

MEMO 2015-9 AC-00001(1)

(1) Voltooi die volgende vyf terme in elk van die volgende rye.

Beskryf ook die patroon van elke ry:

(a) $-3; -11; -19; -27; -35; -43; -51; -59; -67$

Trek 8 af.

$\therefore -8$

(b) $5; 8; 11; 14; 17; 20; 23; 26; 29$

Tel 3 by.

$\therefore +3$

(c) $98\,415; 32\,805; 10\,935; 3\,645; 1\,215; 405; 135; 45; 15$

Deel deur 3.

$\therefore \div 3$

(d) $1; 1; 3; 4; 5; 9; 7; 16; 9; 25; 11; 36; 13; 49$

Blou patroon: Tel 2 by $\rightarrow +2$ of onewe natuurlike getalle

Groen patroon: Volkome vierkante

(2) Die algemene term van 'n ry is $T_n = 5n + 3$.

(a) Skryf die eerste vier terme van die ry neer.

(b) Bepaal die 85^{ste} term van die ry.

(c) Watter term in die ry sal gelyk wees aan 523?

(a) $T_1 = 5(1) + 3 = 5 + 3 = 8$

$$T_2 = 5(2) + 3 = 10 + 3 = 13$$

$$T_3 = 5(3) + 3 = 15 + 3 = 18$$

$$T_4 = 5(4) + 3 = 20 + 3 = 23$$

$\therefore$ Die eerste vier van die ry: $8; 13; 18; 23$

(b) $T_n = 5n + 3$

$$\therefore T_{85} = 5(85) + 3 = 425 + 3 = 428$$

$\therefore T_{85} = 428$

$$\begin{aligned}
 \text{(c)} \quad T_n &= 5n + 3 \\
 \therefore 523 &= 5n + 3 \\
 \therefore 523 - 3 &= 5n \\
 \therefore 520 &= 5n \\
 \therefore \frac{520}{5} &= n \\
 \therefore n &= 104
 \end{aligned}$$

(3) Voltooi die volgende tabel en beantwoord die onderstaande vrae:

(a)	Posisie in ry	1	2	3	7	11	*28	35
	Term	-4	-7	-10	-22	-34	-85	-106

- (b) Beskryf die ry se patroon in woorde.
 (c) Bepaal die algemene term en skryf dit as $T_n = \dots\dots$
 (d) Bepaal die 100^{ste} term van die ry.

(b) $Trek 3 \text{ af} \rightarrow -3$

(c) $T_0 = -1 \rightarrow$ Tel 3 by die -4 (die eerste term van die ry)

$$\therefore T_n = -3n - 1$$

$\rightarrow$ Die -3 is die getal wat telkens “bygetel” word. Hierdie getal wat bygetel word kan negatief wees soos in hierdie geval.

$\rightarrow$ Die -1 word verkry deur “ T_0 ” te bereken.

Of die formele formule kan gebruik word:

$T_n = a + (n - 1)d$ met a die eerste term en d die getal wat “bygetel” word.

$$\therefore T_n = -4 + (n - 1)(-3)$$

$$\therefore T_n = -4 - 3n + 3$$

$$\therefore T_n = -1 - 3n = -3n - 1$$

(d) $T_n = -3n - 1$

$$\therefore T_{100} = -3(100) - 1$$

$$\therefore T_{100} = -300 - 1$$

$$\therefore T_{100} = -301$$

* Kan ook bereken word met algemene term

$$T_n = -85 = -3n - 1$$

$$\therefore 3n = 85 - 1 = 84$$

$$\therefore 3n = \frac{84}{3} = 28$$

(4) Bepaal die ontbrekende terme in elke ry en bepaal dan die algemene term (T_n):

(a) **3** ; 6 ; 12 ; 24 ; **48** ; **96** ; **192** ; 384 $\rightarrow \times 2$

$$T_1 = 3 = 3 \times 1 = 3 \times 2^0$$

$$T_2 = 6 = 3 \times 2 = 3 \times 2^1$$

$$T_3 = 12 = 3 \times 2 \times 2 = 3 \times 2^2$$

$$T_4 = 24 = 3 \times 2 \times 2 \times 2 = 3 \times 2^3$$

$$\therefore T_n = 3 \times 2^{n-1}$$

(b) **$8\frac{1}{2}$** ; **$7\frac{3}{4}$** ; **7** ; **$6\frac{1}{4}$** ; $5\frac{1}{2}$; $4\frac{3}{4}$; 4 $\rightarrow -\frac{3}{4}$

$$T_0 = 8\frac{1}{2} + \frac{3}{4} = 8\frac{2}{4} + \frac{3}{4} = 8\frac{5}{4} = 9\frac{1}{4}$$

$$\text{of } T_n = a + (n-1)d$$

$$\therefore T_n = -\frac{3}{4}n + 9\frac{1}{4}$$

$$\therefore T_n = 8\frac{1}{2} + (n-1)\left(-\frac{3}{4}\right)$$

$$\therefore T_n = 8\frac{1}{2} - \frac{3}{4}n + \frac{3}{4}$$

$$\therefore T_n = -\frac{3}{4}n + 9\frac{1}{4}$$

(c) 136 ; **139** ; 142 ; **145** ; 148 ; **151** ; 154 ; **157** $\rightarrow +3$

$$T_0 = 136 - 3 = 133$$

$$\text{of } T_n = a + (n-1)d$$

$$\therefore T_n = 3n + 133$$

$$\therefore T_n = 136 + (n-1)(3)$$

$$\therefore T_n = 136 + 3n - 3$$

$$\therefore T_n = 3n + 133$$