# JAWAPAN

## BAB 13 Kebarangkalian Mudah
*Simple Probability*

**1.** Kebarangkalian eksperimen bagi suatu peristiwa / *The experimental probability of an event* $= \dfrac{\text{Kekerapan berlakunya peristiwa / } \textit{Frequency of an event}}{\text{Bilangan cubaan / } \textit{Number of trials}}$

**2.**

| Bilangan putaran / *Number of rotations* | Keputusan yang diperoleh / *Results obtained* | | | | Kebarangkalian eksperimen mendapat / *Experimental probability of getting* | | | |
|---|---|---|---|---|---|---|---|---|
| | *P* | *Q* | *R* | *S* | *P* | *Q* | *R* | *S* |
| 40 | 8 | 11 | 12 | 9 | $\frac{8}{40} = 0.2$ | $\frac{11}{40} = 0.275$ | $\frac{12}{40} = 0.3$ | $\frac{9}{40} = 0.225$ |
| 100 | 23 | 26 | 27 | 24 | $\frac{23}{100} = 0.23$ | $\frac{26}{100} = 0.26$ | $\frac{27}{100} = 0.27$ | $\frac{24}{100} = 0.24$ |
| 8 000 | 1 990 | 2 015 | 2 020 | 1 975 | $\frac{1\,990}{8\,000} = 0.249$ | $\frac{2\,015}{8\,000} = 0.252$ | $\frac{2\,020}{8\,000} = 0.253$ | $\frac{1\,975}{8\,000} = 0.247$ |

**3.** (a) (i) $S$ = {K, E, K, O, N, G, R, U, E, N, A, N}
(ii) $n(S) = 12$
(iii) $Z$ = {K, K, N, G, R, N, N}

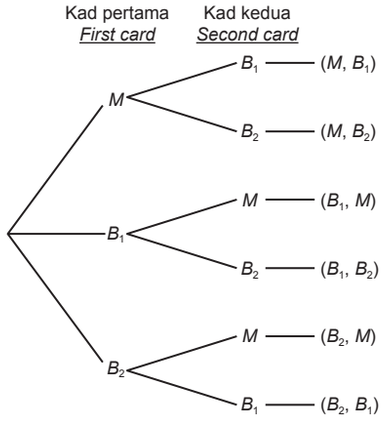
(b) (i) $S$ = {31, 37, 41, 43, 47, 53, 59}
(ii) $n(S) = 7$
(iii) $Z$ = {31, 37, 43, 53}

(c) (i) $S$ = {lelaki, perempuan}
*{boy, girl}*
(ii) $n(S) = 2$
(iii) $Z$ = {lelaki}
*{boy}*

(d) (i) $S$ = {biru, kuning, merah, putih}
*{blue, yellow, red, white}*
(ii) $n(S) = 4$
(iii) $Z$ = {biru, kuning, merah}
*{blue, yellow, red}*

(e) (i) $S$ = {1, 2, 4, 7, 14, 28}
(ii) $n(S) = 6$
(iii) $Z$ = {2, 7}

**4.** (a) Biarkan $M$ = kad merah, $B$ = kad biru,
*Let M = red card, B = blue card,*

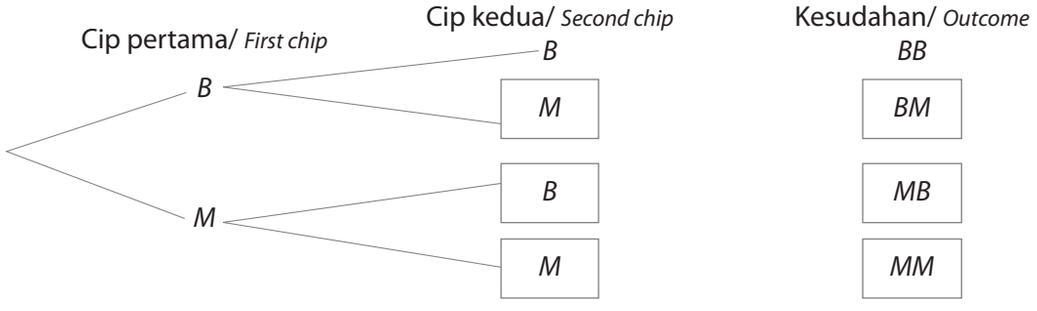



Maka/ *Hence*, $S = \{(M, B_1), (M, B_2), (B_1, M), (B_1, B_2), (B_2, M), (B_2, B_1)\}$

**5.**

| | |
|---|---|
| Sebiji buah epal telah jatuh dari sepohon pokok.<br>*An apple is dropped from a tree.*<br>Peristiwa *A* = epal itu akan rosak.<br>*Event A = the apple will spoilt.* | Mungkin berlaku<br>*May occur* |
| Cuaca di Malaysia.<br>*Season in Malaysia.*<br>Peristiwa *B* = salji akan turun di Malaysia.<br>*Event B = snowing in Malaysia .* | |
| Seorang murid dipilih secara rawak dari sebuah sekolah campur.<br>*A student is randomly selected from a coeducational school.*<br>Peristiwa *C* = seorang murid perempuan dipilih.<br>*Event C = a girl student is selected.* | Tidak mungkin berlaku<br>*May not occur* |
| Sebiji buah-buahan dipilih secara rawak dari sebuah bakul yang mengandungi epal, nanas, betik dan pisang.<br>*A fruit is randomly chosen from a basket which contains apple, pineapple, papaya and banana.*<br>Peristiwa *D* = sebiji tomato dipilih dari bakul.<br>*Event D = a tomato is picked from the basket.* | |

**6.**




(b) $P(BB) = \frac{1}{4} = 0.25$ $P(BM) = \frac{1}{4} = 0.25$ $P(MB) = \frac{1}{4} = 0.25$ $P(MM) = \frac{1}{4} = 0.25$

(c) $P(BB) = \frac{7}{40} = 0.175$ $P(BM) = \frac{10}{40} = 0.25$ $P(MB) = \frac{12}{40} = 0.3$ $P(MM) = \frac{11}{40} = 0.275$

(d) Kebarangkalian eksperimen mungkin sama atau tidak sama dengan kebarangkalian teori. Apabila bilangan cubaan cukup besar, kebarangkalian eksperimen akan menghampiri kebarangkalian teori.

*The experimental probability may or may not be the same as the theoretical probability. When the number of trials is large enough, the experimental probability will become closer to the theoretical probability.*

**7.** (a) $n(S) = 16$

$A$ = Peristiwa memilih kad dengan faktor 32
*A = Event of choosing a card with factor of* 32

Faktor 32/ *Factors of* 32:
1, 2, 4, 8, 16, 32

$P(A) = \frac{2}{16}$

$= \frac{1}{8}$

(b) (i) $P(A) = \frac{48}{125} \times 100$

$= 38.4\%$

(ii) $P(A) = \frac{45}{125} \times 100$

$= 36\%$

(c) $A$ = Peristiwa melakukan rondaan
*A = Event of conducting patrols*

Bilangan rondaan dilakukan dalam 5 hari
*Number of patrols conducted in 5 days*

$= \frac{1}{4} \times 24$ jam $\times 5$ hari

$\frac{1}{4} \times 24$ *hours* $\times 5$ *days*

$= 30$

$P(A) = \frac{30}{24 \times 5}$

$= \frac{1}{4}$

**8.**

| **Peristiwa**<br>***Event*** | **Peristiwa pelengkap dalam perkataan**<br>***Complement of event in words*** | **Peristiwa pelengkap menggunakan tatatanda set**<br>***Complement of event using set notation*** |
|---|---|---|
| $A$ = Peristiwa nombor yang diperoleh ialah nombor perdana apabila sebiji dadu dilambungkan.<br>*A = Event that the number obtained is a prime number when a dice is tossed.* | $A'$ = Peristiwa nombor yang diperoleh bukan nombor perdana apabila sebiji dadu dilambungkan.<br>*A′ = Event that the number obtained is not a prime number when a dice is tossed.* | $A' = \{1, 4, 6\}$ |
| $B$ = Peristiwa huruf yang diperoleh ialah huruf konsonan apabila satu huruf dipilih secara rawak daripada perkataan 'HARMONI'.<br>*B = Event that the letter obtained is a consonant when a letter is chosen at random from the word* 'HARMONI'. | $B'$ = Peristiwa huruf yang diperoleh bukan huruf konsonan apabila satu huruf dipilih secara rawak daripada perkataan 'HARMONI'.<br>*B′ = Event that the letter obtained is not a consonant when a letter is chosen at random from the word* 'HARMONI'. | $B' = \{A, O, I\}$ |
| $C$ = Peristiwa warna yang diperoleh ialah hijau apabila satu warna dipilih secara rawak daripada warna pelangi.<br>*C = Event that the colour obtained is green when a colour of the rainbow is chosen at random.* | $C'$ = Peristiwa warna yang diperoleh bukan hijau apabila satu warna dipilih secara rawak daripada warna pelangi.<br>*C′ = Event that the colour obtained is not green when a colour of the rainbow is chosen at random.* | $C' = \{$merah, jingga, kuning, biru, indigo, ungu$\}$<br>*C′ = {red, orange, yellow, blue, indigo, violet}* |
| $D$ = Peristiwa nombor yang diperoleh ialah gandaan 3 apabila satu nombor dipilih secara rawak daripada satu set nombor dari 1 hingga 20.<br>*D = Event that the number obtained is a multiple of* 3 *when a number is chosen at random from a set of numbers from* 1 *to* 20. | $D'$ = Peristiwa nombor yang diperoleh bukan gandaan 3 apabila satu nombor dipilih secara rawak daripada satu set nombor dari 1 hingga 20.<br>*D′ = Event that the number obtained is not a multiple of* 3 *when a number is chosen at random from a set of numbers from* 1 *to* 20. | $D' = \{1, 2, 4, 5, 7, 8, 10, 11, 13, 14, 16, 17, 19, 20\}$ |
| $E$ = Peristiwa menjawab D dalam satu soalan objektif dengan 4 pilihan jawapan, A, B, C dan D secara rawak.<br>*E = Event of answering D in an objective question with* 4 *options A, B, C and D at random.* | $E'$ = Peristiwa menjawab bukan D.<br>*E′ Event of answering not D.* | $E' = \{A, B, C\}$ |
| $F$ = Peristiwa memilih satu bulan bermula dengan huruf konsonan secara rawak.<br>*F = Event of choosing a month starts with consonant at random.* | $F'$ = Peristiwa memilih satu bulan bermula dengan huruf vokal.<br>*F′ = Event of choosing a month starts with vowel.* | $F' = \{$April, Ogos, Oktober$\}$<br>*F′ = {April, August, October}* |

**9.**

| **Eksperimen** / ***Experiment*** | **Kebarangkalian** / ***Probability*** | |
|---|---|---|
| Sebiji dadu dilambungkan.<br>*A dice is tossed.* | P(nombor 5 diperoleh)<br>P(*number* 5 *is obtained*)<br>$= \frac{1}{6}$ | P(nombor selain daripada 5)<br>P(*numbers other than* 5)<br>$= 1 - \frac{1}{6}$<br>$= \frac{5}{6}$ |
| Satu huruf dipilih secara rawak daripada perkataan 'DINAMIK'.<br>*A letter is chosen at random from the word* 'DINAMIK'. | P(huruf vokal diperoleh)<br>P(*a vowel is obtained*)<br>$= \frac{3}{7}$ | P(huruf konsonan diperoleh)<br>P(*a consonant is obtained*)<br>$= 1 - \frac{3}{7}$<br>$= \frac{4}{7}$ |
| Dalam suatu latihan menembak, tembakan Amir kena sasaran sebanyak 8 kali daripada 20 cubaan.<br>*In a shooting training, Amir hit the target* 8 *times out of* 20 *trials.* | P(kena sasaran)<br>P(*hit the target*)<br>$= \frac{8}{20}$<br>$= \frac{2}{5}$ | P(tidak kena sasaran)<br>P(*did not hit the target*)<br>$= 1 - \frac{2}{5}$<br>$= \frac{3}{5}$ |
| Sebuah beg mengandungi 10 biji guli merah, 15 biji guli biru dan 25 biji guli kuning. Sebiji guli dipilih secara rawak daripada beg itu.<br>*A bag contains* 10 *red marbles,* 15 *blue marbles and* 25 *yellow marbles. A marble is picked at random from the bag.* | P(guli biru diperoleh)<br>P(*a blue marble is obtained*)<br>$= \frac{15}{50}$<br>$= \frac{3}{10}$ | P(guli yang dipilih bukan berwarna biru)<br>P(*the marble picked is not blue*)<br>$= 1 - \frac{3}{10}$<br>$= \frac{7}{10}$ |
| Sebuah bas mempunyai 18 orang penumpang perempuan dan 9 orang penumpang lelaki. Seorang penumpang dipilih secara rawak.<br>*A bus has* 18 *female passengers and* 9 *male passengers. A passenger is chosen randomly.* | P(memilih penumpang lelaki)<br>*P(choosing a male passenger)*<br>$= \frac{9}{27}$<br>$= \frac{1}{3}$ | P(memilih penumpang perempuan)<br>*P(choosing a female passenger)*<br>$= 1 - \frac{1}{3}$<br>$= \frac{2}{3}$ |
| Seramai 25 orang calon, hanya 15 orang calon lulus dalam ujian memandu hari ini. Seorang calon dipilih secara rawak.<br>*In* 25 *candidates, only* 15 *candidates pass the driving test today. A candidate is chosen randomly.* | P(memilih seorang calon yang lulus)<br>*P(choosing a candidate who passed)*<br>$= \frac{15}{25}$<br>$= \frac{3}{5}$ | P(memilih seorang calon yang gagal)<br>*P(choosing a candidate who failed)*<br>$= 1 - \frac{3}{5}$<br>$= \frac{2}{5}$ |

**10.** (a) (i) Jumlah murid
*Total number of students*
$= 16 + 8 + 8 + 16 + 12 + 8 + 20 + 12$
$= 100$

Jumlah murid lelaki
*Total number of boys*
$= 16 + 8 + 12 + 20$
$= 56$

P(murid lelaki dipilih)
*P(a boy is chosen)*
$= \frac{56}{100}$
$= \frac{14}{25}$

(ii) Bilangan murid dari Kelas Cerdas
*Number of students from Class Cerdas*
$= 12 + 8$
$= 20$

P(murid yang dipilih adalah dari Kelas Cerdas)
*P(the student chosen is from Class Cerdas)*
$= \frac{20}{100}$
$= \frac{1}{5}$

P(murid yang dipilih bukan dari Kelas Cerdas)
*P(the student chosen is not from Classs Cerdas)*
$= 1 - \frac{1}{5}$
$= \frac{4}{5}$

(b) P(surat khabar tidak mencapai kualiti piawai)
*P(copies that are not achieved standard quality)*
$= \frac{3}{200} = 0.015$

Bilangan naskhah surat khabar yang dijangka tidak mencapai kualiti piawai
*Number of copies that are expected do not achieve the standard quality*
$= 0.015 \times 5\,000$
= 75 naskhah/ *copies*

(c) Bilangan calon lelaki setelah jawatan *X* diisi
*Number of male candidates after vacancy X has been filled*
$= 12 - 1$
$= 11$

Kebarangkalian calon lelaki dipilih untuk mengisi jawatan *Y*
*Probability that a male candidate is chosen to fill vacancy Y*
$= \frac{11}{11 + 10}$
$= \frac{11}{21}$

# Power PT3

## Bahagian A

**1.** Nombor yang boleh dibahagi tepat dengan 4:
*Numbers divisible by 4:*
12, 24, 36

Kebarangkalian / *Probability*
$= \frac{3}{9} = \frac{1}{3}$
Jawapan / *Answer*: **D**

**2.** Luas *ABC*
*Area of ABC*
$= \frac{1}{2} \times 27 \times 20$
$= 270\ \text{cm}^2$

Luas rantau berlorek
*Area of shaded region*
$= \frac{1}{3} \times 270$
$= 90\ \text{cm}^2$

Jawapan / *Answer*: **B**

**3.** Kebarangkalian murid berbangsa Melayu dipilih
*Probability that a Malay student is selected*
$= \frac{20}{50} = \frac{2}{5}$
Jawapan / *Answer*: **A**

**4.** Kebarangkalian memilih murid yang mendapat 15 – 19 markah ke atas
*Probability of choosing a student who got* 15 – 19 *and above.*
$= \frac{8 + 6}{28}$
$= \frac{14}{28}$
$= \frac{7}{14}$

Jawapan / *Answer*: **C**

## Bahagian B

**5.**

| Kotak *P* *Box P* | Kotak *Q* *Box Q* | Kesudahan *Outcome* |
|---|---|---|
| 1 | 5 | (1, 5) |
| | 9 | (1, 9) |
| | 11 | (1, 11) |
| | 13 | (1, 13) |

**6.**

| Pernyataan / *Statement* | ✓/✗ |
|---|---|
| '*K*' ialah satu kesudahan yang mungkin.<br>*'K' is a possible outcome.* | ✓ |
| '*A*' ialah satu kesudahan yang mungkin.<br>*'A' is a possible outcome.* | ✗ |
| '*T*' ialah satu kesudahan yang mungkin.<br>*'T' is a possible outcome.* | ✓ |
| '*P*' ialah satu kesudahan yang mungkin.<br>*'P' is a possible outcome.* | ✗ |

## Bahagian C

**7.** (a) (i) $S = \{(2, X), (2, Y), (5, X), (5, Y), (8, X), (8, Y)\}$

(ii) Kebarangkalian / *Probability* $= \frac{2}{3}$

(b) (i) $\{(1, 1), (1, 2), (1, 3), (2, 1), (2, 2), (3, 1)\}$

(ii) $\{(1, 1), (2, 2), (3, 3), (4, 4), (5, 5), (6, 6)\}$

(c) (i) Kebarangkalian/ *Probability*

$$= \frac{35}{25 + 35}$$

$$= \frac{35}{60}$$

$$= \frac{7}{12}$$

(ii) Kebarangkalian/ *Probability*

$$= \frac{4 + 25}{25 + 35 + 6 + 4}$$

$$= \frac{29}{70}$$

# Power KBAT

**1.** Katakan P(manik merah) = P(manik biru) $= x$

*Let P(a red bead) = P(a blue bead)*

$$\text{P(bukan manik hijau)} = \frac{5}{6}$$

*P(not a green bead)*

$$\text{P(manik merah)} + \text{P(manik biru)} + \text{P(manik kuning)} = \frac{5}{6}$$

*P(a red bead) + P(a blue bead) + P(a yellow bead)*

$$x + x + \frac{1}{3} = \frac{5}{6}$$

$$2x = \frac{5}{6} - \frac{1}{3}$$

$$= \frac{1}{2}$$

$$x = \frac{1}{4}$$

Kebarangkalian bahawa manik biru dipilih ialah $\frac{1}{4}$.

*The probabilitity that a blue bead is picked is* $\frac{1}{4}$.

**2.** (a) $\text{P(memperoleh nombor 2)} = \frac{40°}{360°}$

*P(getting number 2)*

$$= \frac{1}{9}$$

(b) $\text{P(memperoleh nombor genap)} = \frac{40° + 70° + 40°}{360°}$

*P(getting an even number)*

$$= \frac{5}{12}$$