Penyelesaian Lengkap

Praktis 2

Praktis Formatif

2.1 Nombor Asas
Number Bases

1

	Nombor/*Number*	Nilai-nilai *n* (2 hingga 10) yang mungkin *Possible values of n* (2 to 10)
(a)	4335_n	6, 7, 8, 9, 10
(b)	1891_n	10
(c)	1011_n	2, 3, 4, 5, 6, 7, 8, 9, 10
(d)	652_n	7, 8, 9, 10
(e)	1231_n	4, 5, 6, 7, 8, 9, 10
(f)	3743_n	8, 9, 10
(g)	8776_n	9, 10
(h)	5555_n	6, 7, 8, 9, 10
(i)	221_n	3, 4, 5, 6, 7, 8, 9, 10

2 (a)

Nombor dalam asas 3 *Number in base* **3**	1	2	0	1
Nilai tempat/*Place value*	3^3	3^2	3^1	3^0

(b)

Nombor dalam asas 9 *Number in base* **9**	1	7	6	2	1
Nilai tempat/*Place value*	9^4	9^3	9^2	9^1	9^0

(c)

Nombor dalam asas 4 *Number in base* **4**	3	3	3	0
Nilai tempat/*Place value*	4^3	4^2	4^1	4^0

(d)

Nombor dalam asas 6 *Number in base* **6**	1	4	5	3	1
Nilai tempat/*Place value*	6^4	6^3	6^2	6^1	6^0

3 (a)

Nombor dalam asas 8 *Number in base* **8**	6	6	7	1
Nilai tempat/*Place value*	8^3	8^2	8^1	8^0

$1 \times 8^0 = 1$

(b)

Nombor dalam asas 5 *Number in base* **5**	1	2	3	4
Nilai tempat/*Place value*	5^3	5^2	5^1	5^0

$3 \times 5^1 = 15$

(c)

Nombor dalam asas 7 *Number in base* **7**	6	3	5	1
Nilai tempat/*Place value*	7^3	7^2	7^1	7^0

$6 \times 7^3 = 2058$

(d)

Nombor dalam asas 2 *Number in base* **2**	1	0	1	0	1
Nilai tempat/*Place value*	2^4	2^3	2^2	2^1	2^0

$1 \times 2^4 = 16$

4 (a)

Nombor dalam asas 2/*Number in base* **2**	1	1	0	0	0	1
Nilai tempat/*Place value*	2^5	2^4	2^3	2^2	2^1	2^0

$(1 \times 2^5) + (1 \times 2^4) + (1 \times 2^0) = 49_{10}$

(b)

Nombor dalam asas 3 *Number in base* **3**	2	1	2	2
Nilai tempat/*Place value*	3^3	3^2	3^1	3^0

$(2 \times 3^3) + (1 \times 3^2) + (2 \times 3^1) + (2 \times 3^0) = 71_{10}$

(c)

Nombor dalam asas 4/*Number in base* **4**	1	3	3
Nilai tempat/*Place value*	4^2	4^1	4^0

$(1 \times 4^2) + (3 \times 4^1) + (3 \times 4^0) = 31_{10}$

(d)

Nombor dalam asas 5 *Number in base* **5**	2	4	0	3
Nilai tempat/*Place value*	5^3	5^2	5^1	5^0

$(2 \times 5^3) + (4 \times 5^2) + (3 \times 5^0) = 353_{10}$

(e)

Nombor dalam asas 6 *Number in base* **6**	3	2	5	4
Nilai tempat/*Place value*	6^3	6^2	6^1	6^0

$(3 \times 6^3) + (2 \times 6^2) + (5 \times 6^1) + (4 \times 6^0) = 754_{10}$

(f)

Nombor dalam asas 7 *Number in base 7*	2	5	2	6
Nilai tempat/*Place value*	7^3	7^2	7^1	7^0

$(2 \times 7^3) + (5 \times 7^2) + (2 \times 7^1) + (6 \times 7^0) = 951_{10}$

(g)

Nombor dalam asas 8 *Number in base 8*	3	4	2	0
Nilai tempat/*Place value*	8^3	8^2	8^1	8^0

$(3 \times 8^3) + (4 \times 8^2) + (2 \times 8^1) = 1\,808_{10}$

(h)

Nombor dalam asas 9/*Number in base* **9**	4	6	8
Nilai tempat/*Place value*	9^2	9^1	9^0

$(4 \times 9^2) + (6 \times 9^1) + (8 \times 9^0) = 386_{10}$

5 (a)

Nombor dalam asas 2 *Number in base 2*	1	1	1	0	0
Nilai tempat/*Place value*	2^4	2^3	2^2	2^1	2^0

$(1 \times 2^4) + (1 \times 2^3) + (1 \times 2^2) = 28_{10}$

6	28	Baki/*Remainder*
6	4	4
	0	4

$28_{10} = 44_6 = 4(6)^1 + 4(6)^0$

Dengan perbandingan/*By comparison*,
$n = 4$, $m = 1$

(b)

Nombor dalam asas 5 *Number in base 5*	4	0	2	1
Nilai tempat/*Place value*	5^3	5^2	5^1	5^0

$(4 \times 5^3) + (2 \times 5^1) + (1 \times 5^0) = 511_{10}$

7	511	Baki/*Remainder*
7	73	0
7	10	3
7	1	3
	0	1

$511_{10} = 1330_7 = 1(7)^3 + 3(7)^2 + 3(7)^1$

Dengan perbandingan/*By comparison*,
$n = 2$, $m = 3$

(c)

Nombor dalam asas 8/*Number in base* **8**	6	7	0
Nilai tempat/*Place value*	8^2	8^1	8^0

$(6 \times 8^2) + (7 \times 8^1) = 440_{10}$

3	440	Baki/*Remainder*
3	146	2
3	48	2
3	16	0
3	5	1
3	1	2
	0	1

$440_{10} = 121022_3 = (3)^5 + 2(3)^4 + (3)^3 + 2(3)^1 + 2$

Dengan perbandingan/*By comparison*,
$n = 2$, $m = 5$

6 $900_{10} = x(9)^3 + 2(9)^y + z$

9	900	Baki/*Remainder*
9	100	0
9	11	1
9	1	2
	0	1

$900_{10} = 1210_9$
$= 1(9)^3 + 2(9)^2 + 1(9)$

Secara perbandingan/*By comparison*,
$x = 1$, $y = 2$, $z = 9$

7 (a) Nilai digit 2 dalam 27_{10} ialah 20.
Value of digit 2 *in* 27_{10} *is* 20.

2	20	Baki/*Remainder*
2	10	0
2	5	0
2	2	1
2	1	0
	0	1

$20_{10} = 10100_2$

(b) Nilai digit 2 dalam 7208_9 ialah $2 \times 9^2 = 162$.
Value of digit 2 *in* 7208_9 *is* $2 \times 9^2 = 162$.

4	162	Baki/*Remainder*
4	40	2
4	10	0
4	2	2
	0	2

$162_{10} = 2202_4$

(c) Nilai digit 2 dalam 2000_7 ialah $2 \times 7^3 = 686$.
Value of digit 2 *in* 2000_7 *is* $2 \times 7^3 = 686$.

9	686	Baki/*Remainder*
9	76	2
9	8	4
	0	8

$686_{10} = 842_9$

8 (a)

0	1	0	1	0	0
4	2	1	4	2	1
	2		4		
	↓		↓		
	2		4		

$\therefore 10100_2 = 24_8$

(b)

0	1	0	0	1	1	1	1
2	1	4	2	1	4	2	1
	1		1		4 + 2 + 1		
	↓		↓		↓		
	1		1		7		

$\therefore 1001111_2 = 117_8$

(c)

1	1	1	1	0	1	0
1	4	2	1	4	2	1
1	4 + 2 + 1				2	
↓	↓				↓	
1	7				2	

$\therefore 1111010_2 = 172_8$

9 (a)

2			6			← Asas 8 *Base 8*
4	2	1	4	2	1	
0	1	0	1	1	0	← Asas 2 *Base 2*

$\therefore 26_8 = 10110_2$

(b)

3			5			7		
4	2	1	4	2	1	4	2	1
0	1	1	1	0	1	1	1	1

$\therefore 357_8 = 11101111_2$

(c)

2			4			6		
4	2	1	4	2	1	4	2	1
0	1	0	1	0	0	1	1	0

$246_8 = 10100110_2$

10 (a) $111_2 = (1 \times 2^2) + (1 \times 2^1) + (1 \times 2^0)$

$= 7_{10}$

3 |	7	Baki/*Remainder*
3 |	2	1 ↑
	0	2

$111_2 = 21_3$

(b) $232_5 = (2 \times 5^2) + (3 \times 5^1) + (2 \times 5^0) = 67_{10}$

4 |	67	Baki/*Remainder*
4 |	16	3 ↑
4 |	4	0
4 |	1	0
	0	1

$232_5 = 1003_4$

(c) $257_8 = (2 \times 8^2) + (5 \times 8^1) + (7 \times 8^0) = 175_{10}$

6 |	175	Baki/*Remainder*
6 |	29	1 ↑
6 |	4	5
	0	4

$257_8 = 451_6$

(d)

9 |	310	Baki/*Remainder*
9 |	34	4 ↑
9 |	3	7
	0	3

$310_{10} = 374_9$

11 (a) $110_2 + 111_2 = 1101_2$

$$\begin{array}{r} 110_2 \\ +\ 111_2 \\ \hline 1101_2 \end{array}$$

(b) $1122_3 + 1211_3 = 10110_3$

$$\begin{array}{r} 1122_3 \\ +\ 1211_3 \\ \hline 10110_3 \end{array}$$

(c) $302_4 + 323_4 = 1231_4$

$$\begin{array}{r} 302_4 \\ +\ 323_4 \\ \hline 1231_4 \end{array}$$

(d) $2304_5 + 321_5 = 3130_5$

$$\begin{array}{r} 2304_5 \\ +\ 321_5 \\ \hline 3130_5 \end{array}$$

(e) $244_6 + 355_6 = 1043_6$

$$\begin{array}{r} 244_6 \\ +\ 355_6 \\ \hline 1043_6 \end{array}$$

(f) $1356_7 + 6423_7 = 11112_7$

$$\begin{array}{r} 1356_7 \\ +\ 6423_7 \\ \hline 11112_7 \end{array}$$

(g) $3574_8 + 226_8 = 4022_8$

$$\begin{array}{r} 3574_8 \\ +\ 226_8 \\ \hline 4022_8 \end{array}$$

(h) $1286_9 + 2377_9 = 3674_9$

$$\begin{array}{r} 1286_9 \\ +\ 2377_9 \\ \hline 3674_9 \end{array}$$

12 (a) $11011_2 - 101_2 = 10110_2$

$$\begin{array}{r} 11011_2 \\ -\ 101_2 \\ \hline 10110_2 \end{array}$$

(b) $2202_3 - 121_3 = 2011_3$

$$\begin{array}{r} 2202_3 \\ -\ 121_3 \\ \hline 2011_3 \end{array}$$

(c) $330_4 - 233_4 = 31_4$

$$\begin{array}{r} 330_4 \\ -\ 233_4 \\ \hline 31_4 \end{array}$$

(d) $3122_5 - 241_5 = 2331_5$

$$\begin{array}{r} 3122_5 \\ -\ 241_5 \\ \hline 2331_5 \end{array}$$

(e) $531_6 - 242_6 = 245_6$

$$\begin{array}{r} 531_6 \\ -\ 242_6 \\ \hline 245_6 \end{array}$$

(f) $600_7 - 55_7 = 512_7$

$$\begin{array}{r} 600_7 \\ -\ 55_7 \\ \hline 512_7 \end{array}$$

(g) $2710_8 - 701_8 = 2007_8$

$$\begin{array}{r} 2710_8 \\ -\ 701_8 \\ \hline 2007_8 \end{array}$$

(h) $3100_9 - 254_9 = 2735_9$

$$\begin{array}{r} 3100_9 \\ -\ 254_9 \\ \hline 2735_9 \end{array}$$

13 2 bahagian = 20
2 *parts* = 20
1 bahagian = 10
1 *part* = 10

(a) 7 bahagian/7 *parts*
$= 7 \times 10 = 70$
Terdapat 70 orang murid yang menggemari putih dan hitam.
There are 70 *pupils who like white and black.*

3	70	Baki/*Remainder*
3	23	1
3	7	2
3	2	1
	0	2

Terdapat 2121_3 orang murid yang menggemari putih dan hitam.
There are 2121_3 *pupils who like white and black.*

(b) 10 bahagian/*parts*
$= 10 \times 10 = 100$
$\sqrt{x} = 100$
$x = 10\,000$

9	10000	Baki/*Remainder*
9	1111	1
9	123	4
9	13	6
9	1	4
	0	1

Nilai x dalam asas sembilan ialah 14641_9.
The value of x in base nine is 14641_9.

(c) Terdapat 10 orang murid yang menggemari merah sebab 1 bahagian = 10 orang murid.
There are 10 *pupils who like red because* 1 *part* = 10 *pupils*.

2	10	Baki/*Remainder*
2	5	0
2	2	1
2	1	0
	0	1

Terdapat 1010_2 orang murid yang menggemari merah.
There are 1010_2 *pupils who like red.*

14 (a) $\frac{35}{100} \times 300 = 105$

8	105	Baki/*Remainder*
8	13	1
8	1	5
	0	1

$105_{10} = 151_8$

(b) $\frac{15}{100} \times 300 = 45$

6	45	Baki/*Remainder*
6	7	3
6	1	1
	0	1

$45_{10} = 113_6$

(c) $\frac{2}{100} \times 300 = 6$

$6_{10} = 20_3$

3	6	Baki/*Remainder*
3	2	0
	0	2

15

$10_3 \longrightarrow 3_{10}$

$1111_2 \longrightarrow 15_{10}$

$103_6 \longrightarrow 39_{10}$

Beza/*Difference* = 15 – 3 = 12

Jadi, urutan ialah/*So, the sequence is* 3, 15, 27, 39, 51

$a_5 = 27_{10}$, $b_4 = 51_{10}$

5	27	Baki/*Remainder*
5	5	2
5	1	0
	0	1

4	51	Baki/*Remainder*
4	12	3
4	3	0
	0	3

Oleh itu/*Therefore*, a =102 dan/*and* b = 303

16 (a) Katakan x = harga sebiji nanas dalam RM
Let x = the price of a pineapple in RM
Katakan y = harga sebiji tembikai susu dalam RM
Let y = the price of a honeydew melon in RM
Persamaan/*Equation* (1): $110_2x + 10_2y = 1112_4$
Persamaan/*Equation* (2): $x = 100_3$

$110_2 \longrightarrow 6_{10}$

$10_2 \longrightarrow 2_{10}$

$1112_4 \longrightarrow 86_{10}$

$100_3 \longrightarrow 9_{10}$

Maka/*Thus*, $x = 9$

Ganti $x = 9$ ke dalam persamaan(1):

Substitute $x = 9$ *into equation* (1):

$6(9)+2y = 86$

$y = 16$

$= 22_7$

7	16	Baki/*Remainder*
7	2	2
	0	2

(b) $12_3(9) + 21_3(16) = 5(9) + 7(16)$

$= 157$

$= 1112_5$

$12_3 \longrightarrow 5_{10}$

$21_3 \longrightarrow 7_{10}$

5	157	Baki/*Remainder*
5	31	2
5	6	1
5	1	1
	0	1

Praktis Sumatif

Kertas 1

1 B	**2** D	**3** B	**4** C	**5** D
6 A	**7** D	**8** C	**9** B	**10** C

Kertas 2

Bahagian/*Section* A

1 21202_3

$= 2(3^4) + 1(3^3) + 2(3^2) + 2(3^0)$

$= 209_{10}$

6	209	
6	34	5
6	5	4
	0	5

$21202_3 = 209_{10}$

$= 545_6$

$k = 4$

2 (a) 1011_3

$=1(3^3) + 1(3^1) + 1(3^0)$

$= 31_{10}$

4	31	
4	7	3
4	1	3
	0	1

$1011_3 = 31_{10} = 133_4$

Maka/*Thus*, $n = 1$

(b) $70_9 = 7(9^1)$
$= 63_{10}$

4	63	
4	15	3
4	3	3
	0	3

$70_9 = 63_{10} = 333_4$
Maka/*Thus*, $n = 3$

3 Bilangan murid/*Number of students*: $33_4 = 15_{10}$
$33_4 = 3(4^1) + 3(4^0) = 15_{10}$
Markah purata/*Average marks*: $240_5 = 70_{10}$
$240_5 = 2(5^2) + 4(5^1) = 70_{10}$
Jumlah markah/*Total marks* $= 70 \times 15$
$= 1050_{10}$
$= 1386_9$

9	1050	
9	116	6
9	12	8
9	1	3
	0	1

4 $253_6 = 2(6^2) + 5(6^1) + 3(6^0)$
$= 105_{10}$
Harga selepas 30% diskaun/*Price after* 30% *discount*:
$253_6 = 105_{10}$
Harga asal/*Original price* $= 105 \div 0.7$
$= 150_{10}$
$= 1100_5$

5	150	
5	30	0
5	6	0
5	1	1
	0	1

Bahagian/*Section B*

5 (a) $55506 - 1239 = 54267_{10}$
$= 2202102220_3$

3	54267	
3	18089	0
3	6029	2
3	2009	2
3	669	2
3	223	0
3	74	1
3	24	2
3	8	0
3	2	2
	0	2

(b) $76734_8 = 7(8^4) + 6(8^3) + 7(8^2) + 3(8^1) + 4(8^0)$
$= 32220_{10}$
$1100110101_2 = 1(2^9) + 1(2^8) + 1(2^5) + 1(2^4) + 1(2^2)$
$+ 1(2^0)$
$= 821_{10}$
$32\,220 - 821 = 31\,399$

7	31 399	
7	4 485	4
7	640	5
7	91	3
7	13	0
7	1	6
	0	1

$76734_8 - 1100110101_2 = 32220_{10} - 821_{10}$
$= 160354_7$

6 $2468_9 = 2(9^3) + 4(9^2) + 6(9^1) + 8(9^0)$
$= 1844_{10}$

6	1844	
6	307	2
6	51	1
6	8	3
6	1	2
	0	1

$1844_{10} = 12312_6$
Maka/*Thus*, $h = 12312$

3	1844	
3	614	2
3	204	2
3	68	0
3	22	2
3	7	1
3	2	1
	0	2

$1844_{10} = 2112022_3$
Maka/*Thus*, $m = 2112022$

4	1844	
4	461	0
4	115	1
4	28	3
4	7	0
4	1	3
	0	1

$1844_{10} = 130310_4$
Maka/*Thus*, $n = 130310$

7 (a) 54_8, 1200_3, m_6, 101111_2
$54_8 = 5(8^1) + 4(8^0)$
$= 44_{10}$

$1200_3 = 1(3^3) + 2(3^2)$
$= 45_{10}$
Tukar kepada asas 10/*Convert to base* 10:
44, 45, m_6, 47
Maka/*Thus*, $m_6 = 46$

6 |	46	
6 |	7	4
6 |	1	1
	0	1

$m_6 = 114_6$
$m = 114$

(b) 235_6, 165_7, p_8, q_9, 1203_4
$235_6 = 2(6^2) + 3(6^1) + 5(6^0)$
$= 95_{10}$
$165_7 = 1(7^2) + 6(7^1) + 5(7^0)$
$= 96_{10}$

Tukar kepada asas 10/*Convert to base* 10:
95, 96, p_8, q_9, 99
Maka/*Thus*, $p_8 = 97$ dan/*and* $q_9 = 98$

8 |	97	
8 |	12	1
8 |	1	4
	0	1

9 |	98	
9 |	10	8
9 |	1	1
	0	1

$p_8 = 141_8$ dan/*and* $q_9 = 118_9$
Oleh itu/*Hence*, $p = 141$ dan/*and* $q = 118$