

INTENSIVE REVISION QUESTIONS (ERQ)
SET 18-PROBABILITY

Name :

Form :

Teacher:

1. A number is randomly chosen from the set $\{x : x < 15, x \text{ is a positive number}\}$.
Given that $A = \{x : x < 9\}$, $B = \{x : 9 < x < 13\}$ and $C = \{x : x \text{ is a prime number}\}$,
determine
(a) $P(A)$,
(b) $P(B)$,
(c) $P(C)$. [6 marks]

2. At North Port, there are three shipping companies, namely Kesturi, Masturi and Nuri.
These companies possess three types of ship as follows:

Company	Passenger ship	Cargo ship	Oil tanker ship
Kesturi	6	29	5
Masturi	6	1	28
Nuri	16	8	3

Find the probability that a randomly selected ship

- (a) is a cargo ship,
(b) is not a passenger ship,
(c) belongs to Masturi,
(d) belongs to Kesturi or Nuri,
(e) belongs to Kesturi but is not a passenger ship. [10 marks]

3. The probability that an archer will hit a target is $\frac{4}{7}$. The archer shoots twice.
Find the probability that it will
(a) miss the target both times,
(b) hit the target once only. [5 marks]

4. A number is randomly chosen from the set $\{x : x < 10, x \text{ is a positive number}\}$.
Given that $A = \{x : x < 5\}$, $B = \{x : 4 < x < 6\}$ and $C = \{x : x \text{ is a prime number}\}$,
determine
(a) $P(A)$,
(b) $P(B)$,
(c) $P(C)$. [6 marks]

5. The probabilities that participant A , B and C will win a contest are $\frac{2}{8}$, $\frac{2}{7}$ and $\frac{1}{6}$
If the events of each participant winning are independent, calculate the probability that
(a) only A wins,
(b) two participants win. [6 marks]

6. The probabilities that participant A , B and C will win a contest are $\frac{1}{9}$, $\frac{2}{6}$ and $\frac{1}{8}$.
If the events of each participant winning are independent, calculate the probability that
- only A wins,
 - two participant win. [6 marks]
7. The probabilities that Alice, Bob and Joey win a singing competition are 0.27, 0.1 and 0.12 respectively. What is the probability that
- Alice or Bob wins the singing competition,
 - Alice or Joey wins the singing competition,
 - Bob or Joey wins the singing competition,
 - Alice or Bob or Joey wins the singing competition. [8 marks]
8. The probability that an archer will hit a target is $\frac{4}{7}$. The archer shoots twice.
Find the probability that it will
- miss the target both time,
 - hit the target once only. [5 marks]
9. A 3-digit number is obtained from the set $\{ 1, 2, 3, 4, 5 \}$ where repetition is allowed.
The event A , B and C are defined as follows.
 A = the number begins with digit 4.
 B = the number does not contain the digit, 3.
 C = the number contains all different digits.
Find
- $P(A)$,
 - $P(B)$,
 - $P(C)$. [6 marks]
10. A number is randomly chosen from the set $\{ x : x < 9, x \text{ is a positive number} \}$.
Given that $A = \{ x : x < 5 \}$, $B = \{ x : 2 < x < 6 \}$ and $C = \{ x : x \text{ is a prime number} \}$,
determine
- $P(A)$,
 - $P(B)$,
 - $P(C)$. [6 marks]
11. 10 cards numbered from 3 to 12 are placed in a box. A card is chosen at random from the box. Find the probability of getting
- an even and two-digit number,
 - an even or two-digit number,
 - a number that is divisible by 3 and 2,
 - a number that is divisible by 3 or 2. [8 marks]
12. The probability that a patient is allergic to medicine M is 0.1. Medicine M is administered to three patients, A , B and C . Find the probability that
- all of them are allergic to it,

- (b) only patient A is allergic to it,
(c) two of them are allergic to it,
(d) none of them are allergic to it. [8 marks]
13. The probabilities that Alice, Bob and Joey win a singing competition are 0.33, 0.28 and 0.33 respectively. What is the probability that
(a) Alice or Bob wins the singing competition,
(b) Alice or Joey wins the singing competition,
(c) Bob or Joey wins the singing competition,
(d) Alice or Bob or Joey wins the singing competition. [8 marks]
14. In a village, the probability of having a girl in a family is 59%. A family of three children is chosen randomly, find the probability that it has
(a) one girl,
(b) no girls,
(c) at least one boy,
(d) both genders. [8 marks]
15. A bag contains 16 yellow balls, 12 purple balls and 20 grey balls. A ball is chosen at random without replacement and its colour is noted. Then another ball is chosen from the bag. Calculate the probability that
(a) the second ball is purple,
(b) at least one ball is yellow. [5 marks]
16. The probabilities that participant A , B and C will win a contest are $\frac{1}{7}$, $\frac{1}{9}$ and $\frac{1}{8}$
If the events of each participant winning are independent, calculate the probability that
(a) only A wins,
(b) two participant win. [6 marks]
17. A bag contains 6 yellow balls, 10 purple balls and 18 grey balls. A ball is chosen at random without replacement and its colour is noted. Then another ball is chosen from the bag. Calculate the probability that
(a) the second ball is purple,
(b) at least one ball is yellow. [5 marks]
18. 13 cards numbered from 7 to 19 are placed in a box. A card is chosen at random from the box. Find the probability of getting
(a) an even and two-digit number,
(b) an even or two-digit number,
(c) a number that is divisible by 5 and 2,
(d) a number that is divisible by 5 or 2. [8 marks]
19. A 3-digit number is obtained from the set $\{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 \}$ where repetition is allowed. The event A , B and C are defined as follows.
 A = the number begins with digit 8.

B = the number does not contain the digit, 9.

C = the number contains all different digits.

Find

- (a) $P(A)$,
- (b) $P(B)$,
- (c) $P(C)$.

[6 marks]

20. At North Port, there are three shipping companies, namely Kesturi, Masturi and Nuri.

These companies possess three types of ship as follows:

Company	Passenger ship	Cargo ship	Oil tanker ship
Kesturi	3	17	23
Masturi	6	2	30
Nuri	27	16	20

Find the probability that a randomly selected ship

- (a) is a cargo ship,
- (b) is not a passenger ship,
- (c) belongs to Masturi,
- (d) belongs to Kesturi or Nuri,
- (e) belongs to Kesturi but is not a passenger ship.

[10 marks]

Answers:

1.

(a) $\frac{4}{7}$

(b) $\frac{3}{14}$

(c) $\frac{3}{7}$

2.

(a) $\frac{19}{51}$

(b) $\frac{37}{51}$

(c) $\frac{35}{102}$

(d) $\frac{67}{102}$

(e) $\frac{1}{3}$

3.

(a) $\frac{9}{49}$

(b) $\frac{24}{49}$

4.

(a) $\frac{4}{9}$

(b) $\frac{1}{9}$

(c) $\frac{4}{9}$

5.

(a) $\frac{25}{168}$

(b) $\frac{1}{8}$

6.

(a) $\frac{7}{108}$

(b) $\frac{17}{216}$

7. (a) 0.37

(b) 0.39

(c) 0.22

(d) 0.49

8.

(a) $\frac{9}{49}$

(b) $\frac{24}{49}$

9.

(a) $\frac{1}{5}$

(b) $\frac{64}{125}$

(c) $\frac{12}{25}$

10.

(a) $\frac{1}{2}$

(b) $\frac{3}{8}$

(c) $\frac{1}{2}$

- 2
- 11.
- (a) $\frac{1}{5}$
 - (b) $\frac{3}{5}$
 - (c) $\frac{1}{5}$
 - (d) $\frac{7}{10}$
- 12.
- (a) 0.001
 - (b) 0.081
 - (c) 0.027
 - (d) 0.729
- 13.
- (a) 0.61
 - (b) 0.66
 - (c) 0.61
 - (d) 0.94
- 14.
- (a) 0.2975
 - (b) 0.0689
 - (c) 0.7946
 - (d) 0.7257
- 15.
- (a) $\frac{1}{4}$
 - (b) $\frac{79}{141}$
- 16.
- (a) $\frac{1}{9}$
 - (b) $\frac{1}{24}$
- 17.
- (a) $\frac{5}{17}$
 - (b) $\frac{61}{187}$
- 18.
- (a) $\frac{5}{13}$
 - (b) $\frac{11}{13}$

(c) $\frac{1}{13}$

(d) $\frac{7}{13}$

19.

(a) $\frac{1}{10}$

(b) $\frac{729}{1000}$

(c) $\frac{18}{25}$

20.

(a) $\frac{35}{144}$

(b) $\frac{3}{4}$

(c) $\frac{19}{72}$

(d) $\frac{53}{72}$

(e) $\frac{5}{18}$