Set Theory

1. If $X = \{a, b, c\}$, $Y = \{b, c, d\}$ and $Z = \{a, c, d\}$, what is $(X \cup Y) - (Z \cap X)$?

   A. $\{a, c\}$
   B. $\{b, c\}$
   C. $\{b, d\}$
   D. $\varnothing$
   E. None of the above

   [1972-CE-MATHS B1-8]

2. If represents P and represents Q

   so that represents $P \cap Q$, then which of

   the following represents $Q' \cap P$?

   A.

   B.

   C.

   D.

   E.

   [1972-CE-MATHS B1-9]

3.
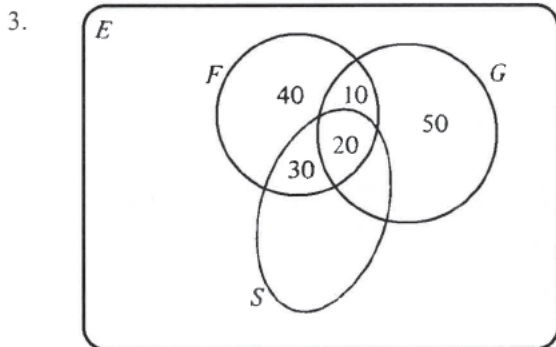
   In the Venn diagram above,

       $E = \{$students in a school$\}$
       $S = \{$short-sighted students$\}$
       $F = \{$form 5 students$\}$
       $G = \{$girls$\}$

   How many form 5 girls are **not** short-sighted?

   A. 10
   B. 20
   C. 30
   D. 40
   E. 50

   [SP-CE-MATHS 2-37]

4. In the figures below, A and B are subsets of a set E. Which figure has its shaded part representing $(E - A) \cap (E - B)$?

   A.

   B.

   C.

   D.

   E.
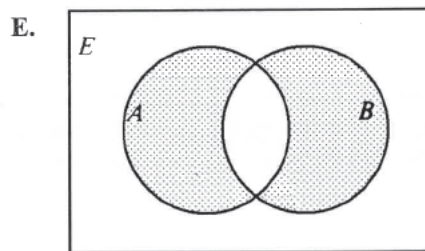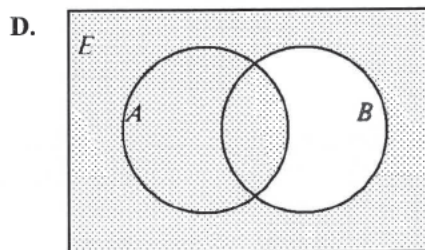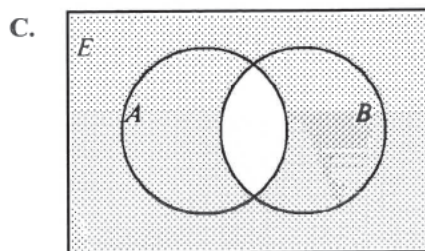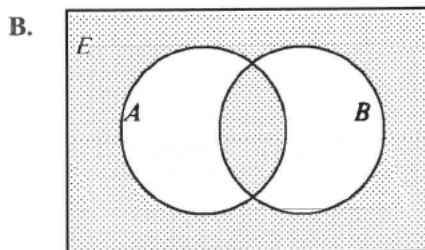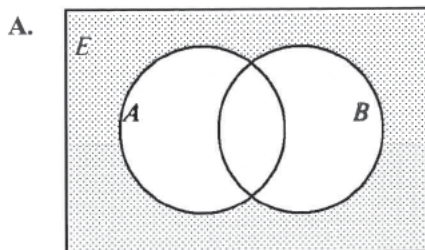
   [SP-CE-MATHS 2-38]

Probability

1. Mrs. Wong has 3 sons and 2 daughters. Mrs. Lee has 2 sons and 3 daughters. If a child is chosen at random from each family, what is the probability of choosing 1 boy and 1 girl?

   A. $\dfrac{5}{9}$

   B. $\dfrac{13}{25}$

   C. $\dfrac{36}{625}$

   D. $\dfrac{24}{25}$

   E. 1

   [1972-CE-MATHS B1-11]

2. Two apples and one orange are to be distributed to John, Tom and Mary by drawing lots. What is the probability that John and Tom get the apples?

   A. $\dfrac{1}{6}$

   B. $\dfrac{2}{9}$

   C. $\dfrac{1}{3}$

   D. $\dfrac{1}{2}$

   E. $\dfrac{2}{3}$

   [1977-CE-MATHS 2-34]

3. There are 21 boys and 9 girls in a class, $\dfrac{1}{3}$ of the boys and $\dfrac{1}{3}$ of girls wear glasses. If a student is chosen at random from the class, find the probability that a boy wearing glasses or a girl not wearing glasses is chosen.

   A. $\dfrac{1}{3}$

   B. $\dfrac{2}{3}$

   C. $\dfrac{13}{30}$

   D. $\dfrac{17}{30}$

   E. $\dfrac{7}{10}$

   [1977-CE-MATHS 2-40]

4. In a throw of two dice, what is the probability of obtaining a total of 11 or 12?

   A. $\dfrac{1}{6}$

   B. $\dfrac{1}{9}$

   C. $\dfrac{1}{12}$

   D. $\dfrac{1}{18}$

   E. $\dfrac{1}{36}$

   [SP-CE-MATHS 2-52]

5. A bag contains 2 black balls and 2 white balls. 2 balls are taken out at random. The first ball taken out is found to be black. What is the probability that the second is white?

   A. $\dfrac{1}{2}$

   B. $\dfrac{1}{3}$

   C. $\dfrac{2}{3}$

   D. $\dfrac{1}{4}$

   E. $\dfrac{3}{4}$

   [SP-CE-MATHS 2-53]

6. A group consists of 4 boys and 4 girls. If two children are chosen at random, what is the probability that one boy and one girl are chosen?

   A. $\dfrac{4}{7}$

   B. $\dfrac{3}{7}$

   C. $\dfrac{2}{7}$

   D. $\dfrac{3}{14}$

   E. $\dfrac{1}{16}$

   [1978-CE-MATHS 2-47]

7. When three fair dice are tossed, what is the probability that three consecutive numbers will turn up?

   A. $\dfrac{1}{6}$

   B. $\dfrac{1}{9}$

   C. $\dfrac{1}{27}$

   D. $\dfrac{1}{54}$

   E. $\dfrac{7}{36}$

   [1978-CE-MATHS 2-48]

8.

| Wong, Y.Y., 234 Nathan Road .... 3–688▮ |
| Woo, Ada, 54 Waterloo Road .... 3–578225 |

A corner of a page of a telephone directory is torn off so that the last two digits of the telephone number of Mr. Y. Y. Wong are missing. (See figure.) If the last two digits are supplied at random, what is the probability of getting Mr. Wong's telephone number?

A. $\dfrac{1}{2}$

B. $\dfrac{1}{10}$

C. $\dfrac{1}{90}$

D. $\dfrac{1}{99}$

E. $\dfrac{1}{100}$

[1979-CE-MATHS 2-28]

9. There are 12 boys and 8 girls in a class. $\dfrac{1}{4}$ of the boys and $\dfrac{1}{4}$ of the girls wear glasses. What is the probability that a student chosen at random from the class is a boy not wearing glasses or a girl wearing glasses?

A. $\dfrac{5}{20}$

B. $\dfrac{9}{20}$

C. $\dfrac{11}{20}$

D. $\dfrac{15}{20}$

E. $\dfrac{9}{100}$

[1983-CE-MATHS 2-31]

10. The probability that John will win a game is $\dfrac{1}{3}$ and the probability that he will lose is $\dfrac{2}{3}$. What is the probability that, in three games, he will win any two games and lose one game?

A. $\dfrac{4}{27}$

B. $\dfrac{2}{27}$

C. $\dfrac{1}{27}$

D. $\dfrac{2}{9}$

E. $\dfrac{1}{9}$

[1984-CE-MATHS 2-30]

11. Two dice are thrown. What is the probability of getting a sum of 8?

A. $\dfrac{1}{12}$

B. $\dfrac{1}{11}$

C. $\dfrac{5}{36}$

D. $\dfrac{1}{6}$

E. $\dfrac{2}{9}$

[1984-CE-MATHS 2-31]

12. There are four balls, numbered 1, 2, 5 and 10 in a bag. If 2 balls are taken out at random, the probability that the sum of the numbers on the two balls drawn is greater than or equal to 7 is

A. $\dfrac{1}{2}$.

B. $\dfrac{5}{8}$.

C. $\dfrac{2}{3}$.

D. $\dfrac{3}{4}$.

E. $\dfrac{5}{6}$.

[1985-CE-MATHS 2-31]

13. Two dice are thrown. The probability of getting at least one '6' is

A. $\dfrac{1}{6}$.

B. $\dfrac{1}{3}$.

C. $\dfrac{11}{36}$.

D. $\dfrac{25}{36}$.

E. $\dfrac{35}{36}$.

[1985-CE-MATHS 2-32]

14. In a shooting game, the probabilities for John and Mary to hit a target are $\dfrac{4}{5}$ and $\dfrac{3}{5}$ respectively. When both shoot at the target, what is the probability that they both miss?

A. $\dfrac{2}{25}$

B. $\dfrac{3}{25}$

C. $\dfrac{8}{25}$

D. $\dfrac{12}{25}$

E. $\dfrac{13}{25}$

[1986-CE-MATHS 2-26]

15. One letter is taken from each of the words "MAN" and "ART" at random. Find the probability that the two letters are **not** the same.

A. $\dfrac{1}{9}$

B. $\dfrac{1}{3}$

C. $\dfrac{4}{9}$

D. $\dfrac{2}{3}$

E. $\dfrac{8}{9}$

[1987-CE-MATHS 2-31]

16. Four persons A, B, C, D sit randomly around a round table. The probability that A sits next to B is

A. $\dfrac{1}{4}$.

B. $\dfrac{1}{3}$.

C. $\dfrac{1}{2}$.

D. $\dfrac{2}{3}$.

E. $\dfrac{5}{6}$.

[1987-CE-MATHS 2-32]

17. A die is thrown twice. Find the probability that the number obtained at the first throw is greater than that at the second throw.

A. $\dfrac{1}{6}$

B. $\dfrac{5}{12}$

C. $\dfrac{1}{2}$

D. $\dfrac{7}{12}$

E. $\dfrac{5}{6}$

[1987-CE-MATHS 2-33]

18. The figure shows 3 paths joining A and B. A man walks from A to B and another man walks from B to A at the same time. If they choose their paths at random, what is the probability that they will meet?

A. $1 - \dfrac{1}{9}$

B. $\dfrac{1}{3}$

C. $1 - \dfrac{1}{3}$

D. $\dfrac{1}{2} \times \dfrac{1}{3}$

E. $\dfrac{1}{3} \times \dfrac{1}{3}$
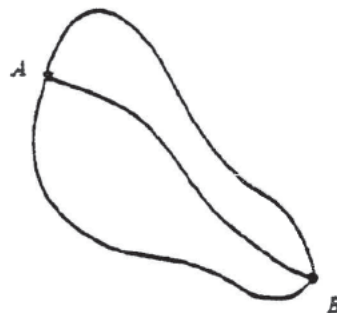
[1988-CE-MATHS 2-31]

19. A **biased** die is thrown. Suppose the probabilities of getting 1, 2, 3, 4 and 5 are respectively $\dfrac{1}{2}$, $\dfrac{1}{4}$, $\dfrac{1}{8}$, $\dfrac{1}{16}$ and $\dfrac{1}{32}$. What is the probability of getting 6?

A. $\dfrac{1}{64}$

B. $\dfrac{1}{36}$

C. $\dfrac{1}{32}$

D. $\dfrac{1}{12}$

E. $\dfrac{1}{6}$

[1989-CE-MATHS 2-26]

20. A bag contains 4 red, 3 green and 2 white balls. Three men A, B and C each draw one ball in turn from the bag at random without replacement. If A draw first, B second and C third, what is the probability that the balls drawn by B and C are both white?

A. $\dfrac{1}{36}$

B. $\dfrac{1}{28}$

C. $\dfrac{4}{81}$

D. $\dfrac{25}{72}$

E. $\dfrac{11}{28}$

[1989-CE-MATHS 2-27]

21. There are 7 bags, 3 of which are empty and the remaining 4 each contains a ball. An additional ball is now put into one of the bags at random. After that a bag is randomly selected. Find the probability of selecting an empty bag.

A. $\dfrac{2}{7}$

B. $\dfrac{3}{7}$

C. $\dfrac{6}{49}$

D. $\dfrac{12}{49}$

E. $\dfrac{18}{49}$

[1990-CE-MATHS 2-26]

22. A fair die is thrown 3 times. The probability that "6" occurs exactly once is

A. $\dfrac{1}{3}$.

B. $(\dfrac{1}{6})^3$.

C. $\dfrac{1}{3} \times \dfrac{1}{6}$.

D. $(\dfrac{1}{6})(\dfrac{5}{6})^2$.

E. $3(\dfrac{1}{6})(\dfrac{5}{6})^2$.

[1991-CE-MATHS 2-32]

23. Two cards are drawn randomly from five cards A, B, C, D and E. Find the probability that card A is drawn while C is not.

A. $\dfrac{3}{25}$

B. $\dfrac{3}{20}$

C. $\dfrac{4}{25}$

D. $\dfrac{6}{25}$

E. $\dfrac{3}{10}$

[1992-CE-MATHS 2-33]

24. Two fair dice are thrown. What is the probability of getting a total of 5 or 10?

A. $\dfrac{1}{9}$

B. $\dfrac{5}{36}$

C. $\dfrac{1}{6}$

D. $\dfrac{7}{36}$

E. $\dfrac{2}{9}$

[1993-CE-MATHS 2-31]

25. A box contains 5 eggs, 2 of which are rotten. If 2 eggs are chosen at random, find the probability that exactly one of them is rotten.

A. $\dfrac{2}{5}$

B. $\dfrac{3}{5}$

C. $\dfrac{3}{10}$

D. $\dfrac{6}{25}$

E. $\dfrac{12}{25}$

[1994-CE-MATHS 2-31]

26. In a shooting game, the probability that A will hit a target is $\dfrac{3}{5}$ and the probability that B will hit it is $\dfrac{2}{3}$. If each fires once, what is the probability that they will both miss the target?

A. $\dfrac{1}{3}$

B. $\dfrac{1}{4}$

C. $\dfrac{2}{5}$

D. $\dfrac{2}{15}$

E. $\dfrac{11}{15}$

[1995-CE-MATHS 2-31]

27. The figure shows that Mr. Chan has 3 ways to leave town X and Mr. Lee has 2 ways to leave town Y. Mr. Chan and Mr. Lee leave town X and town Y respectively at the same time. If they select their ways randomly, find the probability that they will meet on their way.
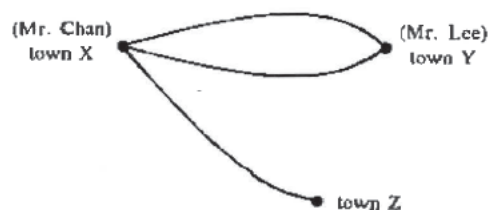
A. $\dfrac{1}{2}$

B. $\dfrac{1}{3}$

C. $\dfrac{2}{3}$

D. $\dfrac{1}{6}$

E. $\dfrac{5}{6}$

[1995-CE-MATHS 2-32]

28. There are 10 parcels. Two of them contain one pen each. If a man opens the parcels at random, what is the probability that he can find the two pens by opening two parcels only?

    A. $\frac{1}{25}$
    B. $\frac{1}{45}$
    C. $\frac{1}{50}$
    D. $\frac{1}{90}$
    E. $\frac{1}{100}$

    [1996-CE-MATHS 2-34]

29. In a certain game, the probability that John will win is 0.3. If he plays the game 3 times, find the probability that he will win at least once.

    A. 0.147
    B. 0.441
    C. 0.657
    D. 0.9
    E. 0.973

    [1996-CE-MATHS 2-35]

30. Two fair dice are thrown. Find the probability that the sum of the two numbers shown is 8.

    A. $\frac{1}{4}$
    B. $\frac{1}{6}$
    C. $\frac{1}{11}$
    D. $\frac{1}{12}$
    E. $\frac{5}{36}$

    [1997-CE-MATHS 2-25]

31. In a test, there are 3 questions. For each question, the probability that John correctly answers it is $\frac{2}{5}$. Find the probability that he gets exactly 2 questions correct.

    A. $\frac{2}{3}$
    B. $\frac{4}{25}$
    C. $\frac{12}{25}$
    D. $\frac{12}{125}$
    E. $\frac{36}{125}$

    [1997-CE-MATHS 2-26]

32. Two cards are drawn randomly from five cards numbered 2, 2, 3, 5 and 5 respectively. Find the probability that the sum of the numbers on the cards drawn is 5.

    A. $\frac{1}{5}$
    B. $\frac{2}{5}$
    C. $\frac{1}{10}$
    D. $\frac{2}{25}$
    E. $\frac{4}{25}$

    [1998-CE-MATHS 2-35]

33. In a shooting game, the probability that Mr. Tung will hit the target is $\frac{2}{3}$. If he shoots twice, find the probability that he will hit the target at least once.

    A. $\frac{1}{9}$
    B. $\frac{2}{9}$
    C. $\frac{4}{9}$
    D. $\frac{2}{3}$
    E. $\frac{8}{9}$

    [1998-CE-MATHS 2-36]

34. Two cards are drawn randomly from four cards numbered 1, 2, 3 and 4 respectively. Find the probability that the sum of the numbers drawn is odd.

    A. $\frac{1}{6}$
    B. $\frac{1}{4}$
    C. $\frac{1}{3}$
    D. $\frac{1}{2}$
    E. $\frac{2}{3}$

    [1999-CE-MATHS 2-35]

35. Tom and Mary each throws a dart. The probability of Tom's dart hitting the target is $\frac{1}{3}$ while that of Mary's is $\frac{2}{5}$. Find the probability of only one dart hitting the target.

    A. $\frac{2}{15}$

B. $\dfrac{3}{15}$

C. $\dfrac{7}{15}$

D. $\dfrac{11}{15}$

E. $\dfrac{13}{15}$

<div align="right">[1999-CE-MATHS 2-36]</div>

36. Two fair dice are thrown. Find the probability that at least one "6" occurs.

    A. $\dfrac{1}{3}$

    B. $\dfrac{1}{6}$

    C. $\dfrac{5}{18}$

    D. $\dfrac{7}{36}$

    E. $\dfrac{11}{36}$

<div align="right">[2000-CE-MATHS 2-21]</div>

37. A bag contains six balls which are marked with the numbers –3, –2, –1, 1, 2 and 3 respectively. Two balls are drawn randomly from the bag. Find the probability that the sum of the numbers drawn is zero.

    A. $\dfrac{1}{30}$

    B. $\dfrac{1}{10}$

    C. $\dfrac{1}{5}$

    D. $\dfrac{1}{3}$

    E. $\dfrac{1}{2}$

<div align="right">[2000-CE-MATHS 2-22]</div>

38. Two cards are drawn randomly from five cards numbered 1, 2, 3, 4 and 4 respectively. Find the probability that the sum of the two numbers drawn is even.

    A. $\dfrac{1}{2}$

    B. $\dfrac{2}{5}$

    C. $\dfrac{3}{10}$

    D. $\dfrac{7}{10}$

    E. $\dfrac{13}{25}$

<div align="right">[2001-CE-MATHS 2-35]</div>

39. A bag contains 2 black balls and 3 white balls. A boy randomly draws balls from the bag one at a time (without replacement) until a white ball appears. Find the probability that he will make at least 2 draws.

    A. $\dfrac{2}{5}$

    B. $\dfrac{3}{5}$

    C. $\dfrac{1}{10}$

    D. $\dfrac{3}{10}$

    E. $\dfrac{7}{10}$

<div align="right">[2001-CE-MATHS 2-36]</div>

40. Two numbers are drawn randomly from five cards numbered 3, 4, 5, 6 and 7 respectively. Find the probability that the product of the numbers drawn is even.

    A. $\dfrac{3}{5}$

    B. $\dfrac{1}{10}$

    C. $\dfrac{7}{10}$

    D. $\dfrac{16}{25}$

<div align="right">[2002-CE-MATHS 2-35]</div>

41. In a test, there are two questions. The probability that Mary answers the first question correctly is 0.3 and the probability that Mary answers the second question correctly is 0.4. The probability that she answers at least one question correctly is

    A. 0.42 .
    B. 0.46 .
    C. 0.58 .
    D. 0.88 .

<div align="right">[2002-CE-MATHS 2-36]</div>

42. A bag contains 2 black balls, 2 green balls and 2 yellow balls. Peter repeats drawing one ball at a time randomly from the bag without replacement until a green ball is drawn. Find the probability that he needs at most 4 draws.

    A. $\dfrac{1}{15}$

    B. $\dfrac{2}{15}$

    C. $\dfrac{14}{15}$

    D. $\dfrac{65}{81}$

<div align="right">[2003-CE-MATHS 2-34]</div>

43. 1232★ is a 5-digit number, where ★ is an integer from 0 to 9 inclusive. The probability that the 5-digit number is divisible by 4 is

   A. $\frac{1}{3}$.

   B. $\frac{1}{4}$.

   C. $\frac{1}{5}$.

   D. $\frac{3}{10}$.

   [2003-CE-MATHS 2-35]

44. A bag contains 3 red balls and 4 green balls. If two balls are drawn randomly from the bag one by one without replacement, then the probability that the two balls are of different colours is

   A. $\frac{2}{7}$.

   B. $\frac{4}{7}$.

   C. $\frac{12}{49}$.

   D. $\frac{24}{49}$.

   [2004-CE-MATHS 2-33]

45. Peter and May each throws a dart. The probability of Peter's hitting the target is 0.2. The probability of May's hitting the target is 0.3. Find the probability of at least one dart hitting the target.

   A. 0.38
   B. 0.44
   C. 0.5
   D. 0.56

   [2004-CE-MATHS 2-34]

46. Bag X contains 1 white ball and 3 red balls while bag Y contains 3 yellow balls and 6 red balls. A ball is randomly drawn from bag X and put into bag Y. If a ball is now randomly drawn from bag Y, then the probability that the ball drawn is red is

   A. $\frac{1}{2}$.

   B. $\frac{2}{3}$.

   C. $\frac{21}{40}$.

   D. $\frac{27}{40}$.

   [2005-CE-MATHS 2-35]

47. If a fair die is thrown three times, then the probability that the three numbers thrown are all different is

   A. $\frac{5}{9}$.

   B. $\frac{17}{18}$.

   C. $\frac{125}{216}$.

   D. $\frac{215}{216}$.

   [2005-CE-MATHS 2-36]

48. Which of the following could be the probability of an event?

   A. $\frac{\pi}{3}$

   B. $\frac{2005}{2006}$

   C. -0.2006
   D. 1.2006

   [2006-CE-MATHS 2-32]

49. Two fair dice are thrown. Find the probability that the sum of the two numbers thrown is a prime number.

   A. $\frac{1}{2}$

   B. $\frac{5}{11}$

   C. $\frac{5}{12}$

   D. $\frac{7}{18}$

   [2006-CE-MATHS 2-33]

50. One letter is chosen randomly from each of the two words 'FORTY' and 'FIFTY'. Find the probability that the two letters chosen are the same.

   A. 0.08
   B. 0.16
   C. 0.32
   D. 0.48

   [2006-CE-MATHS 2-52]

51. There are two questions in a test. The probability that David answers the first question correctly is $\frac{1}{4}$ and the probability that David answers the second question correctly is $\frac{1}{3}$. Given that David answers at least one question correctly in the test, find the probability that he answers the second question correctly.

A. $\dfrac{1}{2}$

B. $\dfrac{2}{3}$

C. $\dfrac{3}{5}$

D. $\dfrac{4}{5}$

[2006-CE-MATHS 2-53]

52. Two numbers are randomly drawn at the same time from five cards numbered 1, 2, 3, 4 and 5 respectively. Find the probability that the sum of the numbers drawn is a multiple of 3.

A. $\dfrac{2}{5}$

B. $\dfrac{3}{10}$

C. $\dfrac{9}{20}$

D. $\dfrac{9}{25}$

[2007-CE-MATHS 2-33]

53. A bag contains 8 black balls and 5 white balls. If two balls are drawn randomly from the bag one by one without replacement, then the probability that the two balls are of the same colour is

A. $\dfrac{14}{39}$.

B. $\dfrac{19}{39}$.

C. $\dfrac{89}{156}$.

D. $\dfrac{89}{169}$.

[2007-CE-MATHS 2-53]

54. One letter is chosen randomly from each of the two words 'CUBE' and 'CONE'. Find the probability that the two letters chosen are different.

A. $\dfrac{1}{4}$

B. $\dfrac{3}{4}$

C. $\dfrac{1}{8}$

D. $\dfrac{7}{8}$

[2007-CE-MATHS 2-54]

55. 4★ is a 2-digit number, where ★ is an integer from 0 to 9 inclusive. Find the probability that the 2-digit number is a prime number.

A. 0.2

B. 0.3

C. 0.4

D. 0.5

[2008-CE-MATHS 2-33]

56. Peter has one $1 coin, one $2 coin and one $5 coin in his pocket. If Peter takes out two coins randomly from his pocket, then the probability that he will get enough money to buy a pen of price $3.5 is

A. $\dfrac{1}{2}$.

B. $\dfrac{1}{3}$.

C. $\dfrac{2}{3}$.

D. $\dfrac{1}{6}$.

[2009-CE-MATHS 2-34]

57. A bag contains n white balls and 12 red balls. If a ball is randomly drawn from the bag, then the probability of drawing a red ball is $\dfrac{1}{4}$. Find the value of n.

A. 3

B. 4

C. 36

D. 48

[2010-CE-MATHS 2-33]

58. In a school, 55% of the students are boys. It is given that 60% of the boys and 30% of the girls live in Kowloon. Find the probability that a randomly selected student from the school is a girl who lives in Kowloon.

A. 0.135

B. 0.165

C. 0.27

D. 0.33

[2010-CE-MATHS 2-53]

59. Two fair dice are thrown. Find the probability that the sum of the two numbers thrown is not less than 10.

A. $\dfrac{1}{6}$

B. $\dfrac{5}{6}$

C. $\dfrac{1}{12}$

D. $\dfrac{11}{12}$

[2011-CE-MATHS 2-33]

60. A box contains 2 red cards, 3 blue cards and 4 yellow cards. Mary repeats drawing one card at a time randomly from the box with replacement until a red card is drawn. Find the probability that Mary needs at least three draws.

A. $\dfrac{5}{12}$

B. $\dfrac{7}{12}$

C. $\dfrac{49}{81}$

D. $\dfrac{343}{729}$

[2011-CE-MATHS 2-52]

HKDSE Problems

61. Bag A contains 2 red balls, 3 green balls and 4 white balls while bag B contains 2 red balls, 3 green balls and 4 yellow balls. If one ball is drawn randomly from each bag, then the probability that the two balls drawn are of different colours is

A. $\dfrac{13}{81}$.

B. $\dfrac{29}{81}$.

C. $\dfrac{52}{81}$.

D. $\dfrac{68}{81}$.

[SP-DSE-MATHS 2-43]

62. If 2 girls and 5 boys randomly form a queue, find the probability that the two girls are next to each other in the queue.

A. $\dfrac{1}{7}$

B. $\dfrac{2}{7}$

C. $\dfrac{6}{7}$

D. $\dfrac{1}{21}$

[SP-DSE-MATHS 2-44]

63. Two numbers are randomly drawn at the same time from four cards numbered 2, 3, 5 and 7 respectively. Find the probability that the sum of the numbers drawn is a multiple of 4.

A. $\dfrac{1}{3}$

B. $\dfrac{1}{4}$

C. $\dfrac{1}{6}$

D. $\dfrac{5}{16}$

[PP-DSE-MATHS 2-28]

64. Mary, Tom and 8 other students participate in a solo singing contest. If each participant performs once only and the order of performance is randomly arranged, find the probability that Mary performs just after Tom.

A. $\dfrac{1}{2}$

B. $\dfrac{1}{10}$

C. $\dfrac{1}{45}$

D. $\dfrac{1}{90}$

[PP-DSE-MATHS 2-43]

65. $9\star\blacklozenge$ is a 3-digit number, where $\star$ and $\blacklozenge$ are integers from 0 to 9 inclusive. Find the probability that the 3-digit number is divisible by 5.

A. $\dfrac{1}{5}$

B. $\dfrac{7}{33}$

C. $\dfrac{20}{99}$

D. $\dfrac{19}{100}$

[2012-DSE-MATHS 2-27]

66. A box contains six balls numbered 7, 8, 8, 9, 9 and 9 respectively. John repeats drawing one ball at a time randomly from the box without replacement until the number drawn is 9. Find the probability that he needs exactly three draws.

A. $\dfrac{1}{2}$

B. $\dfrac{1}{6}$

C. $\dfrac{1}{8}$

D. $\dfrac{3}{20}$

[2012-DSE-MATHS 2-44]

67. Two numbers are randomly drawn at the same time from seven cards numbered 1, 2, 3, 4, 5, 6 and 7 respectively. Find the probability that the product of the numbers drawn is an odd number.

A. $\dfrac{2}{7}$

B. $\dfrac{4}{7}$

C. $\dfrac{12}{49}$

D. $\dfrac{16}{49}$

[2013-DSE-MATHS 2-26]

68. A box contains m yellow balls and 20 black balls. If a ball is randomly drawn from the box, then the probability of drawing a yellow ball is $\dfrac{1}{m}$. Find the value of m.

A. 4
B. 5
C. 15
D. 25

[2014-DSE-MATHS 2-27]

69. Two fair dice are thrown in a game. If the sum of the two numbers thrown is 7, $36 will be gained; otherwise, $6 will be gained. Find the expected gain of the game.

A. $11
B. $12
C. $30
D. $31

[2015-DSE-MATHS 2-27]

70. The bar chart below shows the distribution of the numbers of keys owned by the students in a class. Find the probability that a randomly selected student from the class owns 3 keys.
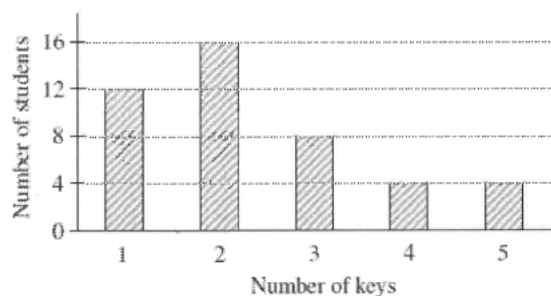
A. $\dfrac{1}{5}$

B. $\dfrac{2}{11}$

C. $\dfrac{4}{11}$

D. $\dfrac{9}{11}$

[2015-DSE-MATHS 2-28]

71. Bag P contains 2 red balls and 4 green balls while bag Q contains 1 red ball and 3 green balls. If a bag is randomly chosen and then a ball is randomly drawn from the bag, find the probability that a green ball is drawn.

A. $\dfrac{3}{10}$

B. $\dfrac{7}{10}$

C. $\dfrac{7}{24}$

D. $\dfrac{17}{24}$

[2015-DSE-MATHS 2-44]

72. Christine has one $1 coin, one $2 coin, one $5 coin and one $10 coin in her pocket. If Christine takes out three coins randomly from her pocket, find the probability that she gets at least $13.

A. $\dfrac{1}{2}$

B. $\dfrac{1}{4}$

C. $\dfrac{3}{4}$

D. $\dfrac{23}{24}$

[2016-DSE-MATHS 2-28]

73. A bag contains 1 red ball, 3 yellow balls and 6 white balls. In a lucky draw, a ball is randomly drawn from the bag and a certain number of tokens will be got according to the following table:

Colour of the ball drawn	Red	Yellow	White
Number of tokens got	90	20	10

Find the expected number of tokens got in the lucky draw.

A. 10
B. 21
C. 40
D. 61

[2016-DSE-MATHS 2-29]

Provided by dse.life

74. There are 9 cans of coffee and 3 cans of tea in a box. If 4 cans are randomly chosen from the box, find the probability that at least 2 cans of tea are chosen.

A. $\frac{13}{55}$

B. $\frac{21}{55}$

C. $\frac{34}{55}$

D. $\frac{42}{55}$

[2016-DSE-MATHS 2-42]

75. The bar chart below shows the distribution of the numbers of tokens got by a group of children in a game. If a child is randomly selected from the group, find the probability that the selected child gets fewer than 5 tokens in the game.
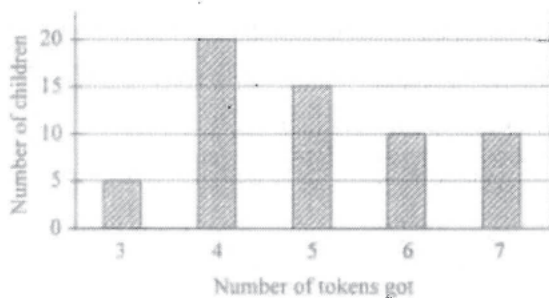
A. $\frac{2}{3}$

B. $\frac{2}{5}$

C. $\frac{5}{12}$

D. $\frac{7}{25}$

[2017-DSE-MATHS 2-28]

76. When Teresa throws a dart, the probability that she hits the target is 0.7. If Teresa throws the dart 4 times, find the probability that she hits the target at most 3 times.

A. 0.0081
B. 0.2401
C. 0.7599
D. 0.9919

[2017-DSE-MATHS 2-43]

77. Two numbers are randomly drawn at the same time from seven cards numbered 1, 1, 1, 2, 2, 3 and 4 respectively. Find the probability that the sum of the numbers drawn is 5.

A. $\frac{5}{21}$

B. $\frac{5}{42}$

C. $\frac{5}{49}$

D. $\frac{10}{49}$

[2018-DSE-MATHS 2-28]

78. John and Mary take turns to throw a fair die until one of them gets a number '1' or '6'. John throws the die first. Find the probability that John gets a number '6'.

A. $\frac{1}{2}$

B. $\frac{1}{6}$

C. $\frac{3}{10}$

D. $\frac{7}{10}$

[2018-DSE-MATHS 2-43]

79. Two numbers are randomly drawn at the same time from nine balls numbered 1, 2, 3, 4, 5, 6, 7, 8 and 9 respectively. Find the probability that the two numbers drawn are consecutive integers.

A. $\frac{1}{2}$

B. $\frac{1}{4}$

C. $\frac{2}{9}$

D. $\frac{7}{9}$

[2019-DSE-MATHS 2-28]

80. There are 2 green cups, 8 blue cups and 9 red cups in a bag. If 6 cups are randomly drawn from the bag at the same time, find the probability that at least 1 blue cup is drawn

A. $\frac{31}{57}$

B. $\frac{44}{323}$

C. $\frac{635}{646}$

D. $\frac{968}{969}$

[2019-DSE-MATHS 2-42]

81. There are three questions in a mathematics competition. The probabilities that Susan answers the first question correctly, the second question correctly and the third question correctly are $\frac{1}{3}, \frac{1}{5}$ and $\frac{1}{7}$ respectively. The probability that Susan answers at most 2 questions correctly in the competition is

A. $\frac{1}{105}$

B. $\frac{13}{105}$

C. $\frac{92}{105}$

D. $\frac{104}{105}$

[2019-DSE-MATHS 2-43]

82. Two numbers are randomly drawn at the same time from four cards numbered 3, 5, 7 and 9 respectively. Find the probability that the product of the numbers drawn is greater than 35.

A. $\frac{1}{2}$

B. $\frac{1}{3}$

C. $\frac{2}{3}$

D. $\frac{3}{8}$

[2020-DSE-MATHS 2-28]

83. There are 8 Chinese books and 7 English books in a box. If 5 books are randomly chosen from the box at the same time, find the probability that at most 3 Chinese books are chosen.

A. $\frac{2}{11}$

B. $\frac{9}{11}$

C. $\frac{61}{143}$

D. $\frac{82}{143}$

[2020-DSE-MATHS 2-43]