

Solve the problem.

- 1) A restaurant offers salads with 3 types of lettuce, 8 different toppings, and 4 different dressings. How many different salads could be ordered? 1) _____
 A) 96 B) 72 C) 44 D) 15

$3 \cdot 8 \cdot 4 = 96$

- 2) How many 3-digit numbers are there in our system of counting numbers? 2) _____
 A) 899 B) 27 C) 6 D) 900

$9 \cdot 10 \cdot 10 = 900$

- 3) License plates are made using 2 letters followed by 3 digits. How many plates can be made if repetition of letters and digits is allowed? 3) _____
 A) 676,000 B) 67,600 C) 11,881,376 D) 100,000

$26 \cdot 26 \cdot 10 \cdot 10 \cdot 10 = 676\,000$

- 4) Of the 2,598,960 different five-card hands possible from a deck of 52 playing cards, how many would contain all black cards. 4) _____
 A) 65,780 hands B) 32,890 hands C) 263,120 hands D) 131,560 hands

$26C5 = 65\,780$

- 5) Of the 2,598,960 different five-card hands possible from a deck of 52 playing cards, how many would contain 2 black cards and 3 red cards? 5) _____
 A) 1,267,500 B) 845,000 C) 422,500 D) 1,690,000

$26C2 \cdot 26C3 = 845\,000$

- 6) How many ways can a president, vice-president, secretary, and treasurer be chosen from a club with 8 members? Assume that no member can hold more than one office. 6) _____
 A) 24 B) 32 C) 70 D) 1680

$8P4 = 1680$

Find the probability.

- 7) A fair die is rolled. What is the probability of rolling a 3 or a 5? 7) _____
 A) $\frac{1}{36}$ B) $\frac{1}{6}$ C) $\frac{1}{3}$ D) 2

$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ $P(3 \text{ or } 5) = 1/6 + 1/6 = 2/6 = 1/3$

- 8) A fair die is rolled. What is the probability of rolling an even number or a number less than 4? 8) _____
 A) $\frac{5}{6}$ B) $\frac{2}{3}$ C) 1 D) $\frac{1}{2}$

$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ $P(\text{even or } <4) = 3/6 + 3/6 - 1/6 = 5/6$

Find the indicated probability.

- 9) A fair die is rolled. Find the probability that the number obtained is not greater than 4. 9) _____
A) $\frac{2}{3}$ B) $\frac{5}{6}$ C) $\frac{1}{3}$ D) $\frac{1}{2}$

$P(\text{less or equal to } 4) = 4/6 = 2/3$

Use the general multiplication rule to find the indicated probability.

- 10) An IRS auditor randomly selects 3 tax returns from 52 returns of which 13 contain errors. What is the probability that she selects none of those containing errors? hint: without replacement. 10) _____
A) 0.0156 B) 0.0129 C) 0.4135 D) 0.4219

Total: 52, 13 with errors; therefore, 39 ok.

$P(\text{One ok and another ok and another ok}) = 39/52 * 38/51 * 37/50 = 0.4135$

Find the probability.

- 11) A spinner has regions numbered 1 through 21. What is the probability that the spinner will stop on an even number or a multiple of 3? 11) _____
A) $\frac{1}{3}$ B) 17 C) $\frac{2}{3}$ D) $\frac{10}{9}$

$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ $P(\text{even or mult of } 3) = 10/21 + 7/21 - 3/21 = 14/21 = 2/3$

Solve the problem.

- 12) There are 10 members on a board of directors. If they must form a subcommittee of 3 members, how many different subcommittees are possible? 12) _____
A) 6 B) 120 C) 720 D) 1000

$10C3 = 120$

Find the indicated probability.

- 13) A bag contains 7 red marbles, 2 blue marbles, and 1 green marble. If a marble is selected at random, what is the probability that it is not blue? 13) _____
A) $\frac{5}{4}$ B) $\frac{4}{5}$ C) 8 D) $\frac{1}{5}$

Total = 10 Not blue = 8 $P(\text{not blue}) = 8/10 = 4/5$

- 14) A card is drawn at random from a standard 52-card deck. Find the probability that the card is an ace or not a club. 14) _____
A) $\frac{9}{13}$ B) $\frac{43}{52}$ C) $\frac{10}{13}$ D) $\frac{35}{52}$

$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ $P(\text{Ace or Not a Club}) = 4/52 + 39/52 - 3/52 = 10/13$

- 15) Two fair dice are rolled. Find the probability that the sum of the two numbers is not greater than 5. 15) _____
A) $\frac{13}{18}$ B) $\frac{1}{3}$ C) $\frac{1}{6}$ D) $\frac{5}{18}$

Sum not greater than 5: (1,1); (1,2); (1,3); (1,4); (2,1); (2,2); (2,3); (3,1); (3,2); (4,1) = 10 $P=10/36 = 5/18$

- 16) The probability that Luis will pass his statistics test is 0.49. Find the probability that he will fail his statistics test. 16) _____
A) 0.51 B) 2.04 C) 0.96 D) 0.25

$P(A) + P(\text{no } A) = 1$ Therefore, $P(\text{not passing}) = 1 - P(\text{pass}) = 1 - 0.49 = 0.51$

Find the probability.

- 17) If you are dealt two cards successively (with replacement of the first) from a standard 52-card deck, find the probability of getting a heart on the first card and a diamond on the second. 17) _____
A) $\frac{1}{16}$ B) $\frac{1}{169}$ C) $\frac{13}{204}$ D) $\frac{1}{204}$

$P(A \text{ and } B) = P(A) * P(B) = 13/52 * 13/52 = (1/4) (1/4) = 1/16$

- 18) If a fair coin is tossed three times, find the probability of getting heads on the first toss and tails on the second and third tosses. 18) _____
- A) $\frac{1}{6}$ B) $\frac{1}{8}$ C) $\frac{1}{4}$ D) $\frac{3}{8}$

$P(A \text{ and B and C}) = 1/2 * 1/2 * 1/2 = 1/8$

Use the general multiplication rule to find the indicated probability.

- 19) You are dealt two cards successively (without replacement) from a shuffled deck of 52 playing cards. Find the probability that both cards are black. 19) _____
- A) $\frac{13}{51}$ B) $\frac{1}{2652}$ C) $\frac{25}{51}$ D) $\frac{25}{102}$

$P(A \text{ and B}) = P(A) * P(B|A) = 26/52 * 25/51 = 25/102$

- 20) You are dealt two cards successively (without replacement) from a shuffled deck of 52 playing cards. Find the probability that the first card is a king and the second card is a queen. 20) _____
- A) $\frac{13}{102}$ B) $\frac{2}{13}$ C) $\frac{4}{663}$ D) $\frac{1}{663}$

$P(A \text{ and B}) = P(A) * P(B|A) = 4/52 * 4/51 = 4/663$

Find the conditional probability.

- 21) If a single fair die is rolled, find the probability that the number rolled is 1 given that it is even. 21) _____
- A) $\frac{2}{3}$ B) $\frac{1}{6}$ C) 0 D) $\frac{1}{2}$

$P(\text{one}|\text{even}) = 0$

- 22) If two cards are drawn at random without replacement from a standard deck, find the probability that the second card is a face card, given that the first card was a queen. 22) _____
- A) $\frac{5}{17}$ B) $\frac{4}{17}$ C) $\frac{3}{13}$ D) $\frac{11}{51}$

$P(\text{2nd card is face} | \text{first was a Queen}) = 11/51$ There are 11 face cards left, one less in total.

Find the indicated probability.

- 23) An unprepared student makes random guesses for the ten true-false questions on a quiz. Find the probability that there is at least one correct answer. 23) _____
- A) $\frac{1023}{1024}$ B) $\frac{9}{10}$ C) $\frac{1}{1024}$ D) $\frac{1}{10}$

$P(\text{at least one} ____) = 1 - P(\text{none of} ____)$; therefore,
 $P(\text{at least one correct}) = 1 - P(\text{none of them correct})$
 $P(\text{at least one correct}) = 1 - (1/2)^{10} = 1 - 1/1024 = 1023/1024$

- 24) In a blood testing procedure, blood samples from 6 people are combined into one mixture. The mixture will only test negative if all the individual samples are negative. If the probability that an individual sample tests positive is 0.1, what is the probability that the mixture will test positive? 24) _____
- A) 0.531 B) 0.469 C) 0.00000100 D) 1.00

$P(\text{at least one} ____) = 1 - P(\text{none of} ____)$; therefore,
 $P(\text{at least one positive}) = 1 - P(\text{none of them positive})$
 $P(\text{at least one positive}) = 1 - P(\text{none of them positive})$
 No positive means negative. Since prob of pos is 0.1, prob of neg is 0.9 ($P(A)+P(\text{no } A) = 1$); then,
 $P(\text{at least one positive}) = 1 - 0.9^6 = 4685$

25) A card is drawn at random from a standard 52-card deck. Find the probability that the card is not a queen. 25) _____

A) $\frac{12}{13}$

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

C) $\frac{3}{4}$

D) $\frac{1}{13}$

Total num of cards, 52; queens, 4. No queens, 48 P(no queen) = $48/52 = 12/13$

Find the probability.

26) When two balanced dice are rolled, there are 36 possible outcomes. What is the probability that the sum of the numbers on the dice is 6 or 9? 26) _____

A) $\frac{1}{54}$

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

C) $\frac{1}{4}$

D) $\frac{5}{12}$

sum is 6: (1,5), (2,4), (3,3), (4,2); (5,1) = 5 pairs

sum is 9: (3,6); (4,5); (5,4); (6,3) = 4 pairs

$P(\text{sum is 6 or 9}) = P(\text{sum is 6}) + P(\text{sum is 9})$

$P(\text{sum is 6 or 9}) = 5/36 + 4/36 = 9/36 = 1/4$

Answer Key

Testname: REVIEW04

- 1) A
- 2) D
- 3) A
- 4) A
- 5) B
- 6) D
- 7) C
- 8) A
- 9) A
- 10) C
- 11) C
- 12) B
- 13) B
- 14) C
- 15) D
- 16) A
- 17) A
- 18) B
- 19) D
- 20) C
- 21) C
- 22) D
- 23) A
- 24) B
- 25) A
- 26) C