GMAT

Quant Reasoning Assessment

Sets, PnC, Counting and Probability

Total Questions: 35
Duration: 70 Min

1. **In a certain game, you pick a card from a standard deck of 52 cards. If the card is a heart, you win. If the card is not a heart, the person replaces the card to the deck, reshuffles, and draws again. The person keeps repeating that process until he picks a heart, and the point is to measure: how many draws did it take before the person picked a heart and won? What is the probability that one will have at least three draws before one picks a heart?**
   - **A.** 1/2
   - **B.** 9/16
   - **C.** 11/16
   - **D.** 13/16
   - **E.** 15/16
2. **Mary and Joe are to throw three dice each. The score is the sum of points on all three dice.If Mary scores 10 in her attempt what is the probability that Joe will outscore Mary in his?**
   - **A.** 24/64
   - **B.** 32/64
   - **C.** 36/64
   - **D.** 40/64
   - **E.** 42/64
3. **A Coach is filling out the starting lineup for his indoor soccer team.**
   There are 10 boys on the team, and he must assign 6 starters to the following positions: 1 goalkeeper, 2 on defence, 2 in midfield, and 1 forward.
   Only 2 of the boys can play goalkeeper, and they cannot play any other positions. The other boys can each play any of the other positions.
   How many different groupings are possible?
   - **A.** 60
   - **B.** 210
   - **C.** 2580
   - **D.** 3360
   - **E.** 151200
4. **Six mobsters have arrived at the theater for the premiere of the film "Goodbuddies."**
   One of the mobsters, Frankie, is an informer, and he's afraid that another member of his crew, Joey, is on to him.
   Frankie, wanting to keep Joey in his sights, insists upon standing behind Joey in line at the concession stand, though not necessarily right behind him.
   How many ways can the six arrange themselves in line such that Frankie's requirement is satisfied?
   - **A.** 6
   - **B.** 24
   - **C.** 120
   - **D.** 360
   - **E.** 720
5. **In how many ways can 11 books on English and 9 books on French be placed in a row on a shelf so that two books on French sholud not be together?**
   - **A.** 220
   - **B.** 320
   - **C.** 200
   - **D.** 300
   - **E.** 420
6. **How many words, with or without meaning can be made from the letters of the word MONDAY, assuming that no letter is repeated, if 4 letters are used at a time?**
   - **A.** 360
   - **B.** 720
   - **C.** 240
   - **D.** 120

E. 60

7. **In how many ways can the letters of the word PERMUTATIONS be arranged if there are always 4letters between P and S**
   - **A.** 2419200
   - **B.** 25401600
   - **C.** 1814400
   - **D.** 1926300
   - **E.** 1321500
8. **4 dices are thrown at the same time. whats the probability of getting ONLY 2 dices showing thesame face?**
   - **A.** 2/9
   - **B.** 1/12
   - **C.** 1/36
   - **D.** 5/9
   - **E.** 1/2
9. **In how many different ways can 4 physics, 2 math and 3 chemistry books be arranged in a row so that all books of the same branch are together?**
   - **A.** 1242
   - **B.** 1728
   - **C.** 1484
   - **D.** 1734
   - **E.** 1726
10. **If there are 64 people, what is the probability that atleast 6 are born in the same month ?**
    - **A.** 1/2
    - **B.** 1/4
    - **C.** 3/4
    - **D.** 1/6
    - **E.** 1
11. **In a class of 100 students, each one plays atleast one game among cricket, football and hockey. How many play cricket and hockey?**
    (1) 40 students do not play cricket, 60 do not play hockey, and 20 neither play cricket nor hockey.
    (2) 70 students play at least two games and 20 students play exactly one game.
12. **In a colony, 50 people read "Hindu". 30 among those who read "Hindu" also read "Telegraph". How many people read only "Telegraph"?**
    (1) 20people read neither "Hindu" nor "Telegraph"
    (2) 60 people do not read "Hindu"
13. **There are four distinct bowls and five distinct marbles. In how many ways you can place the five marbles in the four bowls?**
    - **A.** 1024
    - **B.** 625
    - **C.** 120
    - **D.** 60
    - **E.** None of these
14. **Jack has to put 4 different letters in 4 distinct envelopes. If he puts exactly one of the letters in the correct envelope and the remaining three letters in wrong envelopes, in how many ways can he make such a mistake?**
    - **A.** 16
    - **B.** 6
    - **C.** 12
    - **D.** 8
    - **E.** 4

15. Ten Arabian horses are split into pairs to pull one of the distinct four carts in a race. If each cart is assigned to a pair of horses, how many different assignments of horses to carts are possible?

A. 420
B. 1260
C. 5220
D. 9450
E. 113400

16. How many guests were present at the party?

(1) There were 45 handshakes if the guests shook hands with each other and every two guests shook hands exactly once.
(2) If there were half as many guests present, they could sit in a row in 120 different ways.

17. A man can hit a target once in 4 shots. If he fires 4 shots in succession, what is the probability that he will hit his target?

A. 1
B. 1/256
C. 81/256
D. 175/256
E. 144/256

18. Set #1 = {A, B, C, D, E}
Set #2 = {K, L, M, N, O, P}
There are these two sets of letters, and you are going to pick exactly one letter from each set. What is the probability of picking at least one vowel?

A. 1/6
B. 1/3
C. 1/2
D. 2/3
E. 5/6

19. 3/8 of all students at Social High are in all three of the following clubs: Albanian, Bardic, and Checkmate. 1/2 of all students are in Albanian, 5/8 are in Bardic, and 3/4 are in Checkmate. If every student is in at least one club, what fraction of the student body is in exactly 2 clubs?

A. 1/8
B. 1/4
C. 3/8
D. 1/2
E. 5/8

20. If 2 different representatives are to be selected at random from a group of 10 employees and if p is the probability that both representatives selected will be women, is $p > 1/2$

(1) More than 1/2 of the 10 employees are women.
(2) The probability that both representatives selected will be men is less than 1/10

21. For a trade show, two different cars are selected randomly from a lot of 20 cars. If all the cars on the lot are either sedans or convertibles, is the probability that both cars selected will be sedans greater than 3/4?

(1) At least three-fourths of the cars are sedans.
(2) The probability that both of the cars selected will be convertibles is less than 1/20.

22. A six sided die has 3 of its faces painted red and the other 3 faces yellow. The dice was rolled several times. How many times did the red colour face up?

(1) The dice was rolled 20 times.
(2) The number of times the red colour faced up was 8 more than the number of times the yellow colour faced up.

23. 40 ladies and 50 gentlemen are present at a party. There are 20 couples among them. If a lady and a gentleman is selected at random, what is the probability that they will be a couple?

A. 1/200
B. 1/40
C. 1/50
D. 1/100
E. 1/20

24. There are 12 balls, out of which 4 balls are picked up at random. Is the probability of all the 4 balls being red greater than 1/33 ?

(1) If 2 balls are picked up, the probability of both being red is 5/33
(2) There are 7 blue balls.

25. A password to a certain database consists of digits that cannot be repeated. If the password is known to consist of at least 8 digits and it takes 12 seconds to try one combination, what is the amount of time, in minutes , necessary to guarantee access to database?

A. 8!/5
B. 8!/2
C. 8!
D. 10!/2
E. 5/2.10!

26. In how many ways can 5 letters be posted in 3 post boxes, if any number of letters can be posted in all of the three post boxes?

A. ${}^{5}C_{3}$
B. ${}^{5}P_{3}$
C. 5^3
D. 3^5
E. 2^5

27. A teacher is making a multiple choice quiz. She wants to give each student the same questions, but have each student's questions appear in a different order. If there are twenty-seven students in the class, what is the least number of questions the quiz must contain?

A. 5
B. 6
C. 7
D. 8
E. None of these

28. Badri has 9 pairs of dark Blue socks and 9 pairs of Black socks. He keeps them all in a same bag. If he picks out three socks at random what is the probability he will get a matching pair?

A. $(2*{}^{9}C_{2} * {}^{9}C_{1}) / {}^{18}C_{3}$
B. $({}^{9}C_{2} * {}^{9}C_{1}) / {}^{18}C_{3}$
C. 1
D. None of these

29. How many four letter distinct initials can be formed using the alphabets of English language such that the last of the four words is always a consonant?

A. (26^3)*(21)
B. 26*25*24*21
C. 25*24*23*21
D. None of these.

30. There are 5 Rock songs, 6 Carnatic songs and 3 Indi pop songs. How many different albums can be formed using the above repertoire if the albums should contain at least 1 Rock song and 1 Carnatic song?

A. 15624
B. 16384
C. 6144
D. 240

31. What is the value of 1*1! + 2*2! + 3!*3! + ... n*n!, where n! means n factorial or n(n-1)(n-2)...1

- **A.** n(n-1)(n-1)!
- **B.** (n+1)!/(n(n-1))
- **C.** (n+1)! - n!
- **D.** (n + 1)! - 1!

32. A bag contains 2 red, 3 green and 2 blue balls. Two balls are drawn at random. What is the probability that none of the balls drawn is blue?

- **A.** $^{10}/_{21}$
- **B.** $^{11}/_{21}$
- **C.** $^{2}/_{7}$
- **D.** $^{5}/_{7}$

33. Two dice are tossed. The probability that the total score is a prime number is:

- **A.** $^{1}/_{6}$
- **B.** $^{5}/_{12}$
- **C.** $^{1}/_{2}$
- **D.** $^{7}/_{9}$

34. A card is drawn from a pack of 52 cards. The probability of getting a queen of club or a king of heart is:

- **A.** $^{1}/_{13}$
- **B.** $^{2}/_{13}$
- **C.** $^{1}/_{26}$
- **D.** $^{1}/_{52}$

35. How many heptagons can be drawn by joining the vertices of a polygon with 10 sides?

- **A.** 562
- **B.** 120
- **C.** 105
- **D.** 400
- **E.** 282