The National Orthodox School Shmaisani

Answer Key Chapter 14

Student book

Chapter 14

Check in

1 P(1, 4), Q(3, 0), R(5, 1)

2 a -24 b 6 c -8 d 7

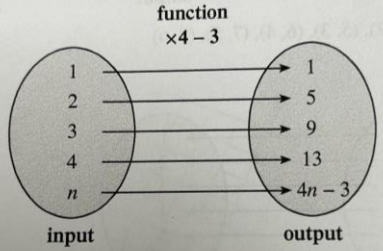
3 a 5 b -22 c 75

Exercise 14A

1

Input	1	2	3	4	n
Output	10	17	24	31	$7n + 3$

2



3 a i $\times 10 + 2$ ii $10n + 2$

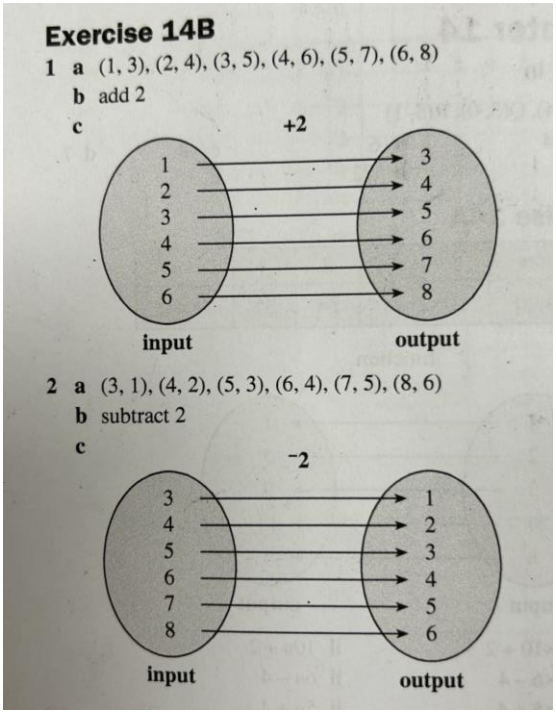
b i $\times 6 - 4$ ii $6n - 4$

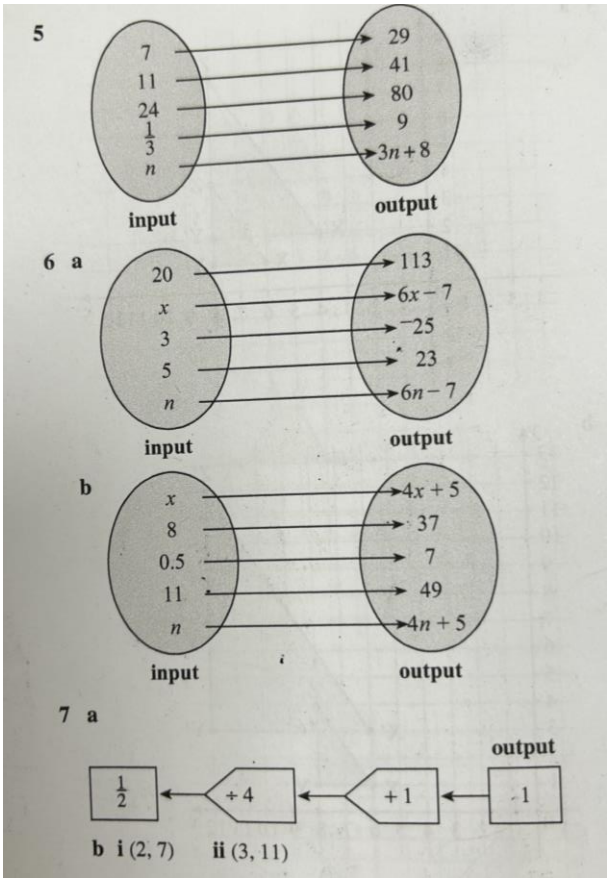
c i $\times 5 + 4$ ii $5n + 4$

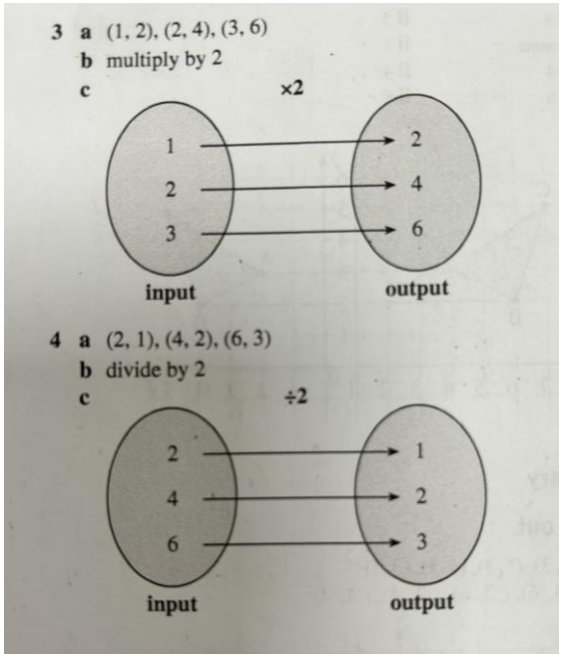
d i $\times 15 - 2$ ii $15n - 2$

4 a i $\times 2 + 1$ ii $2n + 1$

b i $\times 2$ ii $2n$







Exercise 14C

1 (1, 3), (2, 4), (3, 5), (4, 6), (5, 7)

2 (1,1), (2,3), (3,5), (4,7), (5,9)

3 a The coordinates are: (1, 1), (2, 4), (3, 7), (4, 10), (5, 13)

b The coordinates are: (1, 5), (2, 7), (3, 9), (4, 11), (5, 13)

c The coordinates are: (1, 1), (2, 2), (3, 3), (4, 4), (5, 5)

4 a (1, 6), (2, 8), (3, 10), (4, 12), (5, 14), (6, 16)

5 a (−2, −1), (−1, 1), (0, 3), (1, 5), (2, 7)

b (−2, −3), (−1, −1), (0, 1), (1, 3), (2, 5)

c (−2, −7), (−1, −5), (0, −3), (1, −1), (2, 1)

Lines are parallel.

6 a (−2, −2), (−1, 0), (0, 2), (1, 4), (2, 6)

b (−2, 0), (−1, 1), (0, 2), (1, 3), (2, 4)

c (−2, −4), (−1, −1), (0, 2), (1, 5), (2, 8)

Lines are at various levels of steepness but all lines pass through (0, 2)

Exercise 14D

1 b (1, 2), (2, 4), (3, 6), (4, 8), (5, 10) **d** $y = 2x$

2 a (1, 2), (2, 5), (3, 8), (4, 11), (5, 14); $y = 3x - 1$

b (1, 1.5), (2, 2.5), (3, 3.5), (4, 4.5), (5, 5.5); $y = x + 0.5$

c (1, −1), (2, 1), (3, 3), (4, 5), (5, 7); $y = 2x - 3$

d (1, 4), (2, 6), (3, 8), (4, 10), (5, 12); $y = 2x = 2$

3 a multiply **b** subtract

c multiply; 2; subtract **d** halve; add

e −1; add; subtract

4 a ×3 **b** +4 **c** −6 **d** ×2, +4

e ×3, −9 **f** ÷4, +7 **g** +2, ÷5 **h** ×3, +2, ÷4

5 In case you make a mistake calculating a point

6 a

x	−2	−1	0	1	2	3
y	−1	1	3	5	7	9

7 a

x	−2	−1	0	1	2	3
y	2	3	4	5	6	7

b

x	−2	−1	0	1	2	3
y	−2	1	4	7	10	13

c

x	−2	−1	0	1	2	3
y	−8	−5	−2	1	4	7

d

x	-2	-1	0	1	2	3
y	-9	-7	-5	-3	-1	1

e

x	−2	−1	0	1	2	3
y	−16	−11	−6	−1	4	9

f

x	−2	−1	0	1	2	3
y	1	1.5	2	2.5	3	3.5

8 a

x	−5	−4	−3	−2	−1	0	1	2	3	4	5
y	−20	−15	−10	−5	0	5	10	15	20	25	30

b

x	−5	−4	−3	−2	−1	0	1	2	3	4	5
y	−8	−5	−2	1	4	7	10	13	16	19	22

c

x	−5	−4	−3	−2	−1	0	1	2	3	4	5
y	−7	−5	−3	−1	1	3	5	7	9	11	13

9 a (7, 77) **b** (5, 57) **c** (−2, −13) **d** (−1, −3)

10 (3, 12)

11 all except (−1, 6)

12 a

Line 1: A (−4, 3) B (0, 3) C (3, 3) D (7, 3)

Line 2: E (−2, −3) F (−2, 0) G (−2, 2) H (−2, 6)

b Line 1: $y = 3$, Line 2: $x = -2$

13 a A (−1, −1) B (1, 3) C (2, 5) D (−2, −3) E (3, 7)

b It is 1 more than twice the x–coordinate **c** $y = 2x + 1$

14 d (0, 5), (0, 7), (0, 3)

e The y–coordinate is the number on its own (not next door to the x)

f $y = 5x + 5$

15 a i −2, −1, 0, 1, 2, 3 **ii** −4, −2, 0, 2, 4, 6

iii −6, −3, 0, 3, 6, 9 **iv** −8, −4, 0, 4, 8, 12

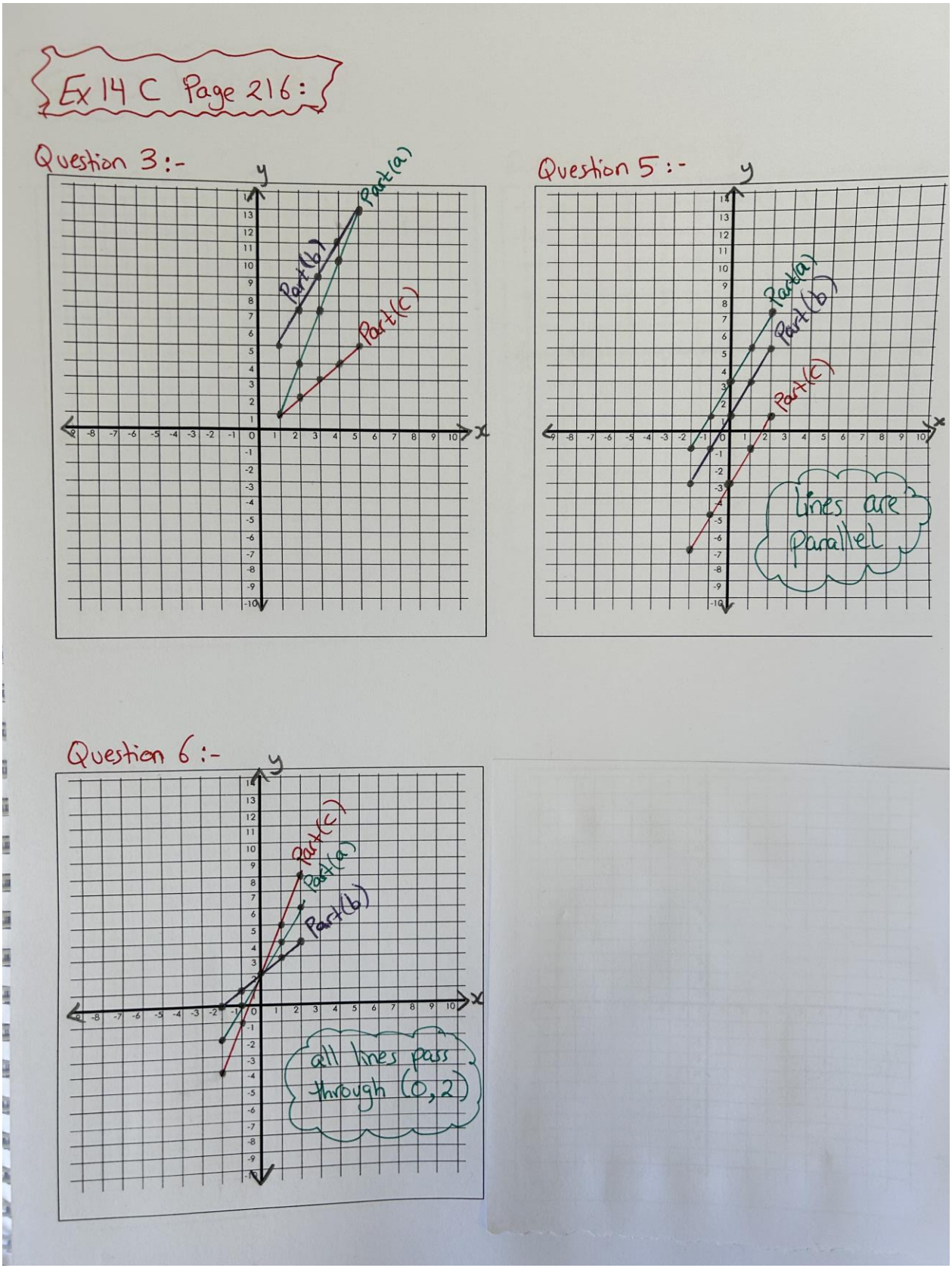
c $y = 4x$

d i 2, 1, 0, −1, −2, −3 **ii** 4, 2, 0, −2, −4, −6

iii 6, 3, 0, −3, −6, −9 **iv** 8, 4, 0, −4, −8, −12

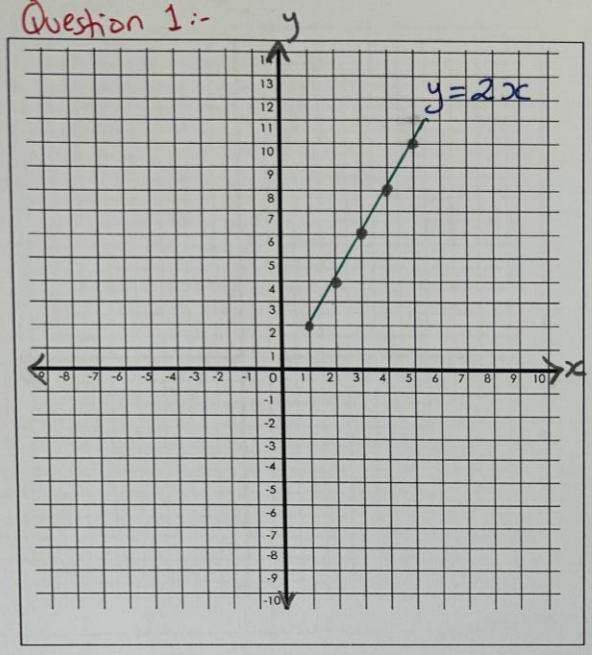
e Lines slope the opposite direction

Graphs that we drew in class:

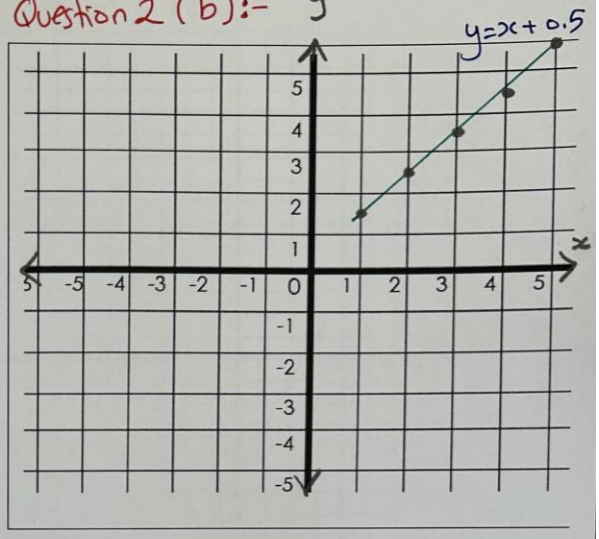


Ex 14D Page 218:

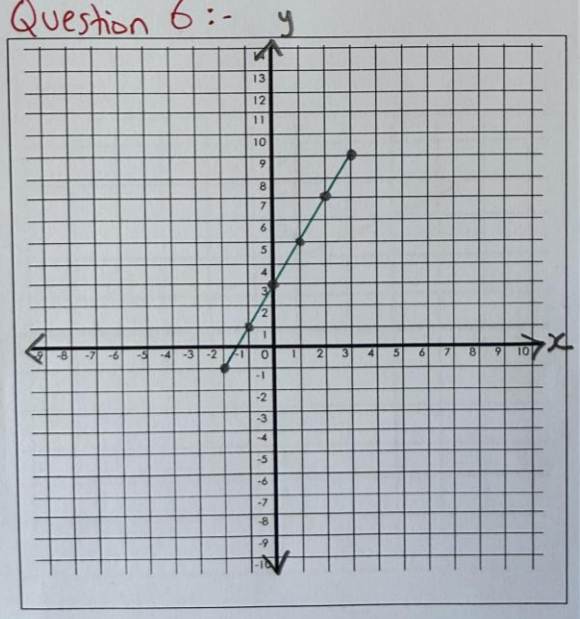
Question 1:-



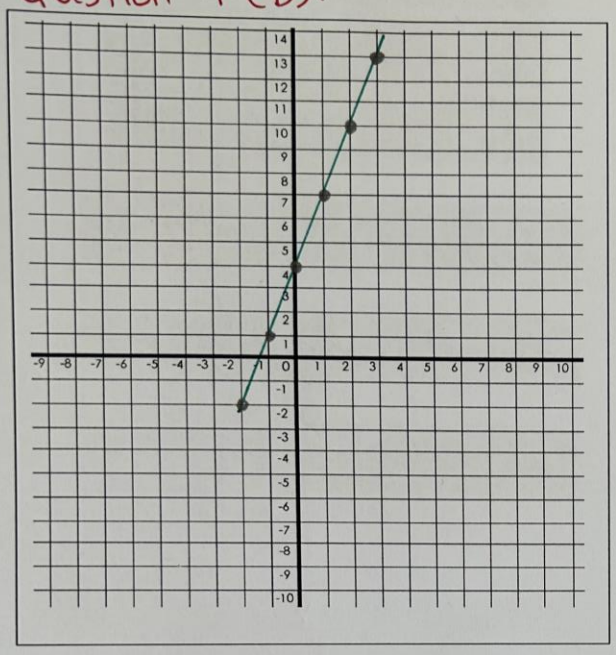
Question 2 (b):-



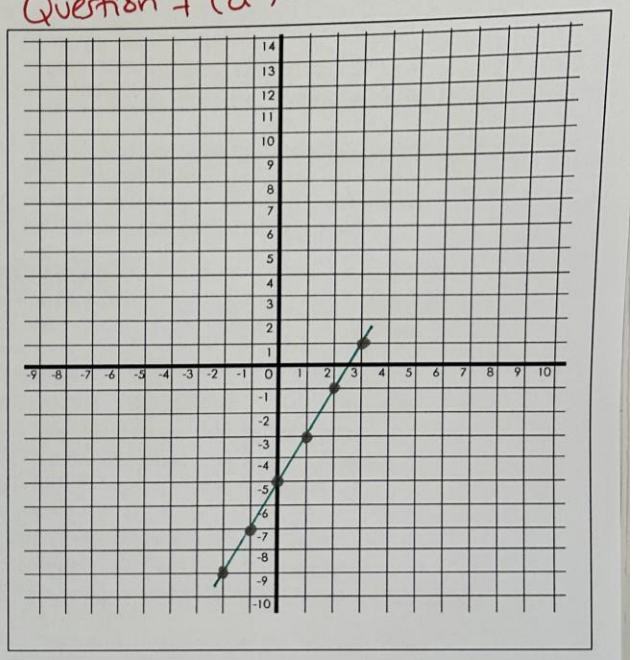
Question 6:-



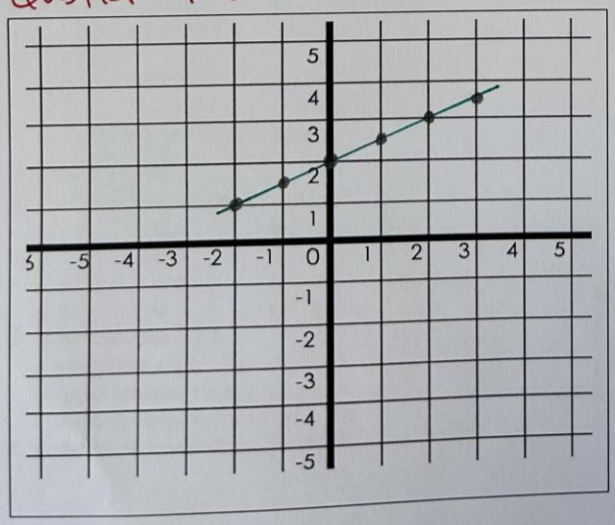
Question 7 (b):-



Question 7 (d):-



Question 7 (f):-



Exercise 14E

1 She has m and c the wrong way round

2 **a** **i** 5 **ii** 8 **b** **i** $^{-}1$ **ii** 2
c **i** 3 **ii** 0 **d** **i** $^{-}1$ **ii** 7
e **i** 1 **ii** 6 **f** **i** $^{-}2$ **ii** 9
g **i** 1 **ii** 4 **h** **i** $^{-}3$ **ii** $^{-}7$

3 A horizontal line $y = 3$
A vertical line $x = 7$
Diagonal upwards: $y = 3x + 4$, $y = 2x$
Diagonal downwards: $y = {}^{-}3x$, $y = {}^{-}x + 3$

4 Straight lines $y = 4x - 7$; $x = 7$; $y = 8 - x$; $y = {}^{-}3$

Exercise 14

1 **a** $^{-}3, {}^{-}1, 1, 3, 2n - 1$ **b** $y = 2x - 1$

c

x	$^{-}1$	0	1	2
y	$^{-}3$	$^{-}1$	1	3

d $(^{-}1, 3)$; $(0, {}^{-}1)$; $(1, 1)$; $(2, 3)$

2 They give the same information

3 **a** **i** 0, 2, 4, 6, 8
b **i** $(^{-}2, 0)$; $(^{-}1, 2)$; $(0, 4)$; $(1, 6)$; $(2, 8)$
a **ii** $^{-}11, {}^{-}8, {}^{-}5, {}^{-}2, 1$
b **i** $(^{-}2, {}^{-}11)$; $(^{-}1, {}^{-}8)$; $(0, {}^{-}5)$; $(1, {}^{-}2)$; $(2, 1)$

4 **a** 50, 68 **b** 50, 30

5 $8n$

6 (7, 59)

7

x	$^{-}2$	$^{-}1$	0	1	2
y	$^{-}7$	$^{-}5$	$^{-}3$	$^{-}1$	1

8 15, 26, 37, 48, 59

9 **a** $(^{-}2, {}^{-}3)$; $(^{-}1, {}^{-}2)$; $(0, {}^{-}1)$; $(1, 0)$; $(2, 1)$
b $(^{-}2, {}^{-}5)$; $(^{-}1, {}^{-}2)$; $(0, 1)$; $(1, 4)$; $(2, 7)$
c $(^{-}2, 0)$; $(^{-}1, 2)$; $(0, 4)$; $(1, 6)$; $(2, 8)$
d $(^{-}2, 9)$; $(^{-}1, 7)$; $(0, 5)$; $(1, 3)$; $(2, 1)$

10 **a** (6, 64) **b** (3, 37) **c** $(^{-}4, {}^{-}26)$ **d** $(^{-}5, {}^{-}35)$

11 **a** $y = 4x - 3$ **b** $y = 2 - x$
c $y = \frac{x}{2} + 8$ **d** $y = \frac{x+3}{2}$

12 $(0, 8)$; $(^{-}1, 10)$

Summary

Check out

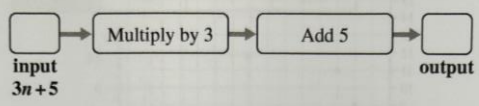
1 **a** **i** 2 **ii** 7 **b** **i** 1 **ii** $^{-}4$
c **i** 8 **ii** 0 **d** **i** $^{-}1$ **ii** 10

2 **a** Graph with points plotted $(^{-}2,{}^{-}1)$, $(^{-}1,1)$, $(0,3)$, $(1,5)$, $(2,7)$
c Graph with points plotted $(^{-}2,6)$, $(^{-}1,5)$, $(0,4)$, $(1,3)$, $(2,2)$

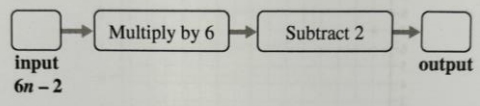
Homework book

14A

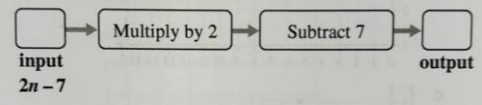
1 a



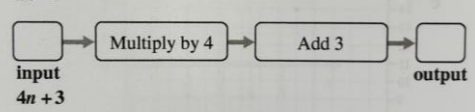
b



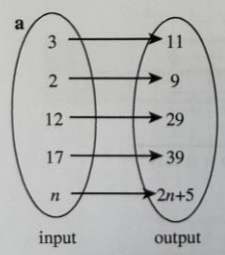
c



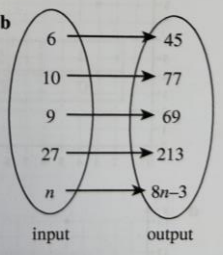
d



2 a



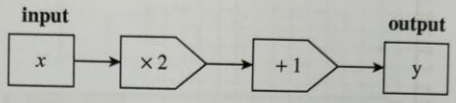
b



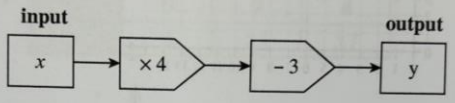
3 a Left arrowed box ÷3, right arrowed box –2

b 3 **c i** 20 **ii** 5

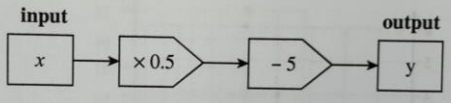
4 a



b

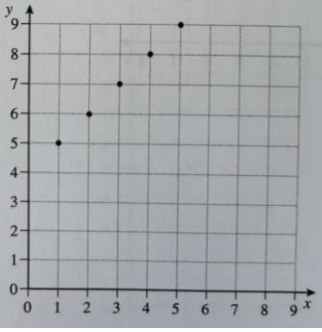


c

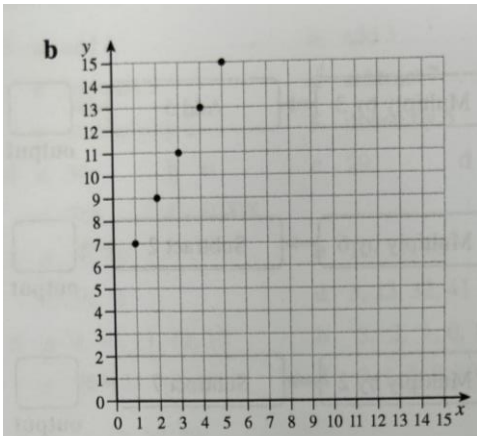


14B–14E

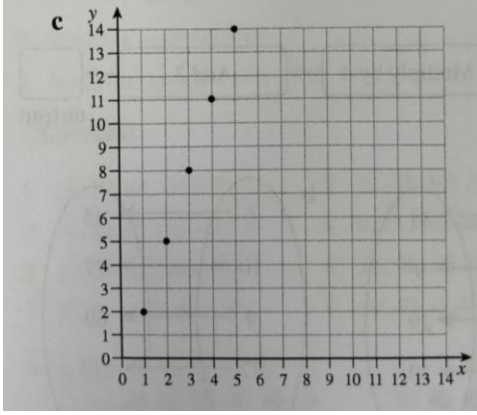
1 a



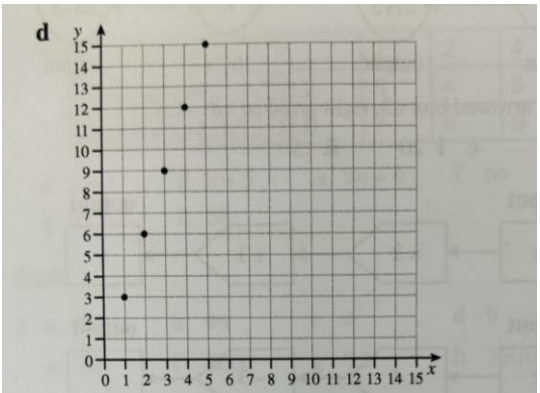
b



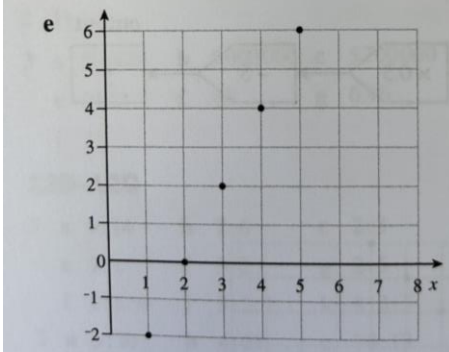
c



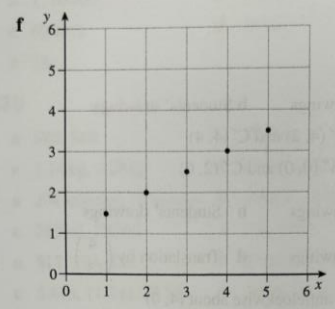
d



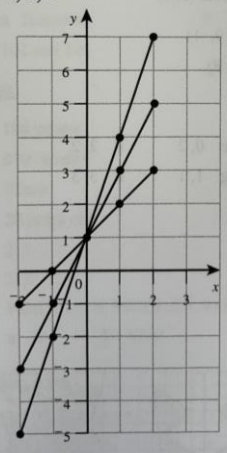
e



f

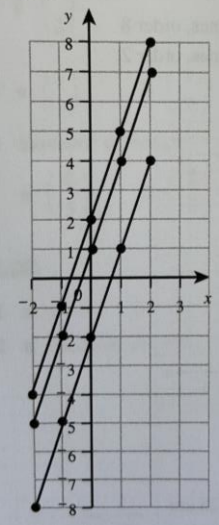


2 a, b, c



All three lines cross the y-axis at the point (0, 1).

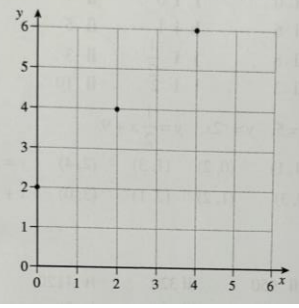
3 a, b, c



All three lines are parallel.

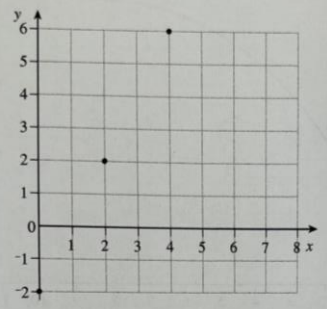
4 a

x	0	2	4
y	2	4	6



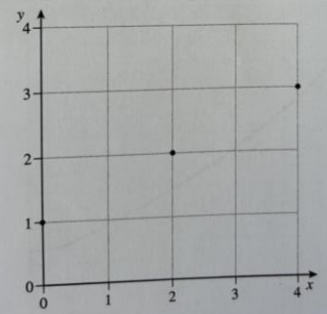
b

x	0	2	4
y	−2	2	6



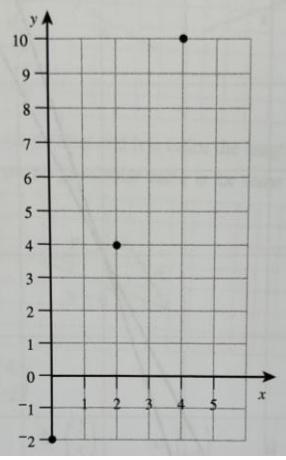
c

x	0	2	4
y	1	2	3



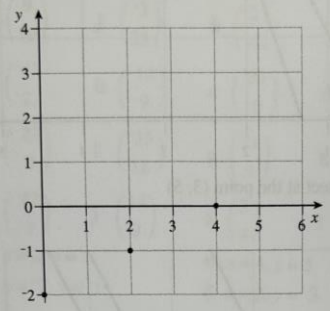
a

x	0	2	4
y	−2	4	10



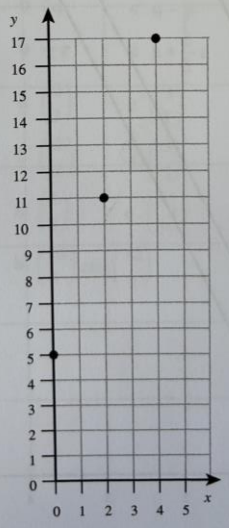
e

x	0	2	4
y	$^{-}2$	$^{-}1$	0



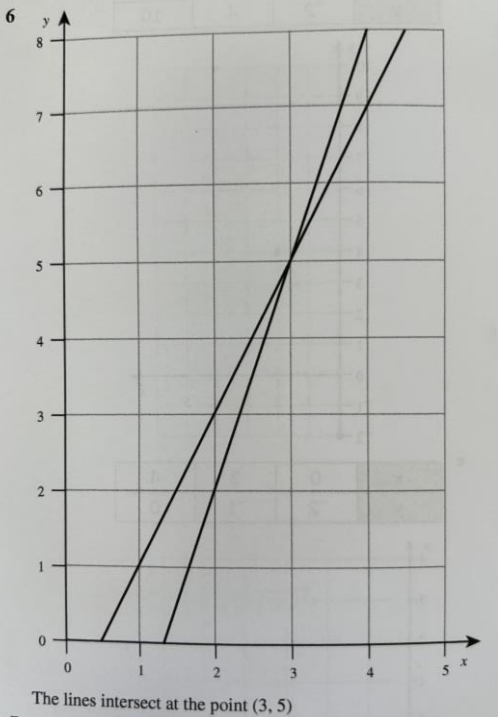
f

x	0	2	4
y	5	11	17



5 (3, 2) and (5, $^{-}2$)

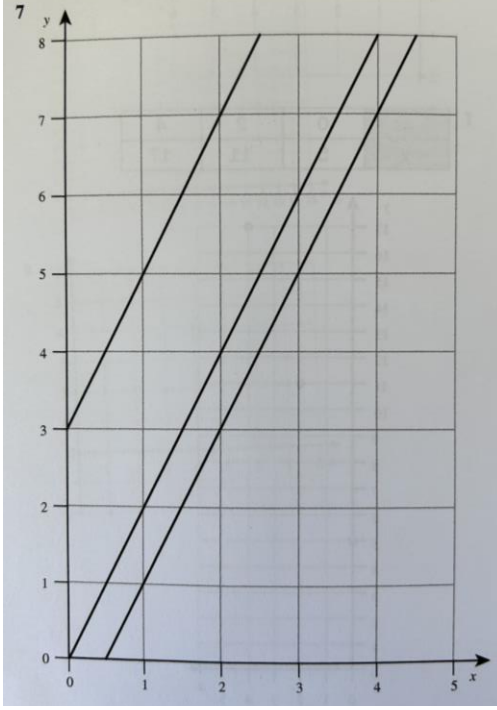
6



The lines intersect at the point (3, 5)

7

The lines intersect at the point (3, 5)



8 **a** **i** 2 **ii** 4 **b** **i** 5 **ii** $^{-}8$

c **i** $\frac{1}{2}$ **ii** 8 **d** **i** 1 **ii** 3

e **i** 5 **ii** 0 **f** **i** 0 **ii** 7

g **i** 2 **ii** 6 **h** **i** 1 **ii** 5

i **i** $^{-}3$ **ii** 8 **j** **i** $\frac{^{-}1}{2}$ **ii** 3

k **i** 2 **ii** 3 **l** **i** $^{-}2$ **ii** 10

9 $y = 3 - 2x$, $y = 5$, $y = {}^{-}2x$, $y = \frac{1}{2}x + 9$

10 **a** ($^{-}2$, 0) ($^{-}1$, 1) (0, 2) (1, 3) (2, 4) $y = x + 2$

b ($^{-}1$, 4) (0, 3) (1, 2) (2, 1) (3, 0) $x + y = 3$