JAWAPAN

BAB 1 Pola dan Jujukan
Patterns and Sequences

1. (a) Menambah lima segi tiga
Adding five triangles

(b) Menolak satu baris
Subtracting a row

2. (a) segi empat sama; heksagon
square; hexagon

(b) +; ×; +; ÷

3. (a) Pola/ *Pattern*:
134, 119, 104, 89, 74, …
−15 −15 −15 −15
Menolak 15 daripada nombor sebelumnya.
Subtract 15 from the previous number.

(b) Pola/ *Pattern*:
57, 81, 105, 129, 153, …
+24 +24 +24 +24
Menambah 24 kepada nombor sebelumnya.
Add 24 to the previous number.

(c) Pola/ *Pattern*:
14, 98, 686, 4 802, 33 614, …
×7 ×7 ×7 ×7
Mendarab nombor sebelumnya dengan 7.
Mutiply the previous number by 7.

(d) Pola/ *Pattern*:
12 288, 3 072, 768, 192, 48, …
÷4 ÷4 ÷4 ÷4
Membahagi nombor sebelumnya dengan 4.
Divide the previous number by 4.

(e) Pola/ *Pattern*:
99, 101, 104, 109, 116, …
+2 +3 +5 +7
Menambah nombor perdana bermula dengan 2 kepada nombor sebelumnya.
Add prime numbers starting with 2 to the previous number.

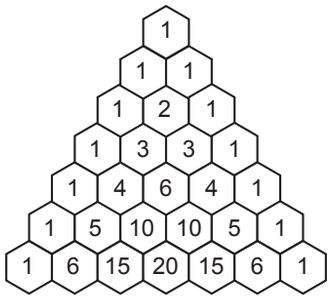
4. (a) Nombor genap/ *Even numbers*:
14, 20, 26, 32, 38, 44

Pola/ *Pattern*:
Nombor genap diperoleh dengan menambah 6 kepada nombor sebelumnya.
The even numbers are obtained by adding 6 to the previous number.

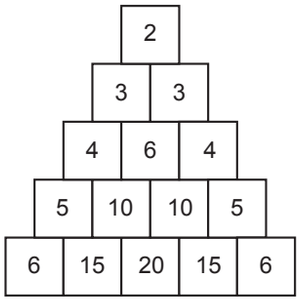
(b) Nombor ganjil/ *Odd numbers*:
13, 17, 21, 25, 29, 33

Pola/ *Pattern*:
Nombor ganjil diperoleh dengan menambah 4 kepada nombor sebelumnya.
The odd numbers are obtained by adding 4 to the previous number.

5. (a)



(b)



(c) [1], 1, 2, 3, [5], 8, [13], …

(d) 4, 9, [13], 22, 35, [57], [92], 149, …

(e) 1, 3, 4, 7, [11], [18], 29, [47], …

(f) [14], 16, 30, [46], [76], 122, 198, …

6.

Pola *Pattern*					
Waktu *Time*	10 : 00	12 : 00	2 : 00	4 : 00	6 : 00

(a) 10 : 00, 12 : 00, 2 : 00, 4 : 00, 6 : 00

(b) menambah dua jam
adding two hours

7. (a) Jujukan/ *A sequence*

(b) Jujukan/ *A sequence*

8. (a) $\overset{+3}{\frown}\ \overset{+4}{\frown}\ \overset{+6}{\frown}\ \overset{+6}{\frown}\ \overset{+7}{\frown}$
7, 10, 14, 20, 26, 33

Bukan jujukan kerana senarai nombor ini tidak mengikut pola tertentu.
Not a sequence because this number list does not follow a particular pattern.

(b) $\overset{\div 3}{\frown}\ \overset{\div 3}{\frown}\ \overset{\div 3}{\frown}\ \overset{\div 3}{\frown}$
1 296, 432, 144, 48, 16

Jujukan kerana polanya ialah membahagi nombor sebelumnya dengan 3.
A sequence because the pattern is dividing the previous number by 3.

9. (a) 12, 96, 768, 6 144, 49 152
$\overset{\times 8}{\frown}\ \overset{\times 8}{\frown}\ \overset{\times 8}{\frown}\ \overset{\times 8}{\frown}$

(b) 89, 84, 79, 74, 69, 64, 59
$\overset{-5}{\frown}\ \overset{-5}{\frown}\ \overset{-5}{\frown}\ \overset{-5}{\frown}\ \overset{-5}{\frown}\ \overset{-5}{\frown}$

(c) −32, −25, −18, −11, −4, 3, 10
$\overset{+7}{\frown}\ \overset{+7}{\frown}\ \overset{+7}{\frown}\ \overset{+7}{\frown}\ \overset{+7}{\frown}\ \overset{+7}{\frown}$

(d) −3 584, 896, −224, 56, −14
$\overset{\div(-4)}{\frown}\ \overset{\div(-4)}{\frown}\ \overset{\div(-4)}{\frown}\ \overset{\div(-4)}{\frown}$

10. (a) 3, [−12], [48], [−192], [768], [−3 072]

(b) 86, [93], [100], [107], [114]

(c) 2 187, [729], [243], [81], [27], [9]

11. (a) **Jujukan nombor/** ***Number sequence*****:**
75, 68, 61, 54, 47, ...
$\overset{-7}{\frown}\ \overset{-7}{\frown}\ \overset{-7}{\frown}\ \overset{-7}{\frown}$

Nombor/ ***Number*****:**
Pola ialah −7.
The pattern is −7.

Perkataan/ ***Words*****:**
Menolak 7 daripada nombor sebelumnya.
Subtracting 7 from the previous number.

Ungkapan algebra/ ***Algebraic expression*****:**
$\times(-7)$: n: 0, 1, 2, 3, …
$+75$: $-7n$: 0, −7, −14, −21, −28, …
$75 - 7n$: 75, 68, 61, 54, 47, …

Maka, $75 - 7n$ dengan keadaan $n = 0, 1, 2, 3, \ldots$
Thus, $75 - 7n$ where $n = 0, 1, 2, 3, \ldots$

(b) **Jujukan nombor/** ***Number sequence*****:**
$\frac{1}{3}, \frac{1}{6}, \frac{1}{12}, \frac{1}{24}, \ldots$
$\times\frac{1}{2}\ \times\frac{1}{2}\ \times\frac{1}{2}$

Nombor/ ***Number*****:**
Pola ialah $\times \frac{1}{2}$. / *The pattern is* $\times \frac{1}{2}$.

Perkataan/ ***Words*****:**
Mendarab nombor sebelumnya dengan $\frac{1}{2}$.
Multiplying the previous number by $\frac{1}{2}$.

Ungkapan algebra/ ***Algebraic expression*****:**
$\left(\frac{1}{2}\right)^n$: n: 0, 1, 2, 3, …
$\times\frac{1}{3}$: $\left(\frac{1}{2}\right)^n$: $1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \ldots$
$\frac{1}{3}\left(\frac{1}{2}\right)^n$: $\frac{1}{3}, \frac{1}{6}, \frac{1}{12}, \frac{1}{24}, \ldots$

Maka, $\frac{1}{3}\left(\frac{1}{2}\right)^n$ dengan keadaan $n = 0, 1, 2, 3, \ldots$
Thus, $\frac{1}{3}\left(\frac{1}{2}\right)^n$ where $n = 0, 1, 2, 3, \ldots$

12. (a) $\overset{+7}{\frown}\ \overset{+7}{\frown}\ \overset{+7}{\frown}\ \overset{+7}{\frown}\ \overset{+7}{\frown}$
−30, −23, −16, −9, −2, 5

Sebutan ke-6 ialah 5.
The 6th term is 5.

(b) $\overset{\times 3}{\frown}\ \overset{\times 3}{\frown}\ \overset{\times 3}{\frown}\ \overset{\times 3}{\frown}\ \overset{\times 3}{\frown}$
$\frac{1}{729}, \frac{1}{243}, \frac{1}{81}, \frac{1}{27}, \frac{1}{9}, \frac{1}{3}$

Sebutan ke-6 ialah $\frac{1}{3}$.
The 6th term is $\frac{1}{3}$.

(c) $\overset{\div 8}{\frown}\ \overset{\div 8}{\frown}\ \overset{\div 8}{\frown}\ \overset{\div 8}{\frown}\ \overset{\div 8}{\frown}$
262 144, 32 768, 4 096, 512, 64, 8

Sebutan ke-6 ialah 8.
The 6th term is 8.

13. (a) $\overset{+5}{\frown}\ \overset{+5}{\frown}\ \overset{+5}{\frown}\ \overset{+5}{\frown}\ \overset{+5}{\frown}$
7, 12, 17, 22, 27, 32
$T_1\ T_2\ T_3\ T_4\ T_5\ T_6$

Maka, 32 ialah sebutan ke-6.
Thus, 32 is the 6th term.

(b) $\overset{-12}{\frown}\ \overset{-12}{\frown}\ \overset{-12}{\frown}\ \overset{-12}{\frown}\ \overset{-12}{\frown}$
−30, −42, −54, −66, −78, −90
$T_1\ T_2\ T_3\ T_4\ T_5\ T_6$

Maka, 90 ialah sebutan ke-6.
Thus, 90 is the 6th term.

(c) −8 −8 −8 −8 −8 −8 −8 −8 −8

35, 27, 19, 11, 3, −5, −13, −21, −29, −37

T_1 T_2 T_3 T_4 T_5 T_6 T_7 T_8 T_9 T_{10}

Maka, −37 ialah sebutan ke-10.
Thus, −37 is the 10th term.

14. (a) $3.25 \div 1.625 = 2$

÷2 ÷2 ÷2 ÷2

13, 6.5, 3.25, 1.625, 0.8125

Maka, $r = 6.5$ dan $s = 0.8125$.
Thus, $r = 6.5$ and $s = 0.8125$.

(b) +15 +15 +15

30, 45, 60, 75

Masa yang diluang bersama anaknya pada minggu ke-4 ialah 75 minit.
The time spent with her son on the 4th week is 75 minutes.

(c) +2 +3 +4 +5

1, 3, 6, 10, 15

T_1 T_2 T_3 T_4 T_5

Bilangan bulatan pada susunan ke-5 ialah 15.
The number of circles in the 5th arrangement is 15.

(d)

Baris/ *Row*	1	2	3	4	5	6	7
Bilangan bentuk *Number of shapes*	7	6	5	4	3	2	1

(i) Baris kelima
Fifth row

(ii) Jumlah bentuk yang diperlukan
Total shapes needed
$= 7 + 6 + 5 + 4 + 3 + 2 + 1$
$= 28$

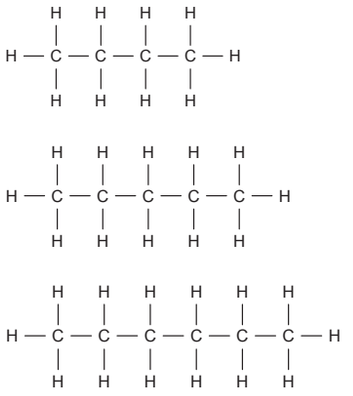
(e) Wang yang disimpan oleh Putri setiap bulan (RM) selama 24 bulan
The money saved by Putri every month (RM) for 24 months

30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260

Jumlah wang yang disimpan oleh Putri setiap bulan
The total money saved by Putri every month
$= 30 + 40 + 50 + 60 + \ldots + 260$
= RM3 480

Maka, Putri tidak dapat membeli komputer riba itu kerana dia masih kekurangan RM20 (RM3 500 – RM3 480).
Thus, Putri is not able to buy the laptop because she still short for RM20(RM3 500 – RM3 480).

15. (a)



(b) C_nH_{2n+2}, $n = 1, 2, 3, \ldots$

Power PT3

Bahagian A

1. +1 +2 +3 +4

3 871, 3 872, x, 3 877, 3 881

$x = 3\,872 + 2 = 3\,874$

Jawapan / *Answer* : **B**

2. −10 −10 −10

17, 7, −3, −13

Jawapan / *Answer* : **D**

3. Nombor Fibonacci / *Fibonacci numbers*

0, 1, 1, 2, 3, …

Jawapan / *Answer* : **C**

4. T_1 : $0 + 2 = 2$
T_2 : $2 + 2 = 4$
T_3 : $4 + 2 = 6$
T_4 : $6 + 2 = 8$
T_5 : $8 + 2 = 10$
T_6 : $10 + 2 = 12$
T_7 : $12 + 2 = 14$

Jawapan / *Answer* : **D**

Bahagian B

5. $p = 23$; $r = 39$
$q = 31$; $s = 43$

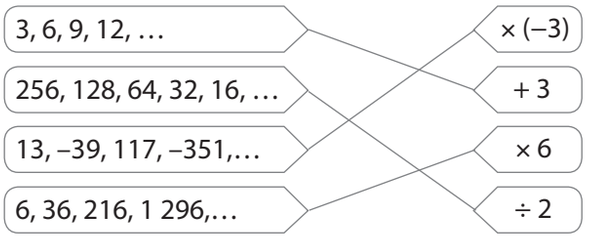
6. (a) (i) 26, 39, 52, 65, 78, … ✓

(ii) 9, 14, 20, 27, 31, … ✗

(b) (i) Tolak 8 daripada nombor sebelumnya.
Subtract 8 from the previous number.

(ii) Bahagi nombor sebelumnya dengan 4.
Divide the previous number by 4.

7.



Bahagian C

8. (a) –13, –15, –17, –19

(b) $\frac{1}{6}, \frac{1}{3}, p, \frac{2}{3}$

$\frac{1}{6}, \frac{2}{6}, p, \frac{4}{6}$

$p = \frac{2}{6} + \frac{1}{6}$

$p = \frac{3}{6} = \frac{1}{2}$

(c) (i) Nombor
Numbers

1, 4, 7, 10, …

Ungkapan algebra
Algebraic expression

$= 1 + 3n - 3$

$= 3n - 2$

(ii) Sebutan ke-30
30th term

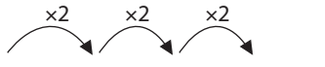
$= 3(30) - 2$

$= 90 - 2$

$= 88$

Power KBAT

(i)



100, 200, 400, 800, …

Bilangan serangga dalam generasi ke-4
Number of insects in the 4th generation

= 800

(ii)

100, 200, 400, 800, 1 600

Jumlah serangga dalam lima generasi
Total number of insects in five generations

= 100 + 200 + 400 + 800 + 1 600

= 3 100

(iii)

$$\frac{\text{Bilangan serangga dalam generasi ke-5}}{\text{Bilangan serangga dalam generasi pertama}} = \frac{1\,600}{100}$$

The number of insects in the 5th generation / *The number of insects in the first generation*

$= 16$

Maka, populasi serangga dalam generasi ke-5 ialah 16 kali berbanding dengan generasi pertama.
Therefore, the population of insects in the 5th generation is 16 times compared to the first generation.