1. A restaurant offers 4 different soft drink flavours, 5 different sandwiches and 3 different dessert selections. In how many ways can a person select one item from each category (a drink, a sandwich and a dessert)?

2. How many 2-digit whole numbers are there with the units digit being…

    a) a multiple of 5?

    b) not a multiple of 5?

3. Using the digits 2, 3, 5, and 9, how many 2-digit whole numbers can be formed if repetitions are permitted?

4. Using the digits 1, 4, 6, and 9, how many 2-digit whole numbers can be formed if repetitions are not permitted?

5. A multiple-choice test has 8 questions, with 4 possible answers for each question. If a student were to guess the answer to each question, how many different ways would there be to answer the test?

6. A car licence plate consists of 6 characters. The first 3 characters are letters excluding I, O, Q, and U. The last 3 characters are any of the numerals from 0 to 9. How many different licence plates are possible?

7. The dial on a combination lock contains markings which represent the numbers from 0 to 59. How many 3-number combinations are possible if the first and the third numbers must be different multiples of three, and the second number must not be a multiple of three?

8. How many different outfits consisting of a shirt, a pair of pants, and a sweater can be chosen from 4 shirts, 3 pants, and 2 sweaters?

9. In how many different ways can the letters in the word PRICE be scrambled?

10. In how many ways can 5 books be arranged on a shelf if 2 of the books must remain together?

11. The code to a garage door opener is programmed by moving each of the nine switches to any one of the three positions. How many different codes are possible?

12. What is the total sum of the digits of all possible three-digit numbers that can be written using the digits 3, 4, and 6 once in each number?

13. How many different three-letter sets of initials are possible using the letters of the alphabet?

14. Computers code information in a binary sequence, using 0 or 1 for each term in the sequence. Each sequence of eight terms is called a byte (for example 00110010). How many different bytes can be created?

15. A softball league has 8 teams. During the season, each team plays each of the other teams exactly 3 times. What is the total number of games played by all teams?

16. How many 3-digit numbers can be formed using the digits 0, 1, 2, 3, 4 if no repetitions are allowed?

17. How many different three digit security codes are possible using the digits 1-5, if the second digit cannot be the same as the first, and the third digit cannot be the same as the second?

18. In a random draw, three names are chosen to win an ipad, a bike and a gift card. If 300 names are entered into the contest, in how many ways can three people win the items?

19. If the digits can be used more than once, how many different even three-digit numbers can be written using the digits 1, 2, 3, 5, and 7?

20. How many different, positive three-digit numbers greater than 300 can be made using any three of the following seven digits without repetition: 1, 2, 3, 4, 5, 6, 7?

21. How many three-digit numbers can be formed from the digits 1, 2, 3, 4, 5 if the 2 may be used any number of times but the other digits may be used at most once in any three-digit number?

Answers: 1. 60 2. a)18 b) 72 3. 16 4. 12 5. 65 536 6. 10 648 000 7. 14 022 8. 24 9. 120 10. 48 11. 19 683

12.78 13. 15 600 14. 256 15. 84 16. 48 17. 80 18. 26 730 600 19. 25 20. 150 21. 73