

## Homework

### 7A. The number plane

1.

N/A

2.

a) B      b) B      c) C      d) E

**There are some typos in the question, correct them into the following numbers**

a. A (3, 2), B (1, 1), C (2, 1), D (4, 3), E (5, 4)

b. A (-2, -1), B (1, 1), C (-1, 0), D (1, 2), E (3, 4)

c. A (-3, 5), B (-1, 7), C (-2, 7), D (0, 8), E (-4, 4)

d. A (1, -3), B (2, -2), C (3, -1), D (4, 0), E (6, 1)

3.

**a:** (2, 2)

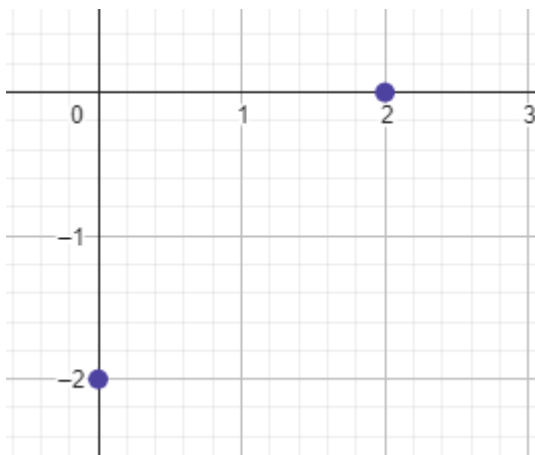
**b:** (-5, 2)

**c:** (1, 1)

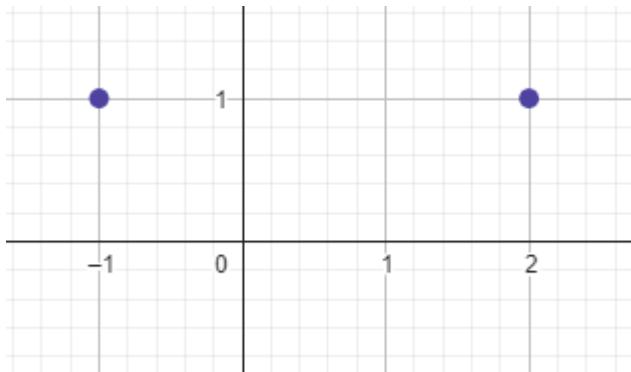
4.

**Points:** (0, -2), (1, -1), (2, 0)

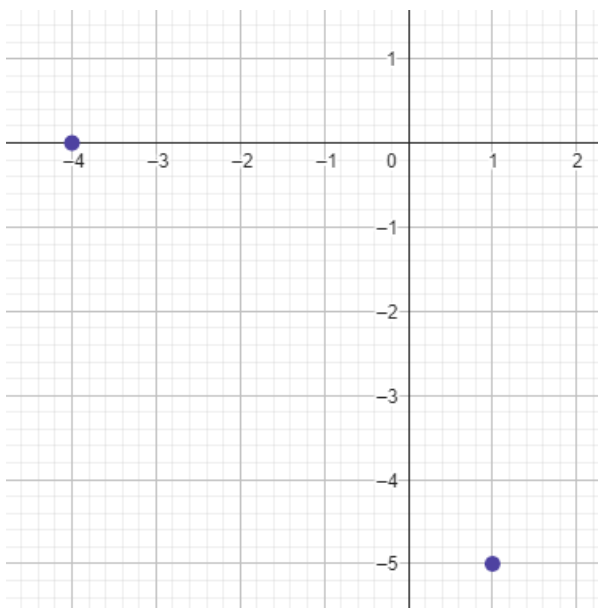
a)



b) Points:  $(-1, 1)$ ,  $(0, 1)$ ,  $(1, 1)$ ,  $(2, 1)$



c) Points:  $(-4, 0)$ ,  $(-3, -1)$ ,  $(-2, -2)$ ,  $(-1, -3)$ ,  $(0, -4)$ ,  $(1, -5)$



5.

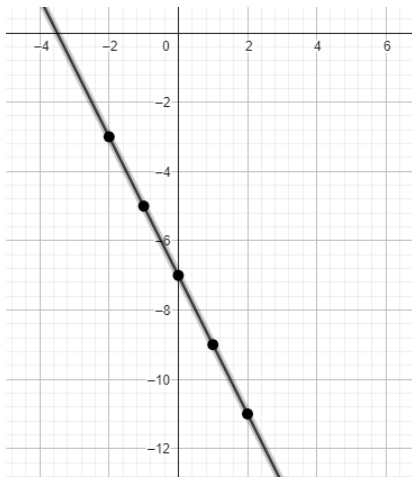
- a: Point lies on the **negative y-axis**.
- b: Point lies on the **positive x-axis**.
- c: Point lies in **Quadrant I**.

6.

- a: 4 units
- b: 4 units
- c: 4 units
- d: 5 units
- e: 5 units

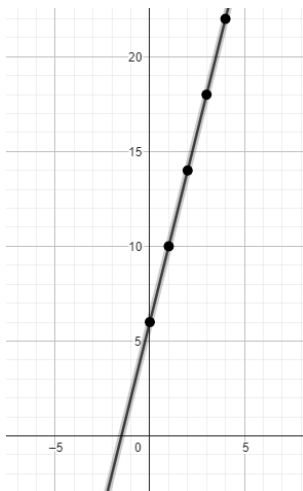
## 7B. Rules, tables and graphs

1.



$x$ :	$f(x)$ :
-2	-3
-1	-5
0	-7
1	-9
2	-11

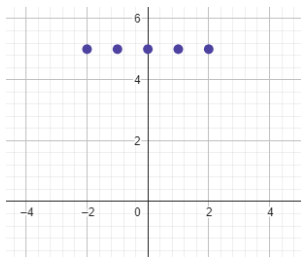
2.



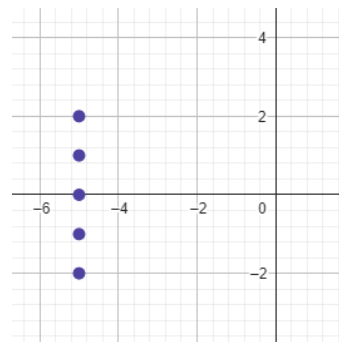
$x$ :	$f(x)$ :
0	6
1	10
2	14
3	18
4	22

3.

a)



b)



4.

1. For  $y = 4x - 5$ :

- y-intercept:  $(0, -5)$
- x-intercept:  $(\frac{5}{4}, 0)$

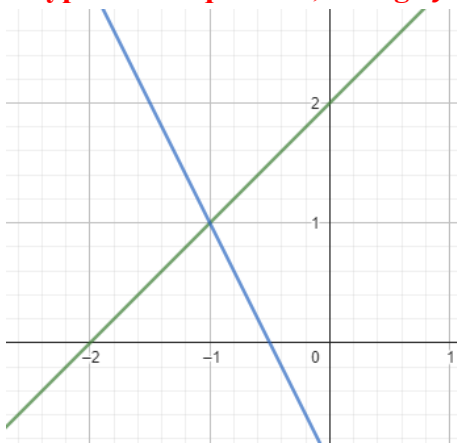
2. For  $y = 2 - 5x$ :

- y-intercept:  $(0, 2)$
- x-intercept:  $(\frac{2}{5}, 0)$

3. For  $y = -x - 3$ :

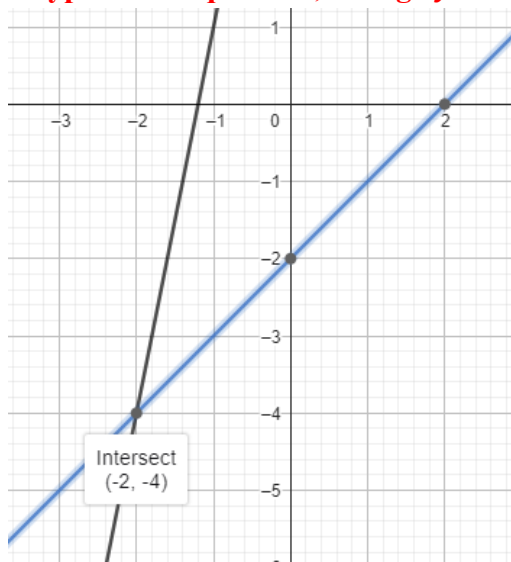
- y-intercept:  $(0, -3)$
- x-intercept:  $(-3, 0)$

5. **A typo in this question, change  $y = 3x + 2$  into  $y = x + 2$**



Intersection  $(-1, 1)$

6. **A typo in this question, change  $y = x - 3$  into  $y = x - 2$**



### 7C. Finding the rule using the tables

1.

- a.  $y = -2x + 4$
- b.  $y = 3x + 8$
- c.  $y = -2x + 5$
- d.  $y = 3x$

2.

- a. If  $x$  increases by 1,  $y$  decreases by 1
- b.  $y = -x + 3$

3.

- a.  $y = x + 5$
- b.  $y = 2x$
- c.  $y = -2x + 5$

## 7D. Using graphs to solve linear equations

1.

- a.  $x=1.5$
- b.  $y=-3$
- c.  $x=2.5$
- d.  $x=3$
- e.  $y=5$
- f.  $y=-5$

2.

- a.
  - i. 60mm
  - ii. 135mm
- b. 2 days
- c. 3 days

3.

- a. Alice line starts at 30; Bob line starts at 15
- b.
  - i.  $n=\frac{5}{7}$
  - ii.  $n=5$
- c.  $n=0, A=30$ ;  
 $n=1, A=37$   
 $n=2, A=44$
- d.  $n=0, A=15$   
 $n=1, A=24$   
 $n=2, A=33$
- e.  $30 + 7n = 15 + 9n, n = 7.5$

## 7E. The $x$ - and $y$ - intercepts

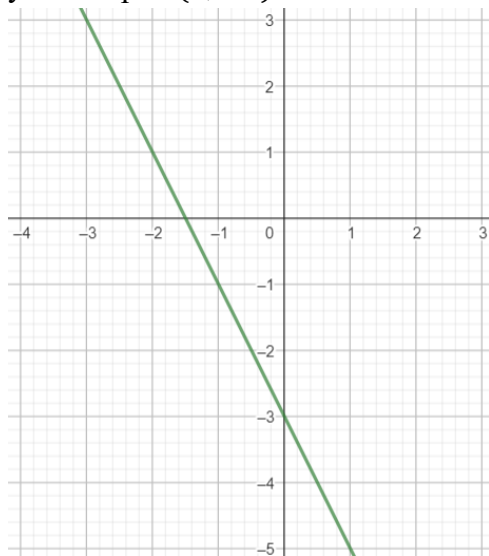
1.

Equation	$y$ -intercept	$x$ -intercept
$y = -x - 6$	$(0, -6)$	$(-6, 0)$
$y = 3x + 4$	$(0, 4)$	$(-\frac{4}{3}, 0)$
$y = x - 7$	$(0, -7)$	$(7, 0)$
$y = 3x - 20$	$(0, -20)$	$(\frac{20}{3}, 0)$
$y = 5x + 6$	$(0, 6)$	$(-\frac{6}{5}, 0)$
$y = 7x - 5$	$(0, -5)$	$(\frac{5}{7}, 0)$
$y = 6x - 15$	$(0, -15)$	$(\frac{5}{2}, 0)$
$y = -x$	$(0, 0)$	$(0, 0)$
$y = -3x + 4$	$(0, 4)$	$(\frac{4}{3}, 0)$
$y = x - 12$	$(0, -12)$	$(12, 0)$
$y = -x - 8$	$(0, -8)$	$(-8, 0)$
$y = 2x + 1$	$(0, 1)$	$(-\frac{1}{2}, 0)$

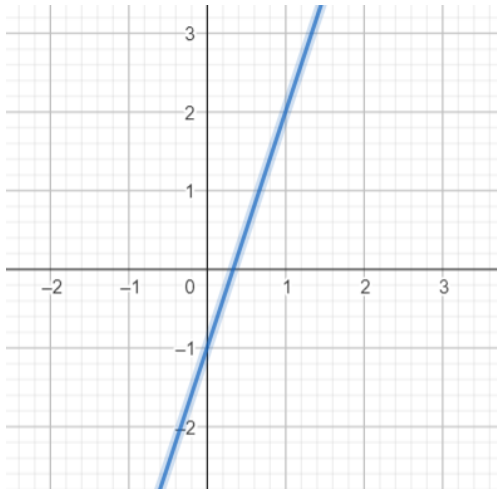
2.

$x$ -intercepts:  $(-\frac{2}{3}, 0)$

$y$ -intercepts:  $(0, -3)$



3. x-intercepts:  $(-\frac{1}{3}, 0)$   
 y-intercepts:  $(0, -1)$



4.

$(0, -2)(\frac{2}{3}, 0)$ $A = \frac{1}{2} \times \frac{2}{3} \times 2 = \frac{2}{3}$	$(0, -6)(3, 0)$ $A = \frac{1}{2} \times 3 \times 6 = 9$
$(0, -4)(-4, 0)$ $A = \frac{1}{2} \times 4 \times 4 = 8$	$(0, -6)(-2, 0)$ $A = \frac{1}{2} \times 6 \times 2 = 6$



## 7F. Gradient

1. n/a

2.

1	2	$\frac{1}{3}$
$\frac{1}{2}$	$-\frac{2}{5}$	1

3.

a.  $\frac{8}{3}$

b. 1

c. 4

d.  $-\frac{5}{3}$

e. -2

f. 1

g.  $-\frac{4}{3}$

h.  $\frac{4}{3}$

i.  $\frac{7}{4}$

j.  $-\frac{5}{3}$

k.  $\frac{8}{5}$

l. 1

## 7G. Gradient-intercept form

1.

- a. Gradient: 3; y-int: (0, -1)
- b. Gradient:  $-\frac{1}{4}$ ; y-int: (0, 3)
- c. Gradient:  $\frac{5}{2}$ ; y-int: (0, 2)
- d. Gradient:  $-\frac{4}{3}$ ; y-int: (0, -2)
- e. Gradient: 6; y-int: (0, -5)
- f. Gradient:  $-\frac{3}{2}$ ; y-int: (0, 7)
- g. Gradient:  $\frac{3}{4}$ ; y-int: (0, -4)
- h. Gradient:  $\frac{1}{5}$ ; y-int:  $(0, \frac{1}{2})$

2.

$y=2x+3$	$y=x+5$	$y=-x+2$
$y=4x-2$	$y=2x-1$	$y=-3x-3$
$y=2x+1$	$y=-x-3$	$y=-3x+4$

## 7H. Application of straight-line graphs

1.

a.

t	0	1	2	3	4	5
d	0	10	20	30	40	50

b.



c.

$$d = 10t$$

d.

$$d = 10 \times 3.5 = 35km$$

e.

$$25 = 10 \times t$$

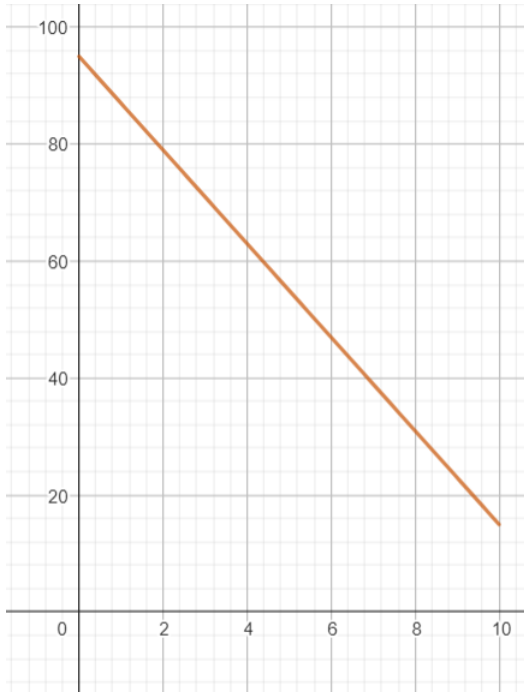
$$t = 2.5h$$

2.

a.

t	0	1	2	3	4	5	6	7	8	9	10
T	95	87	79	71	63	55	47	39	31	23	15

b.



c.

$$T = 95 - 8t$$

d.

$$T = 95 - 8 \times 6.5 = 43$$

e.

$$35 = 95 - 8t$$

$$t = 7.5$$