ $[3x - 2y]$</p> <p>(10) $3a - 5$</p> <p>(11) $2x - 3y$</p> <p>(12) $1 - 2ab^2$ $[-2ab^2 + 1]$</p> <p>(13) $2x^2 - 3x + \frac{3}{2}$</p> <p>(14) $3a^2 + 2a - \frac{3}{2}$</p>	<p>(8) $\boxed{b} \boxed{1} + \frac{\boxed{b}}{a}$</p> <p>(9) $3x - \frac{y}{x}$</p> <p>(10) $a + 2 + \frac{b}{a}$</p> <p>(11) $a + 1 + \frac{1}{a}$</p> <p>(12) $a^2 - a + 1$</p> <p>(13) $-x - 3$</p> <p>(14) $4a - 3$</p> <p>(15) $b - 2a + 1$ $[-2a + b + 1]$</p>

199	200
<p>(1) $-a^2 + a - 2$</p> <p>(2) $-a + 2b - \frac{3}{2}b^2$</p> <p>(3) $-2a + \frac{5}{2}b$</p> <p>(4) $5 - 3a^3x^2$ $[-3a^3x^2 + 5]$</p> <p>(5) $6x - 4y + 2$</p> <p>(6) $5x - 3xy + 1$</p>	<p>(1) $9a^5b^3c^3$</p> <p>(2) $2x^8y^7$</p> <p>(3) $-\frac{3a^3b^2}{4c^4}$</p> <p>(4) $\frac{2x^3}{9y}$</p> <p>(5) $\frac{3}{2}x^2y^3z^3 - 5xy^2z^5$</p>
199	200
<p>(7) $a + b$</p> <p>(8) $4a - 3$</p> <p>(9) $-3x + 2y$</p> <p>(10) $-a^2 + 3a - 2$</p> <p>(11) $-3x^3 + 1$</p> <p>(12) $2xy - 4y$</p>	<p>(6) $-\frac{4a}{b^2}$</p> <p>(7) $3x^2 - 4x + 1$</p> <p>(8) $6a^2b - 4a^3b$</p> <p>(9) $2x^3 - 16$</p> <p>(10) $-6ab + 30$</p>