

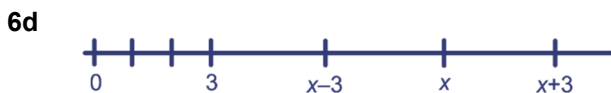
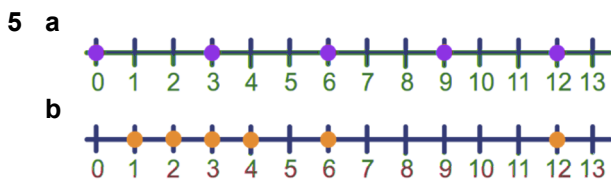
## Hoofdstuk 9 GETALLENLIJN

### 9.0 INTRO

- 1 a  $-7^{\circ}\text{C}$   
b  $11^{\circ}\text{C}$
- 2  $150 - 80 = 70$  euro tekort
- 3 a Ajax: positief doelsaldo van  $84 - 35 = 49$   
NAC: negatief doelsaldo van  $54 - 43 = 11$   
b 11 clubs  
c Heracles en ADO Den Haag, allebei met een negatief doelsaldo van 32.  
d NEC  
e Nee, Willem II heeft een nog slechter doelsaldo.  
f 0

### 9.1 OPTELLEN EN AFTREKKEN

- 4 a 0  
b Die bestaat niet.  
c Nee.



- 7  $\begin{matrix} 11 & & 3 \\ 7 & & 9 \\ x+4 & & x+1 \\ x+6 & & x+4 \end{matrix}$

- 8 a ...  
b ...

- 9  $\begin{matrix} -9 & & -14 \\ -5 & & -11 \\ 11 & & -3 \end{matrix}$

- 10  $\begin{matrix} -9 & & 18 \\ -5 & & 4 \\ 11 & & -7 \end{matrix}$

- 11  $\begin{matrix} -1 & & 5 \\ 0 & & 9 \\ 1 & & 12 \end{matrix}$

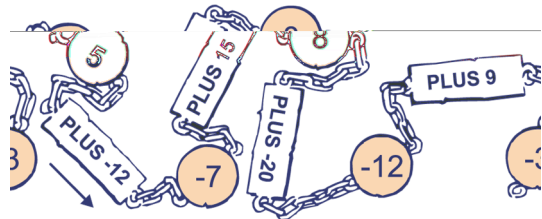
- 12  $\begin{matrix} 5 & & -18 \\ 12 & & -40 \\ -2 & & -84 \end{matrix}$

- 13  $\begin{matrix} 3 + 8 = 11 \\ -2 + 5 = 3 \\ 0 + 8 = 8 \\ 5 + -13 = -8 \\ -6 + -3 = -9 \end{matrix}$

- 14 a bijv.  $2 + -9$ ;  $-3 + -4$ ;  $-10 + 3$   
b bijv.  $1 - 8$ ;  $-11 - -4$ ;  $-3 - 4$

- 15  $\begin{matrix} -2 + -2 = -4 \\ -4 + 3 = -1 \\ -9 + -1 = -10 \\ 4 + -4 = 0 \end{matrix}$

16 a



b

als je begint met	5	6	-6	0
eindig je met	-3	-2	-14	-8

c -8

- 17  $\begin{matrix} 3 - 15 = -12 \\ -7 - -4 = -7 + 4 = -3 \end{matrix}$

18 Nee, ze is ruim drie kilogram aangekomen.

- 19 a 3; -73  
b negatief  
c



- d 3  
e positief

- 20  $\begin{matrix} 0 & & 3 \\ 0 & & -(5) = -5 \\ 0 & & 8 + 3 = 11 \end{matrix}$

21 7

- 22 a  $10 - -20 = 30$   
b  $10 + 20 = 30$ ; klopt

- 23  $\begin{matrix} (-2 + -7) + 12 = -9 + 12 = 3 \\ -2 + (-7 + 12) = -2 + 5 = 3; \text{ klopt} \end{matrix}$

24 a

a	b	a - b	b - a
3	5	-2	2
-4	9	-13	13
6	-3	9	-9
-2	-5	3	-3

b Ze zijn elkaars tegengestelde.

$$\begin{array}{ll} 25 & a - 3 \qquad a + 5 \\ & a - b \qquad a + b \\ & a \qquad a \end{array}$$

$$\begin{array}{l} 26 \quad -7a - b \\ \quad 12a + 5b - 11 \\ \quad 16a + 12b \\ \quad -6a \\ \quad -5a - 4b + 2 \end{array}$$

## 9.2 VERMENIGVULDIGEN EN DELEN

$$\begin{array}{l} 27 \text{ a} \quad -15 ; -20 ; -25 \\ \text{ b} \quad -7 ; -14 ; -21 ; -28 ; -35 \\ \text{ c} \quad 0 \\ \text{ d} \quad -5 ; -10 ; -15 ; -20 ; -25 \\ \text{ e} \quad 7 ; 14 ; 21 ; 28 ; 35 \end{array}$$

$$\begin{array}{ll} 28 & -24 \qquad -8 \\ & 18 \qquad -45 \\ & -7 \qquad 25 \\ & -49 \qquad -18 \\ & 72 \qquad 0 \end{array}$$

$$\begin{array}{l} 29 \quad -5, \text{ want } 2 \cdot -5 = -10 \\ \quad -5, \text{ want } -2 \cdot -5 = 10 \\ \quad 5, \text{ want } -2 \cdot 5 = -10 \\ \quad -3, \text{ want } -7 \cdot -3 = 21 \\ \quad 8, \text{ want } -9 \cdot 8 = -72 \\ \quad -4, \text{ want } 12 \cdot -4 = -48 \end{array}$$

$$\begin{array}{ll} 30 & 3a \qquad 12a^2 \\ & -a \qquad 12a \\ & b^2 \qquad -7b^2 \\ & 3a \qquad -8a \end{array}$$

$$\begin{array}{l} 31 \text{ a} \quad 3x + 6 ; 3(x + 2) \\ \text{ b} \quad 3x + 6 = 3(x + 2) \\ \text{ c} \quad -5x + 20 = -5(x - 4) \end{array}$$

$$\begin{array}{l} 32 \quad (-37 + 37) \cdot -58 = 0 \cdot -58 = 0 \\ \quad (125 + 75) \cdot -23 = 200 \cdot -23 = -4600 \\ \quad (-26 + 126) \cdot -18 = 100 \cdot -18 = -1800 \\ \quad 50 \cdot (32 - 62) = 50 \cdot -30 = -1500 \end{array}$$

$$\begin{array}{l} 33 \quad -10 \cdot 9 = -90 \\ \quad -10 \cdot -7 = 70 \\ \quad -10 \cdot x = -10x \end{array}$$

$$\begin{array}{l} 34 \quad 24 - 6x \\ \quad 15 + 5y \\ \quad -x - xy \\ \quad 7x - 7x = 0 \text{ of } x \cdot 0 = 0 \end{array}$$

$$\begin{array}{ll} 35 & \text{waar} \qquad x - -x = 2x \\ & x - 0 = x \qquad \text{waar} \\ & \text{waar} \qquad 0 \cdot x = 0 \\ & \text{waar} \qquad -1 \cdot -x = x \end{array}$$

$$\begin{array}{ll} 36 & -3^2 = -9 \qquad ; \qquad -3 - 9 = -12 \\ & (-3)^2 = -3 \cdot -3 = 9 \qquad ; \qquad (-6)^2 = -6 \cdot -6 = 36 \end{array}$$

$$\begin{array}{ll} 37 & (6 - 2)^2 = (4)^2 = 16 \qquad (-8 - 2)^2 = (-10)^2 = 100 \\ & -5 + (-1)^2 = -5 + 1 = -4 \qquad -(-1 - 4)^2 = -(-5)^2 = -25 \\ & \text{of } -(5 + -1^2) = -(5 - 1) = -4 \\ & (-4^2 + 15)^2 = (-1)^2 = 1 \qquad -(2^2 + -3)^2 = -(1)^2 = -1 \end{array}$$

$$\begin{array}{l} 38 \text{ a} \quad 3 \cdot -2 + 2 \cdot -4 = -6 + -8 = -14 \\ \text{ b} \quad 3 \cdot -\frac{1}{2} + 2 \cdot 3\frac{1}{2} = -1\frac{1}{2} + 7 = 5\frac{1}{2} \\ \text{ c} \quad (4 \cdot -2\frac{1}{2})^2 = (-10)^2 = -10 \cdot -10 = 100 \end{array}$$

$$\begin{array}{l} 39 \text{ a} \quad 2 \cdot -2 + 3 \cdot -4 + 4 \cdot -2 + -4 = -4 + -12 + -8 + -4 = -28 \\ \text{ b} \quad 6 \cdot -2 + 4 \cdot -4 = -12 + -16 = -28 \\ \text{ c} \quad \text{Ja, uit beide antwoorden komt } -28. \end{array}$$

$$\begin{array}{l} 40 \text{ a} \quad 2a \cdot 3b = 2 \cdot -2 \cdot 3 \cdot 4 = -4 \cdot 12 = -48 \\ \quad 6ab = 6 \cdot -2 \cdot 4 = 6 \cdot -8 = -48 ; \text{ gelijkheid klopt} \\ \text{ b} \quad 2a \cdot 3b = 2 \cdot -\frac{1}{2} \cdot 3 \cdot \frac{2}{3} = -1 \cdot 2 = -2 \\ \quad 6ab = 6 \cdot -\frac{1}{2} \cdot \frac{2}{3} = -3 \cdot \frac{2}{3} = -2 ; \text{ gelijkheid klopt} \end{array}$$

$$\begin{array}{l} 41 \text{ a} \quad 2b \cdot 4b = 2 \cdot 1 \cdot 4 \cdot 1 = 2 \cdot 4 = 8 \\ \quad 8b^2 = 8 \cdot 1^2 = 8 \cdot 1 = 8 ; \text{ gelijkheid klopt} \end{array}$$

48 a  $-2\frac{1}{2}$

bc



49  $\frac{1}{4}$  ;  $\frac{2}{15}$  ;  $\frac{22}{35}$  ;  $-\frac{23}{24}$

50  $\frac{5}{32}$  ,  $\frac{14}{32} = \frac{7}{16}$  ,  $\frac{25}{32}$  ,  $\frac{31}{32}$

51 a  $-\frac{2}{3}$  ;  $-\frac{1}{6}$  ;  $\frac{4}{5}$

b  $-\frac{1}{3} = -\frac{5}{15}$  ;  $\frac{3}{5} = \frac{9}{15}$

Midden is  $(-\frac{5}{15} + \frac{9}{15}) : 2 = \frac{4}{15} : 2 = \frac{2}{15}$ .

52 Breuken gelijknamig maken:

$-\frac{3}{8} = -\frac{9}{24} = -\frac{18}{48}$  ,  $\frac{1}{3} = \frac{8}{24} = \frac{16}{48}$

Midden is  $(-\frac{18}{48} + \frac{16}{48}) : 2 = -\frac{2}{48} : 2 = -\frac{1}{48}$ .

53 a

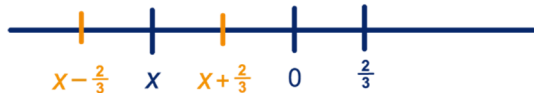


b 2,7 cm, 2,7 cm (in het boek gemeten)

54

-4	-1
$1\frac{4}{5}$	$119\frac{1}{7}$
3	-10
100	0

55 a



b  $4\frac{1}{3}$                        $5\frac{2}{3}$   
 $-8\frac{2}{3}$                        $-7\frac{1}{3}$   
 $-\frac{2}{3}$                           $\frac{2}{3}$

56

-3	4	-7
$-\frac{1}{4}$	$\frac{1}{15}$	$\frac{2}{9}$
2	-5	0
x	-x	0

57

$\frac{3}{8}$ , want  $8 \cdot \frac{3}{8} = 3$   
 $-\frac{3}{8}$ , want  $8 \cdot -\frac{3}{8} = -3$   
 $-\frac{3}{8}$ , want  $-8 \cdot -\frac{3}{8} = 3$   
 $\frac{3}{8}$ , want  $-8 \cdot -\frac{3}{8} = 3$

58

Houd de temperatuur tussen de 10 en 15°C.

59 a

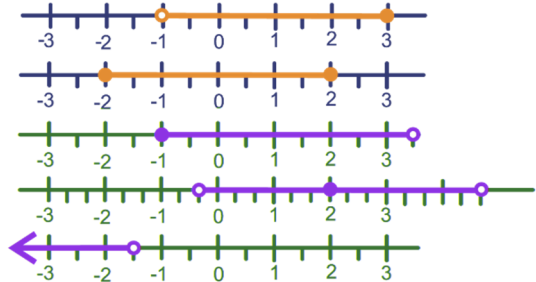


b Oneindig veel getallen.

60

fout goed                      goed fout

61 a



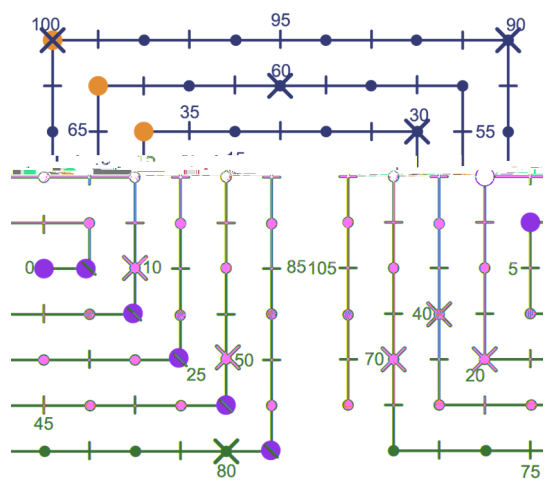
b In het 2<sup>e</sup> en 3<sup>e</sup> interval.

62 a

$-1\frac{2}{3} \leq x < 1\frac{2}{3}$   
 $\frac{1}{3} \leq x \leq 3$   
 $-1\frac{1}{2} < x \leq 2$   
 $-2\frac{1}{2} < x < -1\frac{1}{2}$   
b bijv.  $\frac{1}{3}$  ; 1 ;  $1\frac{1}{2}$

**SUPER OPGAVEN**

4 a Zie ●.



X.                                      b Zie onderdeel a.

- c Het getal 100.
- d Het getal 400.
- e Het getal 900.

9

-	3	8	17	-	17	12	24
12	9	4	-5	9	-8	-3	-15
5	2	-3	-12	14	-3	2	-10
9	6	1	-8	8	-9	-4	-16

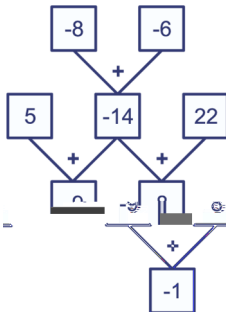
10

+	1	6	2	+	4	6	31
-3	-2	3	-1	9	13	15	40
-12	-11	-6	-10	-18	-14	-12	13
-7	-6	-1	-5	-11	-7	-5	20

11

3	2	3	-3	9	0	6	2	8
0	-6	-5	-11	1	2	8	4	1
1	-10	-9	-15	-3	-9	-3	-7	-

12



13 a Op 15 manieren.

b  $2 + -3 + 8 + -6 + 3 + -5 = -1$

$2 + -3 + 7 + -9 + 3 + -5 = -5$

c Minimaal:  $-1 + -4 + 8 + -9 + -2 + -5 = -13$

Maximaal:  $-1 + 4 + 9 + -6 + 3 + -5 = 4$

14

3	-11	-1	-10	-3	-8
-7	-3	1	-5	-7	-9
-5	5	-9	-6	-11	-4

20 a  $-5 + 5 + -4 + 4 + \dots + -1 + 1 + 6 = 6$

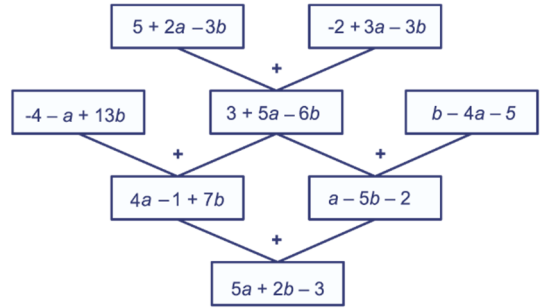
(Elk getal heeft een tegengestelde, behalve het getal 6. Dus het antwoord is 6, want de som van elkaars tegengestelden is 0.)

b  $1 + -2 = -1, 3 + -4 = -1, \text{ enz, totaal } 50 \cdot -1 = -50.$

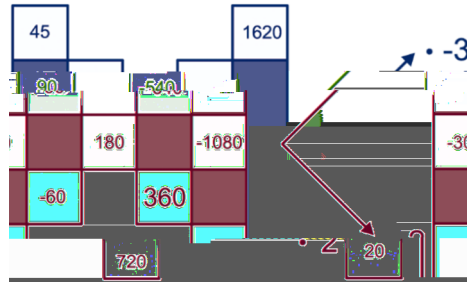
21

- 3
- 14
- $x - 13$
- 0

26



28 a



b  $-1080 \cdot -6 = 6480$

c  $-30 : -6 = 5$

34

$4 ; 1 \frac{1}{2}$

$-2 ; 12$

$2x - 10$

$-1 \frac{1}{2} ; 12$

38

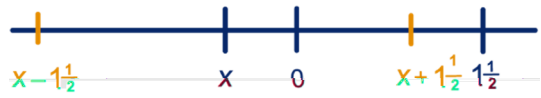
a	b	$\frac{1}{2}a$	-4a	-3b	-4a - 3b	$-3b + \frac{1}{2}a$
1	-3	$\frac{1}{2}$	-4	9	5	$9 \frac{1}{2}$
-3	2	$-1 \frac{1}{2}$	12	-6	6	$-7 \frac{1}{2}$
2	$\frac{1}{2}$	1	-8	$-1 \frac{1}{2}$	$-9 \frac{1}{2}$	$-\frac{1}{2}$

39 a

a	b	-2a	$1 \frac{1}{2}b$	$-2a \cdot 1 \frac{1}{2}b$	$2b^2$	-3ab
-3	5	6	$7 \frac{1}{2}$	45	50	45
$\frac{1}{2}$	-1	-1	$-1 \frac{1}{2}$	$1 \frac{1}{2}$	2	$1 \frac{1}{2}$
1	-2	-2	-3	6	8	6

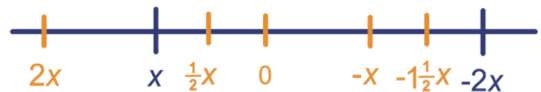
b De 5<sup>e</sup> en de 7<sup>e</sup>. Omdat  $-2a \cdot 1 \frac{1}{2}b = -3ab$ .

55 a

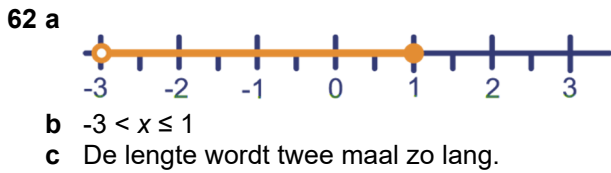
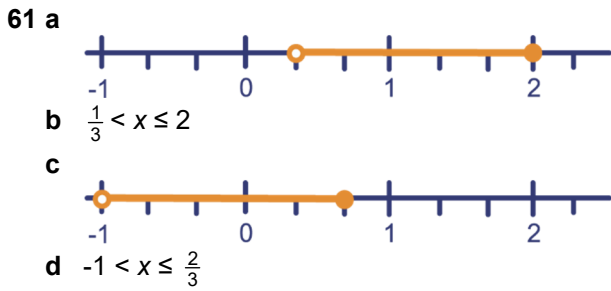


b  $-\frac{1}{2}x$

c



- 60 a Nee, het kan ook tussen de 14 en 15 euro kosten.  
 b Ja, je kunt niet tussen de 7 en 8 DVD's huren.



### 9.6 EXTRA OPGAVEN

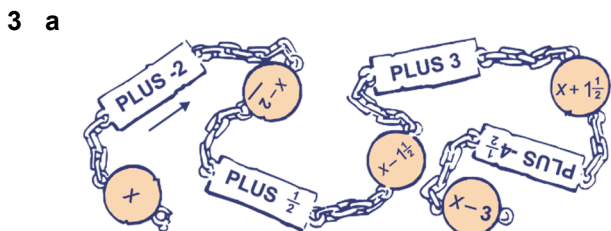
1 a

x	$\frac{3}{5}x$	$\frac{10}{3} \cdot \frac{3}{5} \cdot x$	2x
10	6	20	20
-4	$-2\frac{2}{5}$	-8	-8
-1	$-\frac{3}{5}$	-2	-2
$\frac{1}{5}$	$\frac{3}{25}$	$\frac{2}{5}$	$\frac{2}{5}$

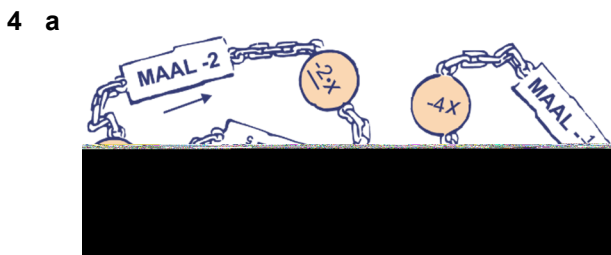
b ja ; ja

2

$6x$	$x$
$2x$	$5x$
$-8\frac{1}{2}x$	$3\frac{1}{2}x$

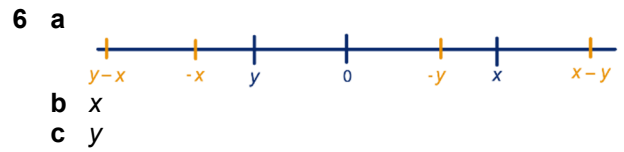


b PLUS -3



b MAAL 2

5 PLUS  $\frac{1}{6}$   
 MAAL  $-3\frac{1}{2}$

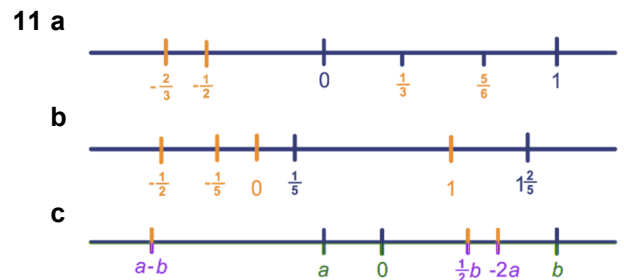


7  $-\frac{7}{3} = -2\frac{1}{3}$       1  
 4       $-1\frac{3}{7}$   
 $9\frac{1}{5}$       0

8  $-\frac{1}{2}x - 2$   
 $-3x + \frac{1}{3}$   
 $-2x + 6$   
 $-10x + 25$

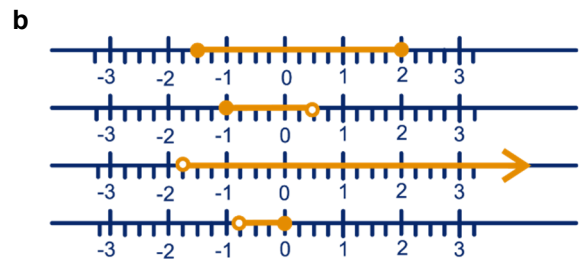
9 7 ; -4x  
 2x ; -35  
 -4 ; +16  
 $-8x - 6$

10  $1 + x$   
 $\frac{1}{36}x$   
 x  
 0



d < ; < ; > ; >

12 a  $-2 < x \leq 1\frac{1}{2}$   
 $-2\frac{3}{4} \leq x \leq -\frac{1}{4}$   
 $-1\frac{1}{4} < x < 2\frac{1}{2}$   
 $-\frac{1}{4} \leq x < \frac{1}{2}$



b  $0 < x \leq 2$

14

a	b	5a	-3b	4b <sup>2</sup>	-(2a) <sup>2</sup>	5a - 3b	ab <sup>2</sup>
-2	2	-10	-6	16	-16	-16	-8
3	4	15	-12	64	-36	3	48
6	6	30	-18	144	-144	12	216
1	-4	5	12	64	-4	17	16
0	-3	0	9	36	0	9	0

15    -4                     $-\frac{1}{3}$                     6  
        16                     $4\frac{4}{7}$                     8

16     $-\frac{10}{4}$                      $\frac{10}{77}$   
         $\frac{1}{4}$                      $-\frac{1}{77}$   
         $-\frac{3}{4}$                      $\frac{3}{77}$

17    -10ab                    -14ab  
        -12ab                    6ab  
        24ab                    -6a<sup>2</sup>

18    -12a<sup>2</sup> - 8ab  
        -15a<sup>2</sup> + 15ab  
        -2 $\frac{1}{2}$ a<sup>2</sup> + 9ab  
        ab - 2b<sup>2</sup>  
        2a<sup>2</sup> - 4ab  
        0  
        1 $\frac{1}{2}$ ab + 3b<sup>2</sup>

19

1	-5	2	0		2	-1	1	3	8
4				4	-7	2			0
	5	1	0	-2	0				
6	-1	8				0			7
9	8	0	9	8	0			10	1
0									
8	0		1			11	-6	4	
1	12	2	4			8			
1	1	2	4			8			