Penyelesaian Lengkap

Praktis Formatif

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

2 (a) 3
   (b) $3 \times 4 \times 5 = 60$

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 $10^4 = 10\ 000$

6 (a) $4! = 24$ atau/*or* $^4P_4 = 24$
   (b) $4! = 24$ atau/*or* $^4P_4 = 24$
   (c) $5! = 120$ 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* $\dfrac{^{10}P_{10}}{10} = 362\ 880$
         $= 362\ 880$

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* $\dfrac{(10 - 1)!}{2} = 181\ 440$

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

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

   (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) $^8P_3 = 336$
   (b) $^7P_4 = 840$ (d) $^{12}P_3 = 1\ 320$

11 (a) $\dfrac{^{10}P_6}{6} = 25\ 200$
   (b) $\dfrac{^9P_5}{5} = 3\ 024$
   (c) $\dfrac{^7P_5}{7} = 360$

12 (a) $\dfrac{^8P_6}{2(6)} = 1\ 680$
   (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) $\dfrac{11!}{4!4!2!} = 34\ 650$ (4I, 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) $^3P_2 \times {}^3P_2 + {}^2P_1 \times {}^2P_1 \times {}^3P_2 = 60$

(e) nombor 5 digit + nombor 6 digit
   5-digit number + 6-digit number
   berakhiri '0': $1 \times {}^3P_1 \times {}^4P_3 + 1 \times {}^5P_5 = 192$
   berakhiri '4': $1 \times {}^3P_1 \times {}^4P_3 + 1 \times {}^4P_1 \times {}^4P_4 = 168$
   berakhiri '6': $1 \times {}^2P_1 \times {}^4P_3 + 1 \times {}^4P_1 \times {}^4P_4 = 144$
   Jumlah nombor/*Total numbers* $= 192 + 168 + 144$
   $\qquad\qquad\qquad\qquad\qquad\quad = 504$

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 $\dfrac{10!}{3!2!} = 302\ 400$

   (a) $\dfrac{2!8!}{3!2!} = 6\ 720$

   (b) $\dfrac{8!3!}{3!2!} = 20\ 160$

   (c) $302\ 400 - \dfrac{2!9!}{3!2!} = 241\ 920$

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 ${}^7C_2 \times {}^5C_2 = 210$

28 (a) ${}^{12}C_5 \times {}^7C_4 \times {}^3C_3 = 27\ 720$
   (b) $Axx + Bxx + Cxx = (5! \times 2! \times 4! \times 3!) \times 3$
      $\qquad\qquad\qquad\qquad\quad = 103\ 680$

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*
      $\qquad\qquad\quad ({}^2C_1 \times {}^4C_1) + ({}^2C_1 \times {}^2C_1)$
      $\qquad\qquad\quad = 12$

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

33 (a) ${}^{12}C_2 - (4 \times {}^3C_2) = 54$
   (b) $54 - 3 = 51$
   (c) ${}^9C_2 - (3 + {}^3C_2) = 30$

Kertas 1

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

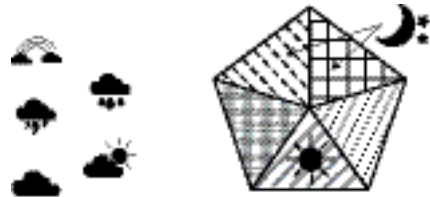**2** (a) ${}^nC_r = \dfrac{n!}{r!(n-r)!}$

   $\qquad\quad = \dfrac{n!}{(n-r)!r!}$

   $\qquad\quad = {}^nC_{n-r}$

   (b) $\dfrac{n!}{(n-r)!} \div \dfrac{n!}{r!(n-r)!} = 120$

   $\qquad \dfrac{n!}{(n-r)!} \times \dfrac{r!(n-r)!}{n!} = 120$

   $\qquad\qquad\qquad\qquad r! = 1(2)(3)(4)(5)$
   $\qquad\qquad\qquad\qquad\quad = 5!$
   $\qquad\qquad\qquad\qquad\ r = 5$

3 (a) $\dfrac{{}^5P_5}{2(5)} = 12$

   (b) ${}^7P_5 = 2\ 520$ atau/*or* ${}^7C_5 \times 5! = 2\ 520$
   (c) ${}^5C_3 \times {}^5C_1 \times {}^2C_1 \times 3! = 600$

4 (a) ${}^{10}C_6 \times 5! = 25\ 200$ atau/*or* $\dfrac{{}^{10}P_6}{6} = 25\ 200$

   (b) $1M5S + 2M4S + 3M3$
      $= ({}^5C_1 \times 5!) + ({}^5C_2 \times {}^5C_4 \times 3 \times 4!) + ({}^5C_3 \times {}^5C_3 \times 2!$
      $\quad \times 3!)$
      $= 5\ 400$

5 (a) (i) $\dfrac{8!}{2!} = 20\ 160$

   (ii) $\dfrac{5!4!}{2!} = 1\ 440$

   (b) tanpa/*without* 'I' + dengan/*with* 1 'I' + dengan/*with*
      2 'I'
      $= {}^4C_3 + {}^4C_2 + {}^4C_1 = 14$

   (c) Tanpa/*Without* 'I' $= ({}^2P_1 \times {}^4P_1 \times {}^4P_3) = 192$

   <u>1 'I'</u>
   Bermula dengan/*Start with* I
   $= (1 \times {}^4P_1 \times {}^5P_3)$
   $= 240$

   Bermula dengan/*Start with* O @ E
   $= ({}^2P_1 \times {}^4P_1 \times {}^3P_1 \times {}^4P_2)$
   $= 288$

   <u>2 'I'</u>
   Bermula dengan/*Start with* I
   $= \dfrac{(2 \times {}^4P_1 \times {}^3P_1 \times {}^5P_2)}{2!}$
   $= 240$

Bermula dengan/*Start with* O @ E

$$= \frac{(^2P_1 \times {}^4P_1 \times {}^3P_2 \times {}^4P_1)}{2!}$$

$$= 96$$

Bilangan susunan/*No of arrangements*

$$= 192 + 240 + 288 + 240 + 96$$

$$= 1\ 056$$

6 (a) Bilangan bunga mawar/*Number of roses*

$$= \frac{18}{6} \times 3 = 9$$

   (b) $\dfrac{12!}{9!3!} \times \dfrac{12!}{2(9!3!)}$

$$= 220 \times 110$$

$$= 24\ 200$$

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) ${}^4P_2 \times {}^8P_2 = 672$ atau/*or* ${}^8C_2 \times 4! = 672$

9 ${}^6P_4 = 360$

   (a) $1 \times {}^5P_3 = 60$

   (b) $1 \times {}^3P_1 \times {}^4P_2 = 36$

10 (a) $\dfrac{(9-1)!}{2!3!3!} = 560$

    (b) $\dfrac{6!}{2!3!} = 60$

    (c) $\dfrac{6!}{3!3!} \times \dfrac{{}^7P_2}{2!} = 20 \times 21$

$$= 420$$