Jawapan

Praktis 2

Praktis Formatif

2.1 Nombor Asas
Number Bases

1

Nombor *Number*	Nilai-nilai *n* (2 hingga 9) yang mungkin *Possible values of n* (2 *to* 9)
(a) 7306_n	8, 9
(b) 2304_n	5, 6, 7, 8, 9
(c) 1458_n	9
(d) 2002_n	3, 4, 5, 6, 7, 8, 9

2 (a)

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

(b)

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

(c)

Nombor dalam asas 8 *Number in base* 8	4	7	6	1
Nilai tempat *Place value*	8^3	8^2	8^1	8^0

(d)

Nombor dalam asas 7 *Number in base* 7	5	2	3	4	6
Nilai tempat *Place value*	7^4	7^3	7^2	7^1	7^0

3 (a)

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

$2 \times 3^3 = 54$

(b)

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

$3 \times 4^3 = 192$

(c)

Nombor dalam asas 9 *Number in base* 9	5	6	7	4
Nilai tempat *Place value*	9^3	9^2	9^1	9^0

$6 \times 9^2 = 486$

(d)

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

$5 \times 6^4 = 6\,480$

4 (a)

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

$(1 \times 2^5) + (1 \times 2^4) + (1 \times 2^3) + (1 \times 2^2) + (1 \times 2^1) + (0 \times 2^0) = 62_{10}$

(b)

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

$(4 \times 5^3) + (3 \times 5^2) + (2 \times 5^1) + (1 \times 5^0) = 586_{10}$

(c)

Nombor dalam asas 8 *Number in base* 8	6	7	5
Nilai tempat *Place value*	8^2	8^1	8^0

$(6 \times 8^2) + (7 \times 8^1) + (5 \times 8^0) = 445_{10}$

(d)

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

$(2 \times 9^2) + (6 \times 9^1) + (3 \times 9^0) = 219_{10}$

(e)

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

$(2 \times 4^3) + (1 \times 4^2) + (3 \times 4^1) + (0 \times 4^0) = 156_{10}$

(f)

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

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

(g)

Nombor dalam asas 7 *Number in base 7*	1	6	4	5
Nilai tempat *Place value*	7^3	7^2	7^1	7^0

$(1 \times 7^3) + (6 \times 7^2) + (4 \times 7^1) + (5 \times 7^0) = 670_{10}$

(h)

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

$(5 \times 6^2) + (4 \times 6^1) + (3 \times 6^0) = 207_{10}$

5 (a) $10210_3 = 1(3)^m + 2(n)^2 + 3$
$10210_3 = 1(3)^4 + 2(3)^2 + (3)^1$
$m = 4, n = 3$

(b) $4101_6 = 4(n)^m + (6)^2 + 1$
$4101_6 = 4(6)^3 + (6)^2 + 1$
$m = 3, n = 6$

(c) $10032_5 = 5^m + 3n + 2$
$10032_5 = 5^4 + 3(5)^1 + 2$
$m = 4, n = 5$

6 $600_{10} = p(8)^3 + q(8)^2 + 8r$
$600_{10} = 1(8)^3 + 1(8)^2 + 8(3)$
$p = 1, q = 1, r = 3$

7

Nilai tempat/*Place value*	3^2	3^1	3^0
Digit/*Digit*	2	2	1

$(2 \times 3^2) + (2 \times 3^1) + (1 \times 3^0) = 25_{10}$
$k = 221$

8 (a)

2	86	Baki/*Remainder*
2	43	0
2	21	1
2	10	1
2	5	0
2	2	1
2	1	0
	0	1

$86_{10} = 1010110_2$

(b)

5	759	Baki/*Remainder*
5	151	4
5	30	1
5	6	0
5	1	1
	0	1

$\therefore 759_{10} = 11014_5$

(c)

8	3000	Baki/*Remainder*
8	375	0
8	46	7
8	5	6
	0	5

$\therefore 3000_{10} = 5670_8$

(d)

9	43567	Baki/*Remainder*
9	4840	7
9	537	7
9	59	6
9	6	5
	0	6

$\therefore 43567_{10} = 65677_9$

9 (a) $10101100_2 = 254_8$

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

$\therefore 10101100_2 = 254_8$

(b) $11101111_2 = 357_8$

1	1	1	0	1	1	1	1
2	1	4	2	1	4	2	1
2 + 1			4 + 1			4 + 2 + 1	
↓			↓			↓	
3			5			7	

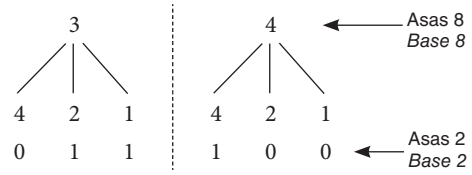
$\therefore 11101111_2 = 357_8$

(c) $11010110_2 = 326_8$

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

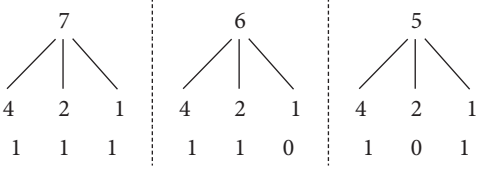
$\therefore 11010110_2 = 326_8$

10 (a)



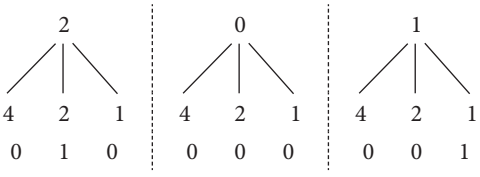
$\therefore 34_8 = 11100_2$

(b)



$\therefore 765_8 = 111110101_2$

(c)



$201_8 = 10000001_2$

11 (a)

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

$(2 \times 5^3) + (3 \times 5^2) + (3 \times 5^1) + (2 \times 5^0) = 342_{10}$

9	342	Baki/*Remainder*
9	38	0
9	4	2
	0	4

$\therefore 2332_5 = 420_9$

(b)

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

$(1 \times 7^3) + (4 \times 7^2) + (3 \times 7^1) + (2 \times 7^0) = 562_{10}$

6	562	Baki/*Remainder*
6	93	4
6	15	3
6	2	3
	0	2

$\therefore 1432_5 = 2334_6$

(c)

Nombor dalam asas 9 *Number in base 9*	8	8	7	8
Nilai tempat *Place value*	9^3	9^2	9^1	9^0

$(8 \times 9^3) + (8 \times 9^2) + (7 \times 9^1) + (8 \times 9^0) = 6551_{10}$

3	6551	Baki/*Remainder*
3	2183	2
3	727	2
3	242	1
3	80	2
3	26	2
3	8	2
3	2	2
	0	2

$\therefore 8878_9 = 22222122_3$

12 (a) $7766_8 = (7 \times 8^3) + (7 \times 8^2) + (6 \times 8^1) + (6 \times 8^0)$
$= 4086_{10}$

5	4086	Baki/*Remainder*
5	817	1
5	163	2
5	32	3
5	6	2
5	1	1
	0	1

$\therefore 7766_8 = 112321_5$

(b) $224_5 = (2 \times 5^2) + (2 \times 5^1) + (4 \times 5^0) = 64_{10}$

8	64	Baki/*Remainder*
8	8	0
8	1	0
	0	1

$\therefore 224_5 = 100_8$

(c) $3233_5 = (3 \times 5^3) + (2 \times 5^2) + (3 \times 5^1) + (3 \times 5^0)$
$= 443_{10}$

7	443	Baki/*Remainder*
7	63	2
7	9	0
7	1	2
	0	1

$\therefore 3233_5 = 1202_7$

(d) $11011110_2 = (1 \times 2^7) + (1 \times 2^6) + (0 \times 2^5) + (1 \times 2^4) + (1 \times 2^3) + (1 \times 2^2) + (1 \times 2^1) + (0 \times 2^0)$
$= 222_{10}$

		Baki/*Remainder*
6	222	
6	37	0
6	6	1
6	1	0
	0	1

$\therefore 11011110_2 = 1010_6$

13 (a) $222_5 + 344_5 = 1121_5$

$$\begin{array}{r} 222_5 \\ +\ 344_5 \\ \hline 1121_5 \end{array}$$

(b) $1100_2 + 1111_2 = 11011_2$

$$\begin{array}{r} 1100_2 \\ +\ 1111_2 \\ \hline 11011_2 \end{array}$$

(c) $354_6 + 233_6 = 1031_6$

$$\begin{array}{r} 354_6 \\ +\ 233_6 \\ \hline 1031_6 \end{array}$$

(d) $2875_9 + 684_9 = 3670_9$

$$\begin{array}{r} 2875_9 \\ +\ 684_9 \\ \hline 3670_9 \end{array}$$

(e) $101_2 + 110_2 = 1011_2$

$$\begin{array}{r} 101_2 \\ +\ 110_2 \\ \hline 1011_2 \end{array}$$

(f) $1110_2 + 1111_2 = 11101_2$

$$\begin{array}{r} 1110_2 \\ +\ 1111_2 \\ \hline 11101_2 \end{array}$$

(g) $122_3 + 212_3 = 1111_3$

$$\begin{array}{r} 122_3 \\ +\ 212_3 \\ \hline 1111_3 \end{array}$$

(h) $1212_3 + 221_3 = 2210_3$

$$\begin{array}{r} 1212_3 \\ +\ 221_3 \\ \hline 2210_3 \end{array}$$

14 (a) $2001_7 - 456_7 = 1212_7$

$$\begin{array}{r} 2001_7 \\ -\ 456_7 \\ \hline 1212_7 \end{array}$$

(b) $401_8 - 37_8 = 342_8$

$$\begin{array}{r} 401_8 \\ -\ 37_8 \\ \hline 342_8 \end{array}$$

(c) $2010_3 - 1121_3 = 112_3$

$$\begin{array}{r} 2010_3 \\ -\ 1121_3 \\ \hline 112_3 \end{array}$$

(d) $3102_4 - 233_4 = 2203_4$

$$\begin{array}{r} 3102_4 \\ -\ 233_4 \\ \hline 2203_4 \end{array}$$

(e) $101_2 - 11_2 = 10_2$

$$\begin{array}{r} 101_2 \\ -\ 11_2 \\ \hline 10_2 \end{array}$$

(f) $11101_2 - 1111_2 = 1110_2$

$$\begin{array}{r} 11101_2 \\ -\ 1111_2 \\ \hline 1110_2 \end{array}$$

(g) $1220_3 - 212_3 = 1001_3$

$$\begin{array}{r} 1220_3 \\ -\ 212_3 \\ \hline 1001_3 \end{array}$$

(h) $1112_3 - 221_3 = 121_3$

$$\begin{array}{r} 1112_3 \\ -\ 221_3 \\ \hline 121_3 \end{array}$$

15 Katakan x = harga sebatang pen dalam RM
Let x *= the price of a pen in* RM
Katakan y = harga sebatang pembaris dalam RM
Let y *= the price of a ruler in* RM

$110_2 \longrightarrow 6_{10}$
$1000_2 \longrightarrow 8_{10}$
$100_2 \longrightarrow 4_{10}$
$22_8 \longrightarrow 18_{10}$
$22_5 \longrightarrow 12_{10}$

Persamaan/*Equation* (1): $100_2x + 110_2y = 22_5$
Persamaan/*Equation* (2): $1000_2x + 110_2y = 22_8$

(2) – (1): $(1000_2 - 100_2)x + (110_2 - 110_2)y = (22_8 - 22_5)$

$4x = 6$

$x = 1.5$

Daripada /*From* (1): $4x + 6y = 12$

$4(1.5) + 6y = 12$

$y = 1$

Harga bagi sebatang pen dan sebatang pembaris masing-masing ialah RM1.50 dan RM1.00.

The prices of a pen and a ruler are RM1.50 *and* RM1.00 *respectively.*

16 Katakan x = harga seekor ikan tilapia merah dalam RM

Let x = the price of a red tilapia fish in RM

Katakan y = harga seekor ikan tilapia hitam dalam RM

Let y = the price of a black tilapia fish in RM

$101_2 \longrightarrow 5_{10}$

$111_2 \longrightarrow 7_{10}$

$1001_2 \longrightarrow 9_{10}$

$145_6 \longrightarrow 65_{10}$

$108_9 \longrightarrow 89_{10}$

Persamaan/*Equation* (1): $101_2x + 111_2y = 145_6$

Persamaan/*Equation* (2): $1001_2x + 111_2y = 108_9$

(2) – (1): $(1001_2 - 101_2)x + (111_2 - 111_2)y = (108_9 - 145_6)$

$4x = 24$

$x = 6$

Daripada /*from Equation* (1): $5x + 7y = 65$

$5(6) + 7y = 65$

$y = 5$

Harga bagi seekor ikan tilapia merah dan seekor ikan tilapia hitam masing-masing ialah RM6.00 dan RM5.00.

The prices of a red tilapia fish and a black tilapia fish are RM6.00 *and* RM5.00 *respectively.*

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

$105_{10} = 151_8$

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

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

$45_{10} = 113_6$

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

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

$6_{10} = 20_3$

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

18

$10_3 \longrightarrow 3_{10}$

$1111_2 \longrightarrow 15_{10}$

$103_6 \longrightarrow 39_{10}$

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

19 (a) Katakan x = harga sebuah katil dalam RM

Let x = the price of a bed in RM

Katakan y = harga sebuah almari dalam RM

Let y = the price of a cupboard in RM

$10_2x = 2046_9$

$11_3y = 1750_8$

$2046_9 \longrightarrow 1500_{10}$

$10_2 \longrightarrow 2_{10}$

$1750_8 \longrightarrow 1000_{10}$

$11_3 \longrightarrow 4_{10}$

$x = 1\,500 \div 2 = 750$

$y = 1\,000 \div 4 = 250$

Harga bagi sebuah katil dan sebuah almari masing-masing ialah RM750 dan RM250.

The prices of a bed and a cupboard are RM750 *and* RM250 *respectively.*

(b) $x - y = 750 - 250$

$= 500$

$500_{10} = 2152_6$

20 (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* $q = 118$