



## 1

## 1.1

## 1.1.1

1

1.

( )

ex:

$$5x + 3y, 200 + x + 2y, \frac{10}{17}x + y - 6 \dots$$

2.

 $x, y$        $x \quad y$ 

ex:

$$\begin{aligned} x = 8, y = 2 &\Rightarrow 5x + 3y \\ &= 5 \times 8 + 3 \times 2 \\ &= 46 \end{aligned}$$

3.

•

$$\text{ex: } 2x, 5x \quad -1, 5 \quad 4x, 7$$

•

(a) +

$$\text{ex: } 6 + (2x - 3y) = 6 + 2x - 3y$$

(b) -

$$\text{ex: } 6 - (2x - 3y) = 6 - 2x + 3y$$

1

1.  $\epsilon$ 

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

$$1. -(5x + 2y - 4) - (2x - 3y + 1)$$

$$2. \frac{1}{3}(2x - y + 1) - \frac{2}{3}(4x + 2y + 5)$$

2

1.            10     $x$    50     $y$     870             $10x + 50y = 870$   
                                  $x, y$

2.             $x, y$                              $x$      $y$   
ex:

$x = 1, y = 5$      $x = -2, y = 0$      $2x + y = -4$     ?

$x = 1, y = 5 \Rightarrow 2x + y = 2 \times 1 + 5 = 7 \neq -4$   
 $x = -2, y = 0 \Rightarrow 2x + y = 2 \times -2 + 0 = -4 = -4$

$x = 1, y = 5$      $x = -2, y = 0$

1.1.2

2

1.            100    10    4     $x$     3     $y$     8

2.     $x, y$      $y = -x + 6$

$x$	-2			2
$y$		-2	3	

1.     $x$      $y$     100             $\frac{2}{5}$             ?

2.     $x, y$      $2x - 5y = 12$     ?

(A)  $x = 1, y = 2$             (B)  $x = 6, y = 0$             (C)  $x = -4, y = -4$             (D)  $x = -9, y = -6$



## 2

## 2.1

1

1.

2. (Cartesian coordinate)

- $O$
- $x$  ( )
- $y$  ( )
- 

3.

- $x = -2$   $x$   $y = 3$   $y$   $P$   
 $(-2, 3)$
- $P(a, b)$   $P$   $a$   $x$   $b$   $y$
- $P(a, b)$ 
  - i.  $P$   $x$   $|b|$
  - ii.  $P$   $y$   $|a|$
- - i.  $x$   $(a, 0)$
  - ii.  $y$   $(0, b)$

4

$A(1, 3), B(3, 5), C(-3, -3), D(-1, 5), E(4, -5)$

$A(1, 3), B(3, 4), C(-2, -3), D(-1, 2.5), E(2, -1)$

5

$A(-3, 5)$

(1)  $A \quad x \quad x \quad P \quad P \quad ? \quad A \quad x \quad ?$

(2)  $A \quad y \quad y \quad Q \quad Q \quad ? \quad A \quad y \quad ?$

$P(a, b) \quad P \quad x \quad x \quad A \quad (-2, 0) \quad y \quad B \quad (0, -4)$

(1)  $P \quad ?$

(2)  $P \quad x \quad y \quad ?$

### 2.1.1

6

1.  $A \quad (1, 0) \quad x \quad 5 \quad B \quad B \quad y \quad 4 \quad C \quad B, C \quad ?$

2.  $ABCD \quad B(1, -3), D(-4, 2)$

(1)  $C \quad ?$

(2)  $ABCD \quad ?$

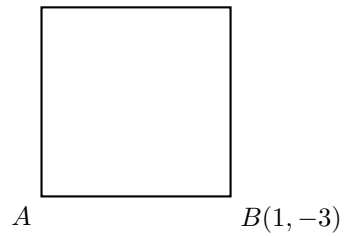
2

$$1. \quad (x, y) \quad / \quad a \quad (x + a, y), (x - a, y)$$

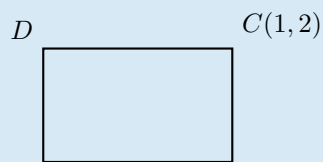
$$2. \quad (x, y) \quad / \quad a \quad (x, y + a), (x, y - a)$$

$$3. \quad x \quad y$$

- $(+, +) \quad x, \quad y$
- $(-, +) \quad x, \quad y$
- $(-, -) \quad x, \quad y$
- $(+, -) \quad x, \quad y$
- $x, \quad y$

 $D(-4, 2) \quad C$ 


$$3. \quad A(2, 3), \quad B(-2, -1), \quad C(4, -1) \quad ABC$$



1.  $ABCD$   $A(-4, -1)$ ,  $C(1, 2)$   $A(-4, -1)$   $B$ 
  - (1)  $D$  ?
  - (2)  $ABCD$  ?
2.  $A(-1, 5)$ ,  $B(-1, -3)$ ,  $C(-6, -1)$   $ABC$

## 7

1. ?  
 $A(3, 4)$ ,  $B(-8, -7)$ ,  $C(6, -9)$ ,  $D(0, 8)$ ,  $E(-3, 0)$
2.  $x > 3$ ,  $y < -2$  ?
  - (1)  $(x, y^2)$
  - (2)  $(x - 3, y + 6)$
  - (3)  $(xy, x - y)$
3.  $P(x, y)$   $|x + 3| + |2x - y + 4| = 0$ 
  - (1)  $x$ ,  $y$
  - (2)  $P$  ?



1.  $(ab, a)$  ?
  - (1)  $(a^2, -b)$
  - (2)  $(a - b, -a)$
  - (3)  $(2b - 3a, -b^2)$
2.  $Q(x, y) = (x - y + 3)^2 + (2x + y + 5)^2 = 0$ 
  - (1)  $a, b$
  - (2)  $Q$  ?

## 2.1.2

8

1.  $\begin{cases} x - y = 3 \\ x + y = -1 \end{cases}$
  2. ? ? ?
- (A)  $\begin{cases} 2x - y = 3 \\ 2x + y = -1 \end{cases}$

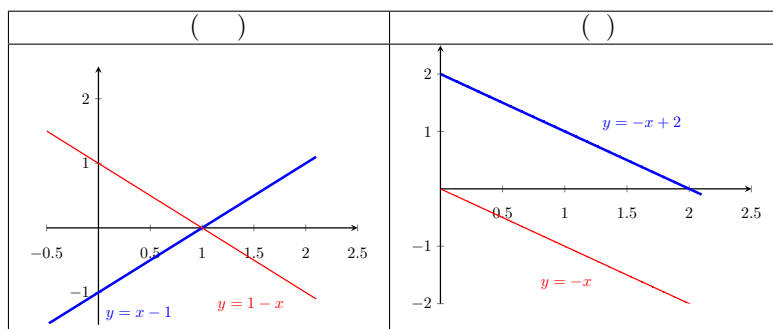
(C)  $\begin{cases} -x - y = 3 \\ -x + y = -1 \end{cases}$

(B)  $\begin{cases} 3x - y = 3 \\ 3x + y = -1 \end{cases}$

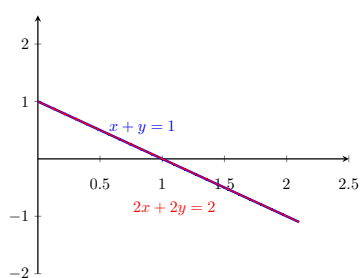
(D)  $\begin{cases} 2x - 5y = 5 \\ x + y = -1 \end{cases}$

5

1. 3



( )



2.

$$\begin{cases} a_1x + b_1y = c_1 \\ a_2x + b_2y = c_2 \end{cases}, (a_1, a_2, b_1, b_2, c_1, c_2 \neq 0)$$

$$\begin{aligned} & \bullet \frac{a_1}{a_2} \neq \frac{b_1}{b_2} \Rightarrow \begin{cases} 1 \end{cases} \\ & \bullet \frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2} \Rightarrow \begin{cases} \end{cases} \\ & \bullet \frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2} \Rightarrow \begin{cases} \infty \end{cases} \end{aligned}$$

1. 
$$\begin{cases} 2x + y = 4 \\ 2x - y = 0 \end{cases}$$

2. ? ? ?

(A) 
$$\begin{cases} 4x - 2y = -2 \\ -4x - y = -2 \end{cases}$$

(C) 
$$\begin{cases} 5x + 3y = 1 \\ -5x - 3y = 1 \end{cases}$$

(B) 
$$\begin{cases} -x + 3y = -2 \\ x - 3y = 2 \end{cases}$$

(D) 
$$\begin{cases} 2x - 3y = 4 \\ x + y = -2 \end{cases}$$

## UPUP

1.  $A(5, 8), B(3, 2), C(k, k + 1)$   $k$
2.  $a, b$   $a, b \neq 0$   $\frac{x}{a} + \frac{y}{b} = 1$   $(a, b)$  ?
3.  $(143, 52), (145, 58)$   $6$   $8$   $2$  ?
4.  $A(7, 11), B(-9, 11), C(m, n)$   $\overline{AC} = \overline{BC}, \overline{CD} \perp \overline{AB}$   $\triangle ABC$   $104$   $C$

## 2.2

### 2.2.1

$$3 \quad ax + by = c$$

1.

ex:

$$x = 0, y = 5 \quad x + 3y = 15 \quad (0, 5)$$

2.

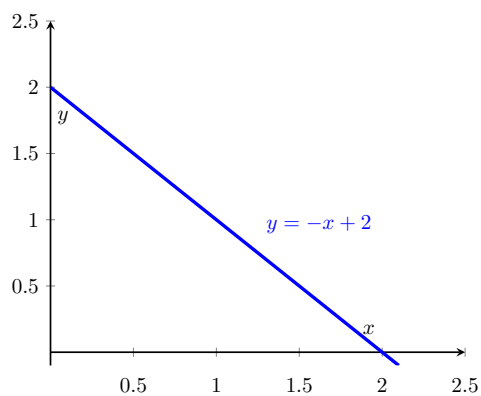
(1)

(2)

$$(x, y = 0)$$

$$(3) \quad ax + by = c, (a, b \neq 0)$$

$$(4) \quad ax + by = c \quad c = 0$$



$$(0, 2), (1, 1), (2, 0), \dots$$

$$y = -x + 2$$

9

1.  $2x + 5y = 4$

2.  $(3, a), (b, -2) \quad 5x - 3y = 15 \quad (a, b) = ?$

3.  $3x - (2k - 1)y = 6 - 2k \quad k$

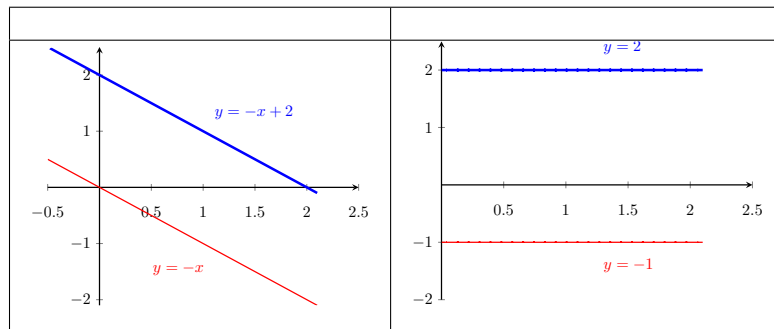
1.  $x - 5y = 10$

2.  $P(2, 3) \quad 2x + ay = 7 \quad a = ?$

3.  $2x - y + 2m - 4 = 0 \quad (-3, n) \quad m, n$

## 2.2.2

4



1.  $ax + by = c, (a, b \neq 0)$   $y = -x + 2$   $c = 0$   $y = -x$  ( )
2. (1)  $y = k, k \neq 0$   $y = k$   $y = -1$   
 (2)  $y = 0$   $x$  ( )
3. (1)  $x = 0$   $y$   
 (2)  $x = h, h \neq 0$   $x = h$   $x = 2$  ( )

10

1.

$$(1) \quad (4, -5) \quad x$$

$$(2) \quad (4, -5) \quad y$$

$$2. \quad (3, 1), (-4, -2) \quad ax + by = 1 \quad (a, b)$$

$$3. \quad O \quad y = 2x + 6 \quad x, y \quad A, B \quad A, B \quad \triangle OAB$$

$$1. \quad y = ax + b \quad (1, 8), (-2, 5)$$

$$2. \quad ax - 3y = 8 \quad x \quad (2, 0) \quad a$$

3

3.1

3.1.1

1

1.  $a, b (b \neq 0)$       $a : b$     $a$     $b$       $a \div b \left( = \frac{a}{b} \right)$     $a$     $b$     $\frac{a}{b}$

2.

3.     /

ex:

$a : b = (a \times m) : (b \times m), m \neq 0$

$a : b = (a \div m) : (b \div m), m \neq 0$

4.

11

1.     1600     768     ?   ?

2.     3 kg     360 g     ?   ?

3.

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

(2) 3.2 : 3.4

(3)  $3\frac{3}{4} : 2\frac{1}{7}$

4. A, B     120 ml, 200 ml     2, 3     ?

5.

(1)  $\frac{1}{5} : \frac{1}{7}$

(2) 54 : 72

(3)  $1\frac{3}{4} : 2\frac{1}{7}$

1.

(1)  $\frac{7}{3} : \frac{5}{3}$

(2)  $5.1 : 3.4$

(3)  $6\frac{3}{5} : 3\frac{1}{4}$

2.

(1)  $2.8 : 4.2$

(2)  $75 : 45$

(3)  $2\frac{3}{4} : 7\frac{1}{3}$

3.

600

150

900

210

300

60

?



## 3.2

## 3.2.1

1

$$x, y \quad x \quad y \quad y : x \quad k \quad x, y \quad y = kx, (k \neq 0)$$

12

1.  $y \quad x \quad x = 6, y = 5$

(1)  $y \quad x \quad ?$

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

2.  $1000000 \quad 2 : 3$

3.  $50 \text{ kg} \quad 30 \text{ kg} \quad 6 \text{ cm} \quad 40 \text{ kg} \quad ?$

1.  $y \propto x$   $x = \frac{14}{3}, y = \frac{7}{6}$

(1)  $y \propto x$  ?

(2)  $y = 250, x = ?$

2.  $\frac{1}{2} \propto \frac{1}{19.6 m}$

(1)  $\frac{1}{2} \propto \frac{1}{?}$

(2)  $\frac{1}{2} \propto \frac{1}{?}$

### 3.2.2

2

$$x, y \propto x \propto y \propto y : x \propto k \propto x, y \propto xy = k, (k \neq 0)$$

13

1.  $y \propto x$   $x = \frac{3}{14}, y = \frac{7}{6}$

(1)  $y \propto x$  ?

(2)  $x = 300, y = ?$

2.  $25000 \propto 1000 \propto 1600 \propto ?$

3.  $10 \propto 24 \propto 4 \propto ?$

1.  $y \propto x$   $x = 3, y = -\frac{1}{6}$

(1)  $y \propto x$  ?

(2)  $y = \frac{2}{5}, x = ?$

2.  $A \propto B$   $3\frac{1}{3} \propto 3\frac{3}{4} \propto ?$

3.  $8 \propto 12 \propto 16 \propto ?$

UPUP

1.     $A$     $B$      $75\text{ km}$      $2$      $20\%$      $?$
2.     $\frac{1}{2x+1}$     $\frac{1}{y-4}$      $x=1$  ,  $y=0$      $y=8$ ,  $x=?$
3.     $y$     $x^2$      $x$     $3$      $y$      $?$
4.     $400\text{ m}$      $50\text{ m}$      $100\text{ m}$
- (1)
- (2)     $800\text{ m}$      $70\text{ m}$      $?$

3.3

3.3.1

4

4.1

4.1.1 ( )

1

1.  
 $a, b$   $a > b, a = b, a < b$

2.  
(1)  $a > b, b > c \Rightarrow a > c$   
(2)  $a < b, b < c \Rightarrow a < c$   
(3)  $a = b, b = c \Rightarrow a = c$

3.  
 $<, >, \leq, \geq, \neq$

4.  

$>$		
$<$		
$\leq$		( )
$\geq$		( )
$\neq$		

14

1.  
(A)  $2a - 34$  (B)  $3x - 5$   
(C)  $2a - 7 - 10$  (D)  $x - 4$
2.  $1000 - x = 400$
3.  $40 - 100 - x = 50 - 4800$

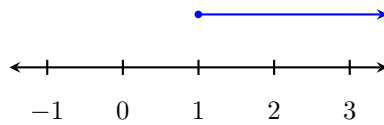
1.      260      160              20      5       $x$
2.      40      14       $x$
3. 3      100               $x$       300

2

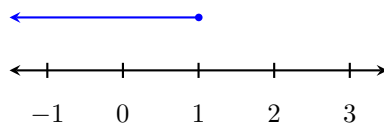
1.     $x$                        $x$

2.

(1)  $x \geq 1$ :



(2)  $x \leq 1$ :



15

1.       $3x - 5 > 3$  ?

- (A) 1  
(C) 3

- (B) 2  
(D) 4

2.  $x = 3$  ?

- (A)  $2x - 1 > 4$   
(C)  $\frac{3x}{2} + 1 \leq 5$

- (B)  $3x + 6 \geq 20$   
(D)  $-2x + 3 < 1$

3.

(1)  $x < -1$

$$(2) \ x \geq 2$$

1.  $x = -3$  ?

(A)  $-5x - 9 < 4$

(B)  $2x + 6 > 0$

(C)  $\frac{x}{3} + 1 < 2$

(D)  $2x < 1$

2.

(1)  $x \geq 3$

(2)  $x < -2$

4.2

4.3