Programming Aptitude Test

1- What is the value of A if A = 5 + (2*(9+5) - 4) / 2
2- Your sister is 8 years old. You are three times as old as her. How old will you be when she is twice as old as her?
3- Which of the following is the odd one out: 3 ... 9 ... 12 ... 24 ... 8 ... 16
4- What is the value of the following expression: (7 mod 5) + (4 mod 5) + (10 mod 5)
5- A car rental service charges 200 E.P. a day and 1.5 E.P. a Kilometer to rent a car. Find the expression for total cost “C”, in E.P, of renting a car for “D” days to travel “M” Kilometer.
6- One day Mrs. Arnl worked three-and-one-half hours in the morning, took a one-half hour lunch break, and worked four-and-one-half hours in the afternoon. If she began work at 8:30 a.m. what time did she finish?
7- Follow the procedures below:
   1. Put 5 in Box A.
   2. Put 4 in Box B.
   3. Add the number in Box A and the number in Box B and put the result in Box C.
   4. Add the number in Box A and the number in Box C and put the result in Box A.
   5. Write down the number from Box A, B, and C.
8- Solve the following:
   black sheep = dag kip
   white dog = tin bud
   black cow = dag stam
   white sheep = ?
9- Ali, Nour, and Body each have a favorite food: donuts, egg, and fish, in no practical order.
   List all of the ways in which you can choose two people and two foods.
   For example:
   Ali, Nour ; dounts, egg.
10- You're given 2 dice (die). List all of the possible combinations of the rolls that you might get, assuming order doesn't matter. For example: 1,2 and 2,1 Are the same combination.
11- You're given four colored boxes to be stacked one top of each other: red, green, blue, and yellow. Assume you must stack all four boxes, list each of the ways in which the boxes can be stacked.

12- The rate of growth of an expression is defined as how quickly the value of the expression increases when increasing values of n are used to evaluate the expression. Arrange these 7 mathematical expressions in order from slowest to fastest rates of growth:
   \[ N^2 + 2n \quad n^2 \quad n^3 \quad 2n \quad n \quad 5 \quad 2^n \]
13- The dark area of which of these diagrams represents "AND".
14- An ATM machine has 20 and 50 coins. Find the mathematical function for finding \( m, n \) as a function of \( x \), such that \( x=50m+20n \).

15- The company has information of their employers in three different lists. You have acquired all three lists, which all have a little bit different information depending on the purpose of the list. The lists have following information of the employees:
List 1: the number, the name, the occupation and the department
List 1 is ordered by the number of employee to ascending order
List 2: the name, the number, the address, the phone number and the social security number
List 2 is organized to alphabetic order by the name
List 3: the number, the social security number, salary and some secret information
List 3 is ordered by the number to ascending order
Your job is to make a report of those employees whose salary is greater than 2000 E. P.
The report has to display the name, the address, the department and the salary of the employees.
Describe how you would solve the problem.

16- Let \( i \) and \( j \) be integers.
List all values of \( i \) and \( j \) that make the expression to be always true
a) \((i>=1) \) and \((i<=5)\)
The expression is true when \( i \) has values:
b) \((j>=3) \) or \((j<=7)\)
The expression is true when \( j \) has values:

17- Write a letter sequence, that is next on the series. Try to determine the general form of the series:
a) bce , bbcde , bbbcdde , __________________________
The general form:
b) bcace , bcacacace , bcacacacacace , __________________________
The general form:
c) __________________ , abcccdd , abbccccdd , abbbcccccd , ...
The general form:

18- Your job is to sum up 50 numbers and at the end report the sum and the count of numbers that were positive numbers (\( >0 \)).
Describe how you would solve the problem or write in a pseudo-code.
19- Your job is to deduce which of the given numbers is the smallest. How many comparisons you have to make if you have:
a) 3 numbers __________________
b) 6 numbers __________________
c) n numbers ___________________ (n>=1)
20- int a = 10; int b = 20;
what is the new value of a and b when:
a = b