Solutions

1. Option C

In 52 cards, there are 13 diamond cards and 4 queens.

1 card is chosen at random

For 1 diamond card, probability = 13/52

For 1 queen, probability = 4/52

For cards which are both diamond and queen, probability = 1/52

So required probability = 13/52 + 4/52 – 1/52 = 16/52 = 4/13

2. Option B

In 52 cards, there are 26 red cards and 4 ace and there 2 such cards which are both red and ace.

1 card is chosen at random

For 1 red card, probability = 26/52

For 1 ace, probability = 4/52

For cards which are both red and ace, probability = 2/52

So required probability = 26/52 + 4/52 – 2/52 = 28/52 = 7/13

3. Option A

Multiples of 3 up to 250 = 250/3 = 83 (take only whole number before the decimal part)

Multiples of 8 up to 250 = 250/3 = 31

Multiples of 24 (3×8) up to 250 = 250/24 = 10

So total such numbers are = 83 + 31 – 10 = 104

So required probability = 104/250 = 52/125

4. Option D

Both balls being non – blue means both balls are either white or green

There are total 12 balls (4 + 3+5)

and total 7 white + green balls.

So required probability = ${}^{7}C_{2}/{}^{12}C_{2}$ = [(7*6/2*1) / (12*11/2*1)] = 21/66 = 7/22

5. Option B

There are total 4 + 3 + 5 = 12 balls

Probability of first ball being green is = 5/12

Now total green balls in box = 5 – 1 = 4

So total white + green balls = 4 + 4 = 8

So probability of second ball being white or green is 8/12 = 2/3

So required probability = 5/12 * 2/3 = 5/18

6. Option C

There are 36 total events which can happen ({1,1}, {1,2}……{6,6})

For a total of 7 on dices, we have – {1,6}, {6,1}, {2,5}, {5,2}, {3,4}, {4,3} – so 6 choices

So required probability = 6/36 = 1/6

7. Option E

There are 36 total events which can happen ({1,1}, {1,2}……{6,6})

For sum of number to be a multiple of 5, we have – {1,4}, {4,1}, {2,3}, {3,2}, {4,6}, {6,4}, {5,5} – so 7 choices

So required probability = 7/36

8. Option D

There are 5 tickets which contain a multiple of 5

So probability of 1st ticket containing multiple of 5 = 5/25 = 1/5

Now:

Case 1: If the ticket chosen contained 15

If there was a 15 on first draw, then there are 7 tickets in box which contain a multiple of 3 out of 24 tickets. (25/3 – 1 = 8 – 1 = 7) – because 15 is already out from the box

So probability = 7/24 (24 tickets remaining after 1st draw)

Case 2: If the ticket chosen contained other than 15 (5 or 10 or 20 or 25)

If 15 was not there on first draw, then there are 8 tickets in box which contain a multiple of 3 out of 24 tickets. (25/3 = 8) – because 15 is already out from the box

So probability = 8/24 (24 tickets remaining after 1st draw)

Add the cases for probability of multiple of 3 on second ticket, so prob. = 7/24 + 8/24 = 15/24 (added the cases because we want one of these cases to happen and not both)

So required probability = 1/5 * 15/24 = 1/8 (multiplied the cases because we want both to happen)

9. Option C

There are 90 two digit numbers (10 – 99)

Multiple of 2 = 90/2 = 45

Multiple of 14 = 90/14 = 6

Since all multiples of 14 are also multiple of 2, so favorable events = 45 – 6 = 39

So required probability = 39/90 = 13/30

10. Option A

Case 1: first was a white ball

Now it is put in second urn, so total white balls in second urn = 5 + 1 = 6, and total balls in second urn = 12 + 1 = 13

So probability of white ball from second urn = 6/13

Case 2: first was a blue ball

Now it is put in second urn, so total white balls in second urn remain 5, and total balls in second urn = 12 + 1 = 13

So probability of white ball from second urn = 5/13

So required probability = 6/13 + 5/13 = 11/13 (added the cases because we want one of these cases to happen and not both)

= 2/11

11. (c)

7*1 – 2, 5*2 – 3, 7*3 – 4, 17*4 – 5, 63*5 – 6, 309*6 – 7

12. (c)

C) 1740

2^3 + 2, 4^3 + 4, 6^3 + 6, 8^3 + 8, 10^3 + 10

13. (d)

132 – 1, 112 – 1, 92 – 1, 72 – 1, 52 – 1, 32 – 1

14. (d)

D5*2 – 3, 7*2 + 3, 17*2 – 3, 31*2 + 3, 65*2 – 3

15. (e)

15-10 = 5, 28-15 = 13, 49-28 = 21, 78-49 = 29

13-5 = 8, 21-13 = 8, 29-21 = 8

So next number is 78+29+8 = 115

16. (c)

12*2, 24+3, 27*2, 54+3, 57*2

17. (d)

$2^2 - 2/2, 4^2 + 4/2, 6^2 - 6/2, 8^2 + 8/2, 10^2 - 10/2, 12^2 + 12/2$

18. (d)

4^2, 4^2 + 5^2, 5^2 + 6^2, 6^2 + 7^2,….

19. (e)

$\times 0.5 + 0.5, \times 1.5 + 1.5, \times 2.5 + 2.5, \times 3.5 + 3.5, \times 4.5 + 4.5,$

20. (b)

×2 + 11, ×2 + 12, ×2 + 13, ×2 + 14, ×2 + 15,

21. (d) $\left(\frac{75 \times 640}{100} - \frac{30 \times 320}{100}\right) \div ?$

$= 64$

$\Rightarrow \frac{384}{?} = 64$

$\Rightarrow 64 \times ? = 384$

$\Rightarrow ? = \frac{384}{64} = 6$

22. **(a)** $\frac{8}{3} + \frac{25}{12} + \frac{5}{4} = ? \times 5$

$\Rightarrow \frac{32 + 25 + 15}{12} = ? \times 5$

$\Rightarrow \frac{72}{12} = ? \times 5$

$\Rightarrow 6 = ? \times 5$

$\Rightarrow ? = \frac{6}{5} = 1.2$

23. **(b)** $(125)^{\frac{1}{3}} \times (34)^4 \times (85)^5 \div (10^4 \times 25) = 17^?$

$\Rightarrow (5^3)^{\frac{1}{3}} \times (2 \times 17)^4 \times (5 \times 17)^5 \div (2^4 \times 5^4 \times 5^2) = 17^?$

$\Rightarrow 5 \times 2^4 \times 17^4 \times 5^5 \times 17^5 \div (2^4 \times 5^6) = 17^?$

$\Rightarrow 5^6 \times 2^4 \times 17^{4+5} \div (2^4 \times 5^6) = 17^?$

$\Rightarrow 17^9 - 17^? \Rightarrow ? = 9$

24. (1) $648 \times \sqrt{324} \div 243$

$= 2^4 \times 3^?$

$\Rightarrow \frac{648 \times 18}{243} = 2^4 \times 3^?$

$\Rightarrow 48 = 2^4 \times 3^? = 16 \times 3^?$

$\Rightarrow 3^? = \frac{48}{16} = 3 \Rightarrow ? = 1$

25. (2) $1839 + \sqrt[4]{625} = \left(? - \frac{25}{3}\right) \times 12$

$\Rightarrow 1839 + \sqrt[4]{5^4} = \left(? - \frac{25}{3}\right) \times 12$

$\Rightarrow 1839 + 5 = \left(? - \frac{25}{3}\right) \times 12$

$\Rightarrow \frac{1844}{12} = ? - \frac{25}{3}$

$\Rightarrow \frac{461}{3} + \frac{25}{3} = ?$

$\Rightarrow \frac{461 + 25}{3} = ?$

$\Rightarrow ? = \frac{486}{3} = 162$

26. (3) $\frac{32 \times 184}{23} + ? = 24^2$

$\Rightarrow 256 + ? = 576$

$\Rightarrow ? = 576 - 256 = 320$

27. (4) $? = 15 \div \left(\frac{1}{2} \times 59 - \frac{35}{2}\right)$

$= 15 \div \left(\frac{59 - 35}{2}\right)$

$= 15 \div \frac{24}{2} = 15 \div 12$

$= \frac{15}{12} = \frac{5}{4} = 1.25$

28. (4) $\frac{30 + 4.4}{?} = 8$

$\Rightarrow \frac{34.4}{?} = 8 \Rightarrow ? = \frac{34.4}{8} = 4.3$

29. (2) $1 + \frac{3}{4} - 1 - \frac{5}{6} = ?^2 - 2 - \frac{1}{3}$

$\Rightarrow \frac{3}{4} - \frac{5}{6} + \frac{1}{3} = ?^2 - 2$

$\Rightarrow \frac{9 - 10 + 4}{12} = ?^2 - 2$

$\Rightarrow \frac{1}{4} + 2 = ?^2$

$\Rightarrow ?^2 = \frac{9}{4}$

$\Rightarrow ? = \frac{3}{2} = 1\frac{1}{2}$

30. (3) $(2^3)^3 \div (2^4)^2 \times 2^5 = \frac{2^{?-4}}{(2^2)^2}$

$\Rightarrow 2^9 \div 2^8 \times 2^5 \times 2^4 = 2^{?-4}$

$[a^m \times a^n = a^{m+n}]$

$\Rightarrow \frac{2^9 \times 2^5 \times 2^4}{2^8} = 2^{?-4}$

$\Rightarrow 2^{9+5+4-8} = 2^{?-4}$

$[a^m \div a^n = a^{m-n}]$

$\Rightarrow 2^{10} = 2^{?-4} \Rightarrow ? - 4 = 10$

$\Rightarrow ? = 10 + 4 = 14$

31. **(d)**

From I : Pr^2/100^2 = 450. So P can be found.

From III: using the compound interest formula, P can be find out

32. **Option E**

Let speed of boat = u, and stream = v

From I: u + v= 12/2 = 6 km/hr

From II: v = 3u/4

From III: u – v = 12/4 = 3

So solving I and II 'u' can be found. Similarly by solving II and III and by solving I and III

33. **(e)**

From I: SI after 5 yrs is rs 600, so after 1 yr = 600/5 = Rs 120

So after 2 years is 120*2 = Rs 240

From III: P = 10*SI after 2 years

So from I and III, P = 10*240 = Rs 2400

Now P = 2400 and from statement II, r = 6%, so CI formula can be used to find the required amount

34. **(d)**

Using all statements:
Let profit earned in Oct and Nov is Rs x and Rs y resp.
So in Dec = 140/100 *x = 1.4x
Given x + y = 55000
From II – 1.4x = 110/100 * y
So we have 2 equations in 2 variables, y can be found

35. (b)

From I and II: we have number of days in which 9 women can complete the work. So using efficiency we can find the number of days required by man to complete the work and then the required answer

From II and III: we have number of days in which 9 women can complete the work. So days required by child can be find out, and then by men.

From I and III: We get 3 equations in 3 variables – man, woman and child. So can be found.

36. (b) **37. (e)** **38. (e)** **39.** (e) **40.** (e)

41. (e) **42.** (d) **43.** (e) **44.** (e) **45.** (c)

46. Answer – (c) 18#N
RAIN – 18#N
R – #
No of letters – 4+(Alphabet order of N = 14) = 18
Last letter – N

47. Answer – (d) RACE
"9#E"– RACE
R – #
Last letter – E
No of letters – 4+(Alphabet order of E=5) = 9

48. Answer – (a) 24%R
M – %
Last letter – R
No of letters – 6+(Alphabet order of R=18) = 24

49. Answer – (e) J
J=@, M=%, R=#, B=$

50. Answer – (d) 22%N, 5$G, 17#M, 19@N
MOUNTAIN BIG ROOM JAPAN = 22%N, 10$G, 17#M, 19@N

51 to 55

51. Answer – (a) ~1&9
First Position – symbol denotes first letter = (F–~)
Third Position – symbol denotes total number of words = (6 letter word – &)
Second & Fourth position = Alphabet order of last letter – Number of letters = (25 – 6) = 19; Second position – 1; Fourth position – 9.

52. Answer –(c) E
– E.

53. Answer – (e) None of these
@ = Three letter word

54. Answer – (d) FOUR
First Position – symbol denotes first letter = (F–~)
Third Position – symbol denotes total number of words = (4 letter word – ^)
Second & Fourth position = Alphabet order of last letter – Number of letters = (18 – 4) = 14; Second position – 1; Fourth position –
(d)
[/su_spoiler]

55. Answer – (e) #2%0, *0^8, ~1@1, !0&6
FUN COOL EARLY DIESEL = #2%0, *0^8, ~1@1, !0&6

56 to 60

56. Answer – (c) 8@N
Person – 8@N
P – @
No of letters – 6+2 = 8
Last letter – N

57. Answer – (c) Sale
6*E' – Sale
S denote *
E denote Sale end with A
6 denote no of letter+2 = 4+2 = 6

58. Answer – (c) 8!D
Intend =>8!D
I – !
D – last letter of the word D and
Total no of letter 6 + 2 = 8

59. Answer – (c) L
I =!,M = %, L = ?,P = @, H =#, S = *, N = &

60. Answer – (b) 7@E, 5#S, 7?E, 6%H
Leave his much peace = 7@E, 5#S, 7?E, 6%H

61. Option B
Divide both equations. So
I/II = 3x/4y
Or I = 3x/4y * II
Now y has to be > 0 and x has to be > y
If x = 2, y = 1, I > II
If x = 3, y = 1, I > II
Similarly we will get I > II in all cases
Now x has to be < 5,
So check If x = 4, y = 3, then I = II
So final we get I ≥ II

62. Option C
I: A:B:C = 10000*24 : 15000*24 : 20000*18=2:3:3
B=3/8 *4,00,000= Rs 1,50,000
II: Salary after deducation = 20,000*12*80/100 = Rs 1,92,000
Hence I < II

63. Option A
I: A=16 days ; B = 16 * 100/160=10 days
A+B together = 16*10/(26)=80/13 days
II: A = 16 days ; B = 10 days
A(double efficiency) = 8 days ; B(half efficiency) = 20 days
A+B together = 80/14
hence I > II

64. Option E
Value of machine after 2 years = 96000*90/100*90/100= Rs 77,760
II: Here we do not need speed, as we can find the total distance travelled by the everyday distance.
If the year is leap year then total distance travelled = 213*366= 77,958 km
if non leap year then =213*365 = 77,745 km
hence relation cannot be established.

65. Option C
I: Perimeter= 2(80+40)=240
No. of poles = 240/24=10
II: Area of circle = 320 =>22/7*r*r=320
r=101.81 => r >10
Hence II > I

A bag contains 3 red, 4 green and 2 blue balls. Two balls are drawn at random.

66. Option C

I: 7C2/9C2=7/12

II: A – > 10 days => fraction of work in 7 days = 7/10

Hence II > I

67. Option A

I: P=16200*100/(3*12)=Rs 45,000

II: A= 35000*121/100=Rs 42,350

Hence I > II

68. Option E

I: 9+y=2(9 – y)

y = 3 kmph

II: x = (4+2)/2=3 kmph

Hence I = II

69. Option C

I: Average Speed = U * D/x

U = (8+4) = 12 ; D = (8 – 4) = 4

Avg Speed = 12 * 4/8 = 6 kmph

II: Distance(Circumferenc(e) = 2*π*r = 44 km ; Time = 4 hours

Speed = 44/4 = 11 kmph

hence II > I

70. Option A

I: Relative speed = 175/10 m/s = (175/10)*(18/5) = 63 kmph

Let speed of train = x kmph => relative speed = x – 6

x – 6 = 63

=> x = 69 kmph

II: Avg speed = (2*65*70)/(65+70) = 67.40 kmph

Hence I > II