

Quantitative Aptitude

1) A bucket contains 9 blue balls, x green balls and y black balls. Two balls are drawn at random from the bucket, then find the probability of that balls are blue, if the probability of selecting a green ball is $\frac{5}{12}$ and the probability of selecting a black ball is $\frac{1}{3}$.

- A. $\frac{5}{36}$
- B. $\frac{1}{12}$
- C. $\frac{7}{24}$
- D. $\frac{2}{35}$
- E. None of these

2) In a school there are 9 male teachers and 8 female teachers. School has to form a group of 6 teachers such that at least 3 male teachers and 1 female teacher are there in the group. In how many ways it can be formed?

- A. 4423
- B. 4585
- C. 4326
- D. 4200
- E. None of these

3) A bag contains 5 red balls, x blue balls and 7 black balls and the probability of selecting 1 blue ball is $\frac{1}{4}$. If three balls are drawn at random, find the probability that it contains at least 1 red ball and at least 1 blue ball.

- A. $\frac{2}{3}$
- B. $\frac{1}{8}$
- C. $\frac{5}{7}$
- D. $\frac{3}{8}$

E. None of these

4) In an examination of 9 papers, a candidate has to pass in more than four papers in order to be successful. Find the number of ways in which he can be successful.

- A. 128
- B. 256
- C. 512
- D. 144
- E. 192

5) There are three bags X, Y and Z each bag contains two types of coloured balls yellow and Red. Bag X contains 6 yellow and 8 red balls, Bag Y contains 6 yellow and 4 red balls and bag Z contains 6 yellow balls and 10 red balls. One bag is selected at random and one ball is chosen from it. Find the probability, if the ball is neither red from bag X or nor yellow from bag Z?

- A. $\frac{115}{168}$
- B. $\frac{113}{168}$
- C. $\frac{95}{168}$
- D. $\frac{115}{198}$
- E. None of these

6) In a pouch, there are 5 blue bangles, 7 green bangles and 8 pink bangles. 3 blue bangles are drawn one by one without replacement. If the first bangle comes out to be blue, then 6 more blue bangles are added to pouch. After the

second comes out to be blue, then no new bangles are added. Find the probability that all the 3 bangles drawn are of blue bangles?

- A. $\frac{3}{80}$
- B. $\frac{4}{77}$
- C. $\frac{5}{81}$
- D. $\frac{2}{89}$
- E. None of these

7) A bag contains 10 red balls, 8 black balls and 'K' yellow balls. When a ball is selected randomly from the bag the probability that the selected ball is yellow is 25%. Find the ratio of probability of selecting two black balls and probability of selecting two red balls.

- A. $\frac{26}{45}$
- B. $\frac{29}{45}$
- C. $\frac{28}{35}$
- D. $\frac{28}{55}$
- E. None of these

8) There are 10 questions out of which 7 are to be attended with a condition that minimum 4 questions have to be attended from first 6 questions. How many number of ways can the questions be attended?

- A. 19

- B. 60
- C. 384
- D. 8640
- E. 75

9) If a basket contains 36 flowers and some of the flowers are Yellow & others are Red. If a flower is drawn at random from the basket, the probability of one flower being Red is $\frac{2}{3}$. If three flowers are picked at random, what is the probability of at least one flower is Yellow?

- A. $\frac{123}{138}$
- B. $\frac{134}{1323}$
- C. $\frac{1279}{1785}$
- D. $\frac{1212}{1321}$
- E. None of these

10) In a group of 7 boys and 8 girls, 5 members are to be selected. In how many different ways can they be selected such that at least one boy should be there?

- A. 2947
- B. 2775
- C. 3153
- D. 3489
- E. None of these

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Answer Key with Explanation

1) Answer: D

The total number of balls in the bucket = $9 + x + y$



$$x C_1 / (9+x+y) C_1 = 5/12$$

$$12x = 5 * (9+x+y)$$

$$12x = 45+5x+5y$$

$$7x - 5y = 45 \quad \text{--- (1)}$$

$$y C_1 / (9+x+y) C_1 = 1/3$$

$$3y = 9+x+y$$

$$2y - x = 9 \quad \text{--- (2)}$$

From 1 and 2,

$$9y = 108$$

$$y = 12$$

$$x = 15$$

The total number of balls in the bucket = 9 + 12

$$+ 15 = 36$$

$$\text{Required probability} = 9C_2 / 36C_2$$

$$= 2/35$$

2) Answer: C

According to question, Group can be formed is as follow,

Required number of ways

$$= (3 \text{ men} + 3 \text{ women}) \text{ or } (4 \text{ men} + 2 \text{ women}) \text{ or } (5 \text{ men} + 1 \text{ woman})$$

$$= (9C_3 \times 6C_3) + (9C_4 \times 6C_2) + (9C_5 \times 6C_1)$$

$$= 1680 + 1890 + 756 = 4326$$

Hence, required ways = 4326

3) Answer: D

$$x C_1 / (5 + x + 7) C_1 = 1/4$$

$$4x = 12 + x$$

$$3x = 12$$

$$x = 4$$

Total number of balls = 5 + 4 + 7 = 16

$$\text{Required probability} = [(5C_1 * 4C_1 * 7C_1) + (5C_2 * 4C_1) + (5C_1 * 4C_2)] / 16C_3$$

$$= [(5 * 4 * 7) + (5 * 2 * 4) + (5 * 2 * 3)] / (16 * 5 * 7)$$

$$= (140 + 40 + 30) / (16 * 5 * 7)$$

$$= 210 / (16 * 5 * 7)$$

$$= 3/8$$

4) Answer: B

To be successful the candidate has to pass in 5 subjects or 6 subjects or 7 subjects or 8 subjects or 9 subjects

$$\text{Number of ways to pass in 5 subjects} = 9C_5 = 126$$

$$\text{Number of ways to pass in 6 subjects} = 9C_6 = 84$$

$$\text{Number of ways to pass in 7 subjects} = 9C_7 = 36$$

$$\text{Number of ways to pass in 8 subjects} = 9C_8 = 9$$

$$\text{Number of ways to pass in 9 subjects} = 1$$

$$\text{Total number of ways} = 126 + 84 + 36 + 9 + 1 = 256$$

5) Answer: A

$$\text{Total balls together in all bags} = 6 + 8 + 6 + 4 + 6 + 10 = 40$$

$$\text{Probability of selecting a bag} = 1/3$$

Probability of selecting a red ball from bag X or yellow ball from bag Z

$$= 1/3 \times (8/14 + 6/16)$$

$$= 1/3 \times (53/56) = 53/168$$

$$\text{Required probability} = 1 - 53/168$$

$$= 115/168$$

6) Answer: A

$$\text{Total bangles} = 5 + 7 + 8 = 20$$



Probability of taking 1st blue bangles = $\frac{5}{20} = \frac{1}{4}$

6 more blue bangles are added = $> 4+6 = 10$

Total bangles = $10 + 7 + 8 = 25$

Probability of taking 2nd blue bangles = $\frac{10}{25} = \frac{2}{5}$

Number of blue bangles after 2nd draw = $10 - 1 = 9$

Total bangles now = $25 - 1 = 24$

Probability of taking 3rd blue bangles = $\frac{9}{24} = \frac{3}{8}$

Required probability = $\frac{1}{4} * \frac{2}{5} * \frac{3}{8} = \frac{3}{80}$

7) Answer: E

According to question

The probability of selecting a yellow ball = 25% = $\frac{1}{4}$

So, 3 unit = 18 balls

1 unit = 6 balls

So yellow balls in the bag = 6 balls

Probability of selecting 2 black balls from the bag = $\frac{{}^8C_2}{{}^{24}C_2}$

Probability of selecting 2 red balls from the bag = $\frac{{}^{10}C_2}{{}^{24}C_2}$

Required ratio = $(\frac{{}^8C_2}{{}^{24}C_2}) : (\frac{{}^{10}C_2}{{}^{24}C_2})$

= $(8 \times 7) / (10 \times 9)$

= $\frac{28}{45}$

8) Answer: B

Total number of questions = 10

Number of questions to be attended = 7

From first 6 questions, 4 questions have to be attended

Number of ways = ${}^6C_4 = \frac{6!}{(4! \cdot 2!)} = \frac{6 \cdot 5}{2} = 15$

From the remaining 4 questions, 3 have to be attended

Number of ways = ${}^4C_3 = \frac{4!}{(3! \cdot 1!)} = 4$

Total number of ways = $15 \cdot 4 = 60$

9) Answer: C

Let number of Red flowers is 'x'

$x \cdot {}^x C_1 / {}^{36}C_1 = \frac{2}{3}$

$\frac{x}{36} = \frac{2}{3}$

$x = 24$

Number of red flowers = 24

Number of Yellow flowers = 12

Probability of at least 1 Yellow flower = $1 - ({}^{24}C_3 / {}^{36}C_3)$

$P(Y) = 1 - \frac{(24 \cdot 23 \cdot 22)}{(36 \cdot 35 \cdot 34)} = 1 - \frac{506}{1785}$

$P(Y) = \frac{1279}{1785}$

10) Answer: A

Required number of ways

= $> ({}^7C_1 \text{ and } {}^8C_4) \text{ or } ({}^7C_2 \text{ and } {}^8C_3) \text{ or } ({}^7C_3 \text{ and } {}^8C_2) \text{ or } ({}^7C_4 \text{ and } {}^8C_1) \text{ or } {}^7C_5$

= $> (7 \cdot 70) + (21 \cdot 56) + (35 \cdot 28) + (35 \cdot 8) + 21$

= $> 490 + 1176 + 980 + 280 + 21$

= > 2947