Problem 1

Define a logical variable isFemale. Then create a variable of type **final String** and initialize it with the string `"Woman"` or `"Man"`, depending on the value of isFemale. Additionally, define a logical variable isYoung. Then declare a variable of type **final String** and initialize it with the string `"Woman"`, `"Man"`, `"Boy"` or `"Girl"` depending on the values of isFemale and isYoung.

Problem 2

Invoking **Math.random()** returns a (pseudo)random number of type **double** from the half-open interval $[0, 1)$. Use this generator to draw one card from a standard deck. First, draw an integer from the interval $[1, 4]$ (corresponding to suit: clubs, diamonds, hearts, spades) and then another number from the interval $[2, 14]$ (deuce, trey, four, five, ... , ten, Jack, Queen, King, Ace). Using the **switch expression**, define a string describing a card and display it on the console; for example

```
Jack of Diamonds
```

There should be only one `System.out.println` statement in the program.

Problem 3

A

For all numbers form the range $[10, 25]$ print, in one line, the number itself, its square and cube.

B

Read, using **Scanner** or **JOptionPane**, two different natural numbers. Then calculate and print their greatest common divisor.

Use Euclid's original algorithm, i.e., with subtractions, not taking remainders:

1. If $a = b$, the answer is a (or b, because they are equal) and END.
2. From the grater of a and b subtract the value of the smaller and go to step 1.

C

Read, using **Scanner** or **JOptionPane**, two different natural numbers, a and b. Swap their values if b is smaller than a. Then calculate (in a **for** loop, without using any mathematical formula) the sum of all numbers from the range $[a, b]$.

For the range $[1001, 31123]$ the result should be 483 835 626.

D

Read (using Scanner or JOptionPane) two different natural numbers, a and b. Swap their values if b is smaller than a. Then print all numbers from the range $[a, b]$ which are divisible by 3 or by 5, but not by both these numbers.

E

Read (using Scanner or JOptionPane) one natural number (an int). Then print the number of 1s in its bit representation (should be 32 for -1).

F

Using the function Math.random, simulate the roll of two dice in a loop. After each roll, print the sum of the dice. The loop terminates when this sum is 9.

Do not use break or continue. Solve the problem using a do-while loop and a for loop.

Problem 4

Write a program which reads numbers until the user enters number 0 and then prints the maximum and minimum of the numbers that have been entered. Don't use arrays, strings or collections.

Problem 5

Write a program printing the multiplication table for numbers from 1 to n. For example, if n is 12, the table should look like this:

```
 1   2   3   4   5   6   7   8   9  10  11  12
 2   4   6   8  10  12  14  16  18  20  22  24
 3   6   9  12  15  18  21  24  27  30  33  36
 4   8  12  16  20  24  28  32  36  40  44  48
 5  10  15  20  25  30  35  40  45  50  55  60
 6  12  18  24  30  36  42  48  54  60  66  72
 7  14  21  28  35  42  49  56  63  70  77  84
 8  16  24  32  40  48  56  64  72  80  88  96
 9  18  27  36  45  54  63  72  81  90  99 108
10  20  30  40  50  60  70  80  90 100 110 120
11  22  33  44  55  66  77  88  99 110 121 132
12  24  36  48  60  72  84  96 108 120 132 144
```

In order to print a number, say k, on four places, padding it from the left with spaces for shorter numbers, you can use `System.out.printf("%4d",k)`.