

16.10.17 — 17.10.17

CLASS X

ASSIGNMENT - PROBABILITY

25. A student says that if you throw a die, it will show up 1 or not 1. Therefore, the probability of getting 1 and the probability of getting 'not 1' each is equal to  $\frac{1}{2}$ . Is this correct? Give reasons. [NCERT Exemplar]

**Part Answer Type Questions II [3 Marks]**

26. Find the probability that a number selected at random from the numbers 1, 2, 3, ..., 35 is a

- (i) prime number  
(ii) multiple of 7  
(iii) multiple of 3 or 5



27. A box has cards numbered 14 to 99. Cards are mixed thoroughly and a card is drawn from the bag at random. Find the probability that the number on the card, drawn from the box is

- (a) an odd number  
(b) a perfect square number  
(c) a number divisible by 7. [Foreign 2009]

28. From a well-shuffled pack of playing cards, black jacks, black kings and black aces are removed. A card is then drawn at random from the pack. Find the probability of getting

- (a) a red card,  
(b) not a diamond card. [Foreign 2010]

29. The king, queen and jack of clubs are removed from a deck of 52 playing cards and then well shuffled. One card is selected from the remaining cards. Find the probability of getting

- (i) a heart  
(ii) a king  
(iii) a club  
(iv) the '10' of hearts.

30. From a group of 3 boys and 2 girls we select two children. What is the set representing the event:

- (i) one girl is selected  
(ii) at least one girl is selected?

31. Box A contains 25 slips of which 19 are marked ₹ 1 and other are marked ₹ 5 each. Box B contains 50 slips of which 45 are marked ₹ 1 each and others are marked ₹ 13 each. Slips of both boxes are poured into a third box and reshuffled. A slip is drawn at random. What is the probability that it is marked other than ₹ 1?

32. A die has its six faces marked 0, 1, 1, 1, 6, 6. Two such dice are thrown together and the total score is recorded.

- (i) How many different scores are possible?  
(ii) What is the probability of getting a total of 7?

[NCERT Exemplar]

26. A lot consists of 48 mobiles phones of which 42 are good, 3 have only minor defects and 3 have major defects. Varnika will buy a phone if it is good but the trader will only buy a mobile if it has no major defect. One phone is selected at random from the lot. What is the probability that it is

- (i) acceptable to Varnika?  
(ii) acceptable to the trader?

[NCERT Exemplar]

27. A number is selected at random from the numbers 3, 5, 5, 7, 7, 7, 9, 9, 9, 9. Find the probability that the selected number is their average. [HOTS]

28. If a number  $x$  is chosen from the number 1, 2, 3 and a number  $y$  is selected from the numbers 1, 4, 9. Find the probability that  $xy = 10$ . [HOTS]

29. A number  $x$  is chosen from the numbers  $-4 - 3, -2, -1, 0, 1, 2, 3, 4$ . Find the probability that  $|x| < 3$ . [HOTS]

30. Three different coins are tossed together. Find the probability of getting (i) exactly two heads (ii) at least two heads (iii) at least two tails. [AI 2016, 2013]

31. From a pack of 52 playing cards, Jacks, Queens and Kings of red colours are removed. From the remaining, a card is drawn at random. Find the probability that drawn card is: (i) a black King (ii) a card of red colour (iii) a card of black colour [AI 2016]

32. There are 100 cards in a bag on which numbers from 1 to 100 are written. A card is taken out from the bag at random. Find the probability that the number on the selected card (i) is divisible by 9 and is a perfect square (ii) is a prime number greater than 80. [AI 2016]

33. In a single throw of a pair of different dice, what is probability of getting (i) a prime number on each dice? (ii) a total of 9 or 11? [Delhi 2016]

34. Two different dice are thrown together. Find the probability of:

- (i) getting a number greater than 3 on each die  
(ii) getting a total of 6 or 7 of the numbers on two dice [Delhi 2016]

35. A box consists of 100 shirts of which 88 are good, 8 have minor defects and 4 have major defects. Ramesh, a shopkeeper will buy only those shirts which are good but 'Kewal' another shopkeeper will not buy shirts with major defects. A shirt is taken out of the box at random. What is the probability that

- (i) Ramesh will buy the selected shirt?  
(ii) 'Kewal' will buy the selected shirt?

[Delhi 2016]

1. The point which divides the line segment joining points (7,-6) and (3,4) in ratio 1:2 internally lies in which quadrant?
2. If P(a/3,4) is the mid-point of line segment joining points Q(-6,5) and R(-2,3), then find the value of a.
3. A line intersects the y-axis and x-axis at points P and Q respectively. If (2,-5) is the mid-point of PQ, then find the coordinates of P and Q.
4. If A(5,2), B(2,-2) and C(-2,t) are the vertices of a right angles triangle with  $\angle B=90^\circ$ , then find the value of t.
5. If points (a,0), (0,b) and (1,1) are collinear, then find the value of  $(1/a) + (1/b)$ .
6. Prove that points (3,0), (6,4) and (-1,3) are the vertices of a right angled triangle.
7. If the point A(2,-4) is equi-distant from P(3,8) and Q(-10,y), find the values of y. also find distance PQ.
8. The base BC of an equilateral triangle ABC lie on y-axis. The coordinates of point C are (0,-3). The origin is the mid-point of the base. Find the coordinates of the points A and B. also find the coordinates of another point D such that BACD is a rhombus.
9. If A(4,2), B(7,6) and C(1,4) are the vertices of a triangle ABC and AD is its median, prove that the median AD divides triangle ABC into two triangles of equal areas.
10. The line joining points (2,1) and (5,-8) is trisected by the points P and Q. if the point P lies on the line  $2x - y + k = 0$ , find the value of k.
11. Point A lies on line segment PQ joining P(6,-6) and Q(-4,-1) in such a way that  $PA/PQ = 2/5$ . If point P also lies on the line  $3x + k(y+1) = 0$ , find the value of k.
12. Find the area of triangle ABC with A(1,-4) and the mid-points of sides through A being (2,-1) and (0,-1).
13. Find the centre of a circle passing through the points (6,-6), (3,-7) and (3,3).
14. Determine the ratio in which the line  $2x + y = 4$  divides the line segment joining the points A(2,-2) and B(3,7).
15. The centre of circle is (2a,a-7). Find the value of a if the circle passes through point (11,-9) and has diameter  $10\sqrt{2}$  units.
16. Find the value of k if the points P(k+1,2k), Q(3k,2k+3) and R(5k-1,5k) are collinear.
17. The coordinates of A,B and C are (6,3),(3,5) and (4,-2) respectively and P is a point (x,y). Show that  $\frac{\text{ar}(PBC)}{\text{ar}(ABC)} = \frac{(x+y-2)}{7}$ .
18. If the points P(-3,9), Q(a,b) and R(4,-5) are collinear and  $a + b=1$ , find the values of a and b.
19. If the points P(-1,-4), Q(b,c) and R(5,-1) are collinear and  $2b + c = 4$ , find the values of a and b.
20. Points A(-1,y) and B(5,7) lie on a circle with centre O(2,-3y). find the value of y. hence find the radius of the circle.
21. If P(9a-2,-b) divides the line segment joining A(3a+1, -3) and B(8a,5) in the ratio 3:1, find the values of a and b.
22. Vertices of triangle ABC are A(4,6), B(1,5) and C(7,2). A line DE is drawn to intersect AB and AC at D and E respectively such that  $AD/AB = AE/AC = 1/3$ . Calculate the area of triangle ADE and compare it with area of triangle ABC.
23. Find the ratio in which line segment joining points A(2,-2) and B(3,7) is divided by line  $2x + y = 4$ .
24. Prove that area of triangle with vertices (t,t-2),(t+2,t+2) and ((t+3,t) is independent of t.
25. Find the value of k for which points A(-6,10), B(-4,k) and C(3,-8) are collinear. Also, find the ratio in which B divides AC and the length of AC.