Penyelesaian Lengkap

PRAKTIS 2

Praktis Formatif

2.1 Asas Nombor
Number Bases

1

	Nombor *Number*	Nilai-nilai n (0 hingga 10) yang mungkin *Possible values of* n (0 to 10)
(a)	111_n	2, 3, 4, 5, 6, 7, 8, 9, 10
(b)	3021_n	4, 5, 6, 7, 8, 9, 10
(c)	251_n	6, 7, 8, 9, 10
(d)	5672_n	8, 9, 10
(e)	$4n8_9$	0, 1, 2, 3, 4, 5, 6, 7, 8
(f)	$22n_3$	0, 1, 2
(g)	$n01_5$	1, 2, 3, 4
(h)	n_{10}	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
(i)	666_n	7, 8, 9, 10
(j)	9892_n	10

2 (a)

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

(b)

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

(c)

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

(d)

Nombor asas 8 *Number in base 8*	3	3	0	0	7
Nilai tempat/*Place value*	8^4	8^3	8^2	8^1	8^0

3 (a)

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

$2 \times 3^2 = 18$

(b)

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

$3 \times 4^1 = 12$

(c)

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

$4 \times 6^3 = 864$

(d)

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

$1 \times 5^4 = 625$

4 (a)

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

$1 \times 2^5 + 1 \times 2^3 + 1 \times 2^1 = 42_{10}$

(b)

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

$1 \times 3^3 + 2 \times 3^2 + 2 \times 3^1 + 1 \times 3^0 = 52_{10}$

(c)

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

$3 \times 4^2 + 2 \times 4^1 + 1 \times 4^0 = 57_{10}$

(d)

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

$4 \times 5^3 + 1 \times 5^2 + 3 \times 5^1 = 540_{10}$

(e)

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

$2 \times 6^3 + 3 \times 6^2 + 4 \times 6^1 + 5 \times 6^0 = 569_{10}$

(f)

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

$1 \times 7^3 + 4 \times 7^2 + 3 \times 7^1 + 1 \times 7^0 = 561_{10}$

(g)

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

$2 \times 8^3 + 6 \times 8^2 + 6 \times 8^1 + 7 \times 8^0 = 1\,463_{10}$

(h)

Nombor dalam asas 9 *Number in base 9*	2	5	0
Nilai tempat/*Place value*	9^2	9^1	9^0

$2 \times 9^2 + 5 \times 9^1 = 207_{10}$

5 (a)

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

$2 \times 3^4 + 1 \times 3^3 + 2 \times 3^2 + 3 = 210_{10}$

		Baki/*Remainder*
2	210	0
2	105	1
2	52	0
2	26	0
2	13	1
2	6	0
2	3	1
2	1	1
	0	

$210_{10} = 11010010_2 = 2^7 + 2^6 + 2^4 + 2$

Dengan perbandingan/*By comparison*,
$p = 2, q = 7, r = 2$

(b)

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

$3 \times 4^3 + 3 \times 4^2 + 1 \times 4^0 = 241_{10}$

		Baki/*Remainder*
9	241	7
9	26	8
9	2	2
	0	

$241_{10} = 287_9 = 2(9^2) + 8(9^1) + 7(9^0)$

Dengan perbandingan/*By comparison*,
$p = 2, q = 8, r = 7$

(c)

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

$5 \times 6^2 + 5 \times 6^1 + 5 \times 6^0 = 215_{10}$

		Baki/*Remainder*
8	215	7
8	26	2
8	3	3
	0	

$215_{10} = 327_8 = 3(8^2) + 2(8^1) + 7(8^0)$

Dengan perbandingan/*By comparison*,
$p = 7, q = 8, r = 0$

6 $759_{10} = a(7^3) + 7^2 + 3(7^b) + c$

		Baki/*Remainder*
7	759	3
7	108	3
7	15	1
7	2	2
	0	

$759_{10} = 2133_7$
$= 2(7^3) + 7^2 + 3(7^1) + 3(7^0)$

Secara perbandingan/*By comparison*,
$a = 2, b = 1, c = 3$

7 (a) Nilai digit 3 dalam 9327_{10} ialah 300.
Value of digit 3 *in* 9327_{10} *is* 300.

		Baki/*Remainder*
8	300	4
8	37	5
8	4	4
	0	

$\therefore 454_8$

(b) Nilai digit 3 dalam 3102_4 ialah $3 \times 4^3 = 192$.
Value of digit 3 *in* 3102_4 *is* $3 \times 4^3 = 192$.

		Baki/*Remainder*
9	192	3
9	21	3
9	2	2
	0	

$\therefore 233_9$

(c) Nilai digit 3 dalam 2234_8 ialah $3 \times 8^1 = 24$.
Value of digit 3 *in* 2234_8 *is* $3 \times 8^1 = 24$.

		Baki/*Remainder*
2	24	0
2	12	0
2	6	0
2	3	1
2	1	1
	0	

$\therefore 11000_2$

8 (a)

0	1	0	0	1	1
4	2	1	4	2	1
	2			2 + 1	
	↓			↓	
	2			3	

$\therefore 10011_2 = 23_8$

(b)

0	1	1	0	0	1	0	1
2	1	4	2	1	4	2	1
	1	4			4		+ 1
	↓		↓			↓	
	1		4			5	

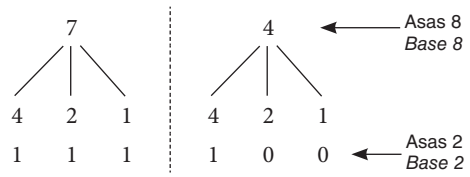
$\therefore 1100101_2 = 145_8$

(c)

1	1	1	1	0	1	1	1
2	1	4	2	1	4	2	1
2 + 1		4 + 2			4 + 2 + 1		
↓		↓			↓		
3		6			7		

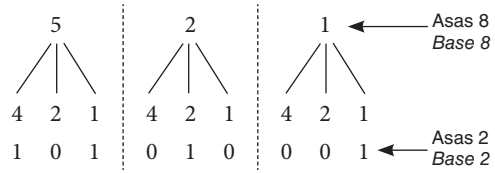
$\therefore 11110111_2 = 367_8$

9 (a)



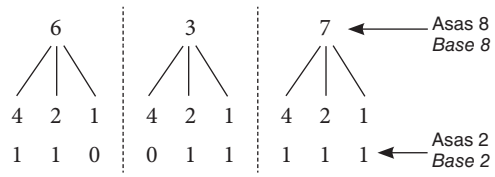
$\therefore 74_8 = 111100_2$

(b)



$\therefore 521_8 = 101010001_2$

(c)



$637_8 = 110011111_2$

10 (a)

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

$3 \times 5^2 + 4 \times 5^1 + 4 \times 5^0 = 99_{10}$

6	99	Baki/*Remainder*
6	16	3 ↑
6	2	4
	0	2

$\therefore 344_5 = 243_6$

(b)

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

$2 \times 9^2 + 7 \times 9^1 + 6 \times 9^0 = 231_{10}$

7	231	Baki/*Remainder*
7	33	0 ↑
7	4	5
	0	4

$\therefore 276_9 = 450_7$

(c)

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

$1 \times 2^5 + 1 \times 2^3 + 1 \times 2^2 + 1 \times 2^0 = 45_{10}$

4	45	Baki/*Remainder*
4	11	1 ↑
4	2	3
	0	2

$\therefore 101101_2 = 231_4$

11 (a) $220_3 = (2 \times 3^2) + (2 \times 3^1) + (0 \times 3^0)$
$= 24_{10}$

8	24	Baki/*Remainder*
8	3	0 ↑
	0	3

$\therefore 220_3 = 30_8$

(b) $102_4 = (1 \times 4^2) + (0 \times 4^1) + (2 \times 4^0) = 18_{10}$

3	18	Baki/*Remainder*
3	6	0 ↑
3	2	0
	0	2

$\therefore 102_4 = 200_3$

(c) $534_6 = (5 \times 6^2) + (3 \times 6^1) + (4 \times 6^0) = 202_{10}$

5	202	Baki/*Remainder*
5	40	2 ↑
5	8	0
5	1	3
	0	1

$\therefore 534_6 = 1302_5$

12 (a) $101_2 + 1101_2 = 10010_2$

$$\begin{array}{r} 101_2 \\ +\ 1101_2 \\ \hline 10010_2 \end{array}$$

(b) $222_3 + 121_3 = 1120_3$

$$\begin{array}{r} 222_3 \\ +\ 121_3 \\ \hline 1120_3 \end{array}$$

(c) $312_4 + 313_4 = 1231_4$

$$\begin{array}{r} 312_4 \\ +\ 313_4 \\ \hline 1231_4 \end{array}$$

(d) $124_5 + 341_5 = 1020_5$

$$\begin{array}{r} 124_5 \\ +\ 341_5 \\ \hline 1020_5 \end{array}$$

(e) $531_6 + 415_6 = 1350_6$

$$\begin{array}{r} 531_6 \\ +\ 415_6 \\ \hline 1350_6 \end{array}$$

(f) $6162_7 + 6453_7 = 15645_7$

$$\begin{array}{r} 6162_7 \\ +\ 6453_7 \\ \hline 15645_7 \end{array}$$

(g) $7525_8 + 3766_8 = 13513_8$

$$\begin{array}{r} 7525_8 \\ +\ 3766_8 \\ \hline 13513_8 \end{array}$$

(h) $8532_9 + 3864_9 = 13506_9$

$$\begin{array}{r} 8532_9 \\ +\ 3864_9 \\ \hline 13506_9 \end{array}$$

13 (a) $1001_2 - 111_2 = 10_2$

$$\begin{array}{r} 1001_2 \\ -\ 111_2 \\ \hline 10_2 \end{array}$$

(b) $2112_3 - 210_3 = 1202_3$

$$\begin{array}{r} 2112_3 \\ -\ 210_3 \\ \hline 1202_3 \end{array}$$

(c) $312_4 - 231_4 = 21_4$

$$\begin{array}{r} 312_4 \\ -\ 231_4 \\ \hline 21_4 \end{array}$$

(d) $3034_5 - 2142_5 = 342_5$

$$\begin{array}{r} 3034_5 \\ -\ 2142_5 \\ \hline 342_5 \end{array}$$

(e) $452_6 - 344_6 = 104_6$

$$\begin{array}{r} 452_6 \\ -\ 344_6 \\ \hline 104_6 \end{array}$$

(f) $560_7 - 166_7 = 361_7$

$$\begin{array}{r} 560_7 \\ -\ 166_7 \\ \hline 361_7 \end{array}$$

(g) $6740_8 - 5657_8 = 1061_8$

$$\begin{array}{r} 6740_8 \\ -\ 5657_8 \\ \hline 1061_8 \end{array}$$

(h) $8008_9 - 453_9 = 7445_9$

$$\begin{array}{r} 8008_9 \\ -\ 453_9 \\ \hline 7445_9 \end{array}$$

14 (a) 3 bahagian/*parts* = 675
1 bahagian/*part* = 675 ÷ 3= 225
4 bahagian/*parts*
= 4 × 225
= 900
Terdapat 900 orang murid yang menggemari badminton.
There are 900 *students who like badminton*.

6	900	Baki/*Remainder*
6	150	0 ↑
6	25	0
6	4	1
	0	4

Terdapat 4100_6 orang murid yang menggemari badminton.
There are 4100_6 *students who like badminton.*

(b) 15 bahagian/*parts*
$= 15 \times 225$
$= 3375$
$y^3 = 3375$
$y = 15$
$y^2 = 225$

4 | 225		Baki/*Remainder*
4 | 56		1 ↑
4 | 14		0
4 | 3		2
0		3

Nilai y^2 dalam asas empat ialah 3201_4.
The value of y^2 *in base four is* 3201_4.

(c) 7 bahagian/*parts*
$= 7 \times 225$
$= 1575$
Jumlah murid yang menggemari ragbi dan badminton ialah 1575 orang.
The total number of students who like rugby and badminton is 1575.

9 | 1575		Baki/*Remainder*
9 | 175		0 ↑
9 | 19		4
9 | 2		1
0		2

Jumlah murid yang menggemari ragbi dan badminton ialah 2140_9 orang.
The total number of students who like rugby and badminton is 2140_9.

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

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* $q = 118$