Jawapan

Praktis 4

Praktis Formatif

1 (a) $3 + 5 = 8$ (Petua penambahan/*Addition rule*)
(b) $3 \times 5 = 15$ (Petua pendaraban/*Multiplication rule*)

2 (a) $3 + 2 + 3 + 2 = 10$ (Petua penambahan/*Addition rule*)
(b) $3 \times 2 \times 2 = 12$ (Petua pendaraban/*Multiplication rule*)

3 $(3 \times 3) + (2 \times 3) = 15$

4 (a) $3 \times 4 \times 1 \times 1 = 12$
(b) $3 \times 4 \times 3 \times 2 = 72$

5 $2^{10} = 1\,024$

6 (a) $4! = 24$ atau/*or* ${}^4P_4 = 24$
(b) $4! = 24$ atau/*or* ${}^4P_4 = 24$
(c) $6! = 720$ atau/*or* ${}^6P_6 = 760$
(d) $5! = 120$ atau/*or* ${}^5P_5 = 120$

7 (a) $(10 - 1)! = 9!$ atau/*or* $\dfrac{{}^{10}P_{10}}{10} = 362\,880$
$= 362\,880$

(b) $(8 - 1)! = 7!$ atau/*or* $\dfrac{{}^8P_8}{8} = 5\,040$
$= 5\,040$

(c) $(10 - 1)! = 9!$ atau/*or* $\dfrac{{}^{10}P_{10}}{10} = 362\,880$
$= 362\,880$

(d) $(6 - 1)! = 5!$ atau/*or* $\dfrac{{}^6P_6}{6} = 120$
$= 120$

8 (a) $\dfrac{{}^{12}P_{12}}{2(12)} = 19\,958\,400$ atau/*or* $\dfrac{(12 - 1)!}{2} = 19\,958\,400$

(b) $\dfrac{{}^{10}P_{10}}{2(10)} = 181\,440$ atau/*or* $\dfrac{5!}{2!3!} = 181\,440$

9 (a)
$$n(n - 1) = 6$$
$$n^2 - n = 6$$
$$n^2 - n - 6 = 0$$
$$(n - 3)(n + 2) = 0$$
$$n = 3 \quad \text{(tolak/}reject\ n = -2\text{)}$$

(b)
$$(n + 2)(n + 1)(n) = 42\,n$$
$$(n + 2)(n + 1) = 42$$
$$n^2 + 3n + 2 - 42 = 0$$
$$n^2 + 3n - 40 = 0$$
$$(n - 5)(n + 8) = 0$$
$$n = 5 \quad \text{(tolak/}reject\ n = -8\text{)}$$

(c)
$$7(n + 1)(n) = 5(n + 2)(n + 1)$$
$$7n = 5n + 10$$
$$2n = 10$$
$$n = 5$$

(d)
$$(2n)(2n - 1) = 3(n + 1)(n)$$
$$4n - 2 = 3n + 3$$
$$n = 5$$

10 (a) ${}^5P_3 = 60$ (c) ${}^7P_4 = 840$ (e) ${}^{12}P_3 = 1\,320$
(b) ${}^6P_4 = 360$ (d) ${}^8P_3 = 336$

11 (a) $\dfrac{{}^{10}P_6}{6} = 25\,200$

(b) $\dfrac{{}^9P_5}{5} = 3\,024$

(c) $\dfrac{{}^7P_5}{7} = 360$

12 (a) $\dfrac{{}^{15}P_{10}}{2(10)} = 544\,864\,320$

(b) $\dfrac{{}^{16}P_8}{2(8)} = 32\,432\,400$

13 (a) (i) $\dfrac{7!}{3!} = 840$ (3 O's)

(ii) $\dfrac{11!}{2!2!2!} = 4\,989\,600$ (2M, 2A, 2T)

(iii) $\dfrac{11!}{4!4!2!} = 34\,650$ (4T, 4S, 2P)

(b) nombor 5 digit tanpa '8' + nombor dengan satu '8' + nombor dengan dua '8'
5-*digit number without* '8' + *number with one* '8' + *number with two* '8'
$$= \frac{{}^5P_3 \times {}^6P_2}{3!} + \frac{{}^5P_3 \times {}^2P_1 \times {}^6P_1}{3!} + \frac{{}^5P_3 \times {}^2P_2}{3!2!}$$
$= 430$
atau/*or*
$${}^6C_2 \times \frac{5!}{3!} + {}^6C_1 \times \frac{5!}{3!} + {}^2C_2 \times \frac{5!}{3!2!}$$
$= 430$

14 (a) ${}^2P_2 \times {}^5P_5 = 240$
(b) $5 \times 6! = 3\,600$
(c) $6! \times 2! = 1\,440$
(d) ${}^2P_2 \times {}^5P_3 \times 4 = 480$ atau/*or* ${}^5C_3 \times 4! \times 2! = 480$
(e) ${}^5P_2 \times {}^5P_3 = 1\,200$ atau/*or* ${}^5C_3 \times 5! = 1\,200$

15 (a) ${}^2P_2 \times {}^5P_3 = 120$
(b) $(6 - 1)!2! = 240$ atau/*or* ${}^2P_2 \times {}^5P_5 = 240$
(c) ${}^2P_2 \times {}^8P_5 = 13\,440$

16 (a) $6! = 720$
(b) $5!\ 2! = 240$
(c) $720 - 240 = 480$

17 (a) $10! = 3\,628\,800$
(b) $8!\ 3! = 241\,920$
(c) $7! \times {}^8P_3 = 1\,693\,440$

18 (a) ${}^3P_1 \times {}^4P_1 \times {}^4P_2 = 144$
(b) ${}^2P_1 \times {}^5P_3 = 120$

(c) dengan/*with* '0' + tanpa/*without* '0'
$1 \times {}^3P_3 + {}^2P_1 \times {}^3P_3 \times 2 = 30$
atau/*or*
$1 \times 3! + {}^2C_1 \times 2! \times 3! = 30$
(d) ${}^3P_2 \times {}^3P_2 + {}^2P_1 \times {}^2P_1 \times {}^3P_2 \times 2 = 60$
(e) nombor 5 digit + nombor 6 digit
5-digit number + 6-digit number
berakhiri '0': $1 \times {}^3P_1 \times {}^4P_3 + 1 \times {}^3P_1 \times {}^4P_4 = 144$
berakhiri '4': $1 \times {}^3P_1 \times {}^4P_3 + 1 \times {}^3P_1 \times {}^4P_4 = 144$
berakhiri '6': $1 \times {}^2P_1 \times {}^4P_3 + 1 \times {}^2P_1 \times {}^4P_4 = 96$
Jumlah nombor/*Total numbers* = 144 + 144 + 96
= 384

19 $3^6 = 729$

20 (a) 9! = 362 880
(b) baris 5 kerusi atau baris 4 kerusi
5-chair row or 4-chair row
$= {}^5P_3 \times 6! + {}^4P_3 \times 6!$
= 60 480

21 ${}^5P_2 \times 6! = 14\,400$

22 $\frac{10!}{3!2!} = 302\,400$
(a) $\frac{2!8!}{3!2!} = 6\,720$
(b) $\frac{8!3!}{3!2!} = 20\,160$
(c) $302\,400 - \frac{2!9!}{3!2!} = 241\,920$

23 (a) 7! = 5 040
(b) 5 040 – 6! 2! = 3 600
(c) 3! 4! = 144

24 (a) ${}^5C_2 = 10$
(b) ${}^{10}C_4 = 210$

25 (a) ${}^9C_4 \times {}^5C_5 = 126$
(b) ${}^9C_2 \times {}^7C_3 \times {}^4C_4 = 1\,260$
(c) ${}^9C_1 \times {}^8C_8 + {}^9C_2 \times {}^7C_7 + {}^9C_3 \times {}^6C_6 = 129$

26 ${}^6C_4 = 15$
(a) ${}^5C_4 = 5$
(b) $1 \times {}^5C_3 = 10$ atau/*or* 15 – 5 = 10

27 (a) ${}^4C_1 = 4$
(b) ${}^4C_1 = 4$
(c) ${}^4C_1 = 4$

28 (a) ${}^{10}C_4 = 210$
(b) ${}^4C_1 \times {}^6C_3 = 80$
(c) 2M2W + 3M1W + 4M
$= {}^4C_2 \times {}^6C_2 + {}^4C_3 \times {}^6C_2 + {}^4C_4$
= 115

29 (a) ${}^4C_1 \times {}^5C_2 + {}^4C_2 \times {}^5C_1 = 70$
(b) ${}^4C_2 \times {}^5C_2 = 60$
(c) $AF\_ + CF\_ = {}^2C_1 + {}^4C_1 + {}^2C_1 + {}^4C_1$ atau/*or*
$({}^2C_1 \times {}^4C_1) + ({}^2C_1 \times {}^2C_1)$
= 12

30 (a) ${}^6C_4 \times {}^7C_4 = 525$
(b) ${}^6C_4 \times {}^5C_2 + {}^6C_4 \times {}^5C_4 = 225$

31 (a) 9! = 362 880
(b) $1 \times {}^4C_1 \times {}^3C_1 \times 2! \times 7! = 120\,960$
(c) $6! \times {}^7P_3 = 151\,200$

32 (a) ${}^8C_5 \times {}^{12}C_5 = 44\,352$
(b) 1B9G + 2B8G + 3B7G + 4B6G
$= ({}^8C_1 \times {}^{12}C_9) + ({}^8C_5 \times {}^{12}C_8) + ({}^8C_3 \times {}^{12}C_7) + ({}^8C_4 \times {}^{12}C_6)$
= 124 652
(c) ${}^2C_2 \times {}^2C_2 \times {}^{16}C_6 = 8\,008$

33 $100 \div 5 = 20$
(a) ${}^{20}C_2 = 190$ (b) $190 - {}^3C_2 = 187$

Praktis Sumatif

Kertas 1

1 (a) $r = 0, 7$ (b) $s = t + u$

2 (a) ${}^nC_r = \frac{n!}{r!(n-r)!}$
$= \frac{n!}{(n-r)!r!}$
$= {}^nC_{n-r}$
(b) $\frac{n!}{r!(n-r)!} \div \frac{n!}{r!(n-r)!} = 120$
$\frac{n!}{(n-r)!} \times \frac{r!(n-r)!}{n!} = 120$
$r! = 1(2)(3)(4)(5)$
$= 5!$
$r = 5$

3 (a) ${}^{17}C_7 = 19\,448$
(b) ${}^7C_3 \times {}^{10}C_4 = 7\,350$
(c) 4F3M + 5F2M + 6F1M
$= ({}^{10}C_4 \times {}^7C_3) + ({}^{10}C_5 \times {}^7C_2) + ({}^{10}C_6 \times {}^7C_1)$
= 14 112

4 (a) ${}^{10}C_6 \times 5! = 25\,200$ atau/*or* $\frac{{}^{10}P_6}{6} = 25\,200$
(b) 1M5S + 2M4S + 3M3
$= ({}^5C_1 \times 5!) + ({}^5C_2 \times {}^5C_4 \times 3 \times 4!) + ({}^5C_3 \times {}^5C_3 \times 2! \times 3!)$
= 5 400

5 (a) (i) $\frac{8!}{2!} = 20\,160$
(ii) $\frac{5!4!}{2!} = 1\,440$
(b) tanpa/*without* 'I' + dengan/*with* 1 'I' + dengan/*with* 2 'I'
$= ({}^4C_3 \times 5!) + ({}^4C_2 \times 5!) + ({}^4C_1 \times \frac{5!}{2!})$
= 1 440
(c) $\frac{{}^4P_1 \times {}^4P_1 \times {}^6P_3}{2!} = 960$

6 (a) 12! = 479 001 600
(b) ${}^{12}P_9 = 79\,833\,600$
(c) 2!10! = 7 257 600

7 (a) 8! = 40 320 (b) $1 \times {}^4P_1 \times 6! = 2\,880$

8 (a) ${}^{10}P_4 = 5\,040$ atau/*or* ${}^{10}C_4 \times 4! = 5\,040$
(b) (i) ${}^8P_4 = 1\,680$ atau/*or* ${}^8C_4 \times 4! = 1\,680$
(ii) ${}^4P_1 \times {}^8P_2 = 672$ atau/*or* ${}^8C_2 \times 4! = 672$

9 ${}^6P_4 = 360$
(a) $1 \times {}^5P_3 = 60$ (b) $1 \times {}^3P_1 \times {}^4P_2 = 36$