

MODULE 14
SPM 'ENRICHMENT'
TOPIC : PROBABILITY
TIME : 2 HOURS

1. A box contains 5 green marbles, 4 blue marbles and 6 red marbles. A marble is picked at random.
Without replacing the first marble, another marble is taken from the box.
Calculate the probability that
- (a) the first marble green and the second marble red
 - (b) two marbles are the same colour.

Answer:

(a)

(b)

2. Table 1 shows the number of members of two sport societies, Rugby and Football, who are planning trips to Melaka and Pahang.

State to be visited	Number of members	
	Rugby	Football
Melaka	17	13
Pahang	9	15

Table 1

- (a) If two members are chosen at random from the Rugby, calculate the probability that both of them will be going to Melaka.
- (b) If two members are chosen at random from the group to Pahang, calculate the probability that both of them are from the same society.

Answer:

(a)

(b)

3. Table 2 shows the number of students of the class that leave at two residential areas.

Residential area	Number of students	
	Boy	Girl
Taman Desaru	7	3
Taman Penawar	5	4

Table 2

- (a) If two students are chosen at random from the Taman Penawar, calculate the probability that one of the students is girl and the other one is boy.
- (b) If two students are chosen at random from boy group, calculate the probability that both of the students are from the same residential area.

Answer:

(a)

(b)

4. In a quiz contest, there are three categories of questions consisting of 5 questions on Chemistry, 3 questions on Biology and 7 questions on Physic. Each question is placed inside an envelope. All of the envelopes are similar and put inside a box.

All the participants of the quiz contest are requested to pick at random two envelopes from the box.

Find the probability that the first participant picks

- (a) the first envelope with a Chemistry question and the second envelope with an Biology question.
- (b) two envelopes with question at the same category.

Answer:

(a)

(b)

5. A group of 5 boys and 4 girls take part in science exhibitions. Each day, two pupils are chosen at random to give presentation.

(a) Calculate the probability that both pupils chosen to give presentation on the first day are boys.

(b) Two boys do give presentation on the first day. They are then exempted from giving presentation on the second day.

Calculate the probability that both pupils chosen to give presentation on the second day are of the same gender.

Answer:

(a)

(b)

6. Diagram 1 shows the route of a van which carries a group of volunteers. The group consists of 8 males and 4 females who are dropped off at random to give aid at various towns along the routes.



Diagram 1

- (a) If two volunteers are dropped off at Kota Tinggi, calculate the probability that both are males.
- (b) Two volunteers of different gender are dropped off at Kota Tinggi. If two other volunteers are then dropped at Segamat, calculate the probability that at least one of them is female.

Answer:

(a)

(b)

7. Diagram 2 shows the route for cross country event.

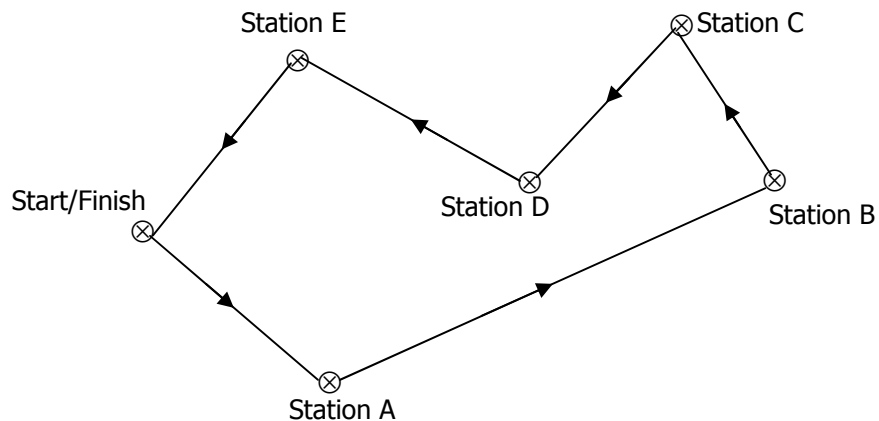


Diagram 2

The group 7 boys and 3 girls from KRS squad are chosen for duty on cross country day. Each station, two pupils are chosen at random at each station to perform their duties.

- (a) If two of the pupils are selected to duty at Station A. Calculate the probability that both are girls.
- (b) Two boys from that group are duty at Station A. Another two pupils are selected at random to be on duty at Station B. Calculate the probability that both pupils chosen for Station B are of different gender.

Answer:

(a)

(b)

8. Diagram 3 show twelve labelled cards which are placed in an empty box.

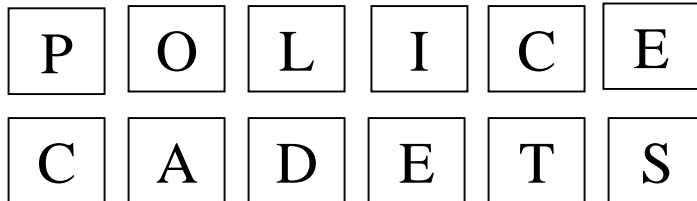


Diagram 3

- (a) If a card is chosen at random from the box, calculate the probability that the card labelled 'L' is chosen.
- (b) If a card is chosen at random from the box, calculate the probability that the card labelled 'L' or the card labelled 'C' are chosen.

Answer:

(a)

(b)

9. Table 3 which is incomplete shows, the probability of spending the weekend among two classmate Azmi and Faizal.

Students	Probability		
	Gardening	Fishing	Shopping
Azmi	$\frac{1}{6}$	$\frac{3}{4}$	
Faizal	$\frac{2}{5}$	$\frac{1}{10}$	$\frac{1}{2}$

Table 3

Calculate the probability that

- (a) Azmi going shopping
(b) They both doing the same activities

Answer:

(a)

(b)

10. Table 4 shows the numbers of students in Form 3 Maju and 3 Bestari who entitles to receive school t-shirts.

Form	Gender	
	Boy	Girl
3 Maju	3	5
3 Bestari	6	2

Table 4

Two students from the group are chosen atrandom to receive a school t-shirt each.

Find the probability that both student chosen

- (a) are boys,
- (b) are girls from the same class.

Answer:

(a)

(b)

MODULE 8: ANSWERS
TOPIC : PROBABILITY

Answer:

$$\begin{aligned} 1. \quad (a) &= \frac{5}{15} = \frac{1}{3} \\ (b) &= \left(\frac{5}{15} \times \frac{4}{14}\right) + \left(\frac{4}{15} \times \frac{3}{14}\right) + \left(\frac{6}{15} + \frac{5}{14}\right) \\ &= \frac{31}{105} \end{aligned}$$

$$\begin{aligned} 2. \quad (a) &= \frac{17}{26} \times \frac{16}{25} = \frac{136}{325} \\ (b) &= \left(\frac{9}{24} \times \frac{8}{23}\right) + \left(\frac{15}{24} \times \frac{14}{23}\right) \\ &= \frac{47}{92} \end{aligned}$$

$$\begin{aligned} 3. \quad (a) &= \left(\frac{5}{9} \times \frac{4}{8}\right) + \left(\frac{4}{9} \times \frac{5}{8}\right) = \frac{5}{9} \\ (b) &= \left(\frac{7}{12} \times \frac{6}{11}\right) + \left(\frac{5}{12} \times \frac{4}{11}\right) \\ &= \frac{31}{66} \end{aligned}$$

$$\begin{aligned} 4. \quad (a) &= \left(\frac{5}{15} \times \frac{3}{14}\right) = \frac{1}{14} \\ (b) &= \left(\frac{5}{15} \times \frac{4}{14}\right) + \left(\frac{3}{15} \times \frac{2}{14}\right) + \left(\frac{7}{15} \times \frac{6}{14}\right) \\ &= \frac{34}{105} \end{aligned}$$

$$\begin{aligned} 5. \quad (a) &= \frac{5}{9} \times \frac{4}{8} \\ &= \frac{5}{18} \\ (b) &= \left(\frac{3}{7} \times \frac{2}{6}\right) + \left(\frac{4}{7} \times \frac{3}{6}\right) \\ &= \frac{3}{7} \end{aligned}$$

$$6. \quad (a) = \frac{8}{12} \times \frac{7}{11}$$

$$= \frac{14}{33}$$

$$(b) = \left(\frac{3}{10} \times \frac{7}{9}\right) + \left(\frac{7}{10} \times \frac{3}{9}\right) + \left(\frac{3}{10} \times \frac{2}{9}\right)$$

$$= \frac{8}{15}$$

$$7. (a) = \frac{3}{10} + \frac{2}{9}$$

$$= \frac{1}{15}$$

$$(b) = \left(\frac{5}{10} \times \frac{3}{9}\right) + \left(\frac{3}{10} + \frac{5}{9}\right)$$

$$= \frac{1}{3}$$

$$8. (a) = \frac{1}{12}$$

$$(b) = \frac{1}{12} + \frac{2}{12}$$

$$= \frac{3}{12}$$

$$9. (a) = 1 - \left(\frac{1}{6} + \frac{3}{4}\right)$$

$$= \frac{1}{12}$$

$$(b) = \left(\frac{1}{6} \times \frac{2}{5}\right) + \left(\frac{3}{4} \times \frac{1}{10}\right) + \left(\frac{1}{12} \times \frac{1}{2}\right)$$

$$= \frac{11}{60}$$

$$10. (a) = \frac{9}{16} \times \frac{8}{15}$$

$$= \frac{3}{10}$$

$$(b) = \left(\frac{5}{16} \times \frac{4}{15}\right) + \left(\frac{2}{16} \times \frac{1}{15}\right)$$

$$= \frac{11}{120}$$