Problem 1: Write a program that prints the integer equivalent to an input real number (floating point number).
Sample input: 5.44
Sample output: 5

Problem 2: Write a program that takes as input a real number and prints the integer number equal to the rounded off number.

Sample input: 5.6
Sample output: 6
Sample input: 5.23
Sample output: 5

Problem 3: Write a program that takes a floating point number as input and prints its integer and fractional parts separately.
Sample input: 4.332
Sample output: Integer part = 4, Fractional part: 0.332

Problem 4: Write a program that converts a given temperature (floating point number) from degrees Fahrenheit to degrees Celsius.

Sample input: -40
Sample output: -40

Sample input: 212
Sample out: 100

Problem 5: Write a program that takes an integer as input and prints its square.
Sample input: 5
Sample output: 25

Problem 6: Write a function that returns the sum of two integers x and y. Use this function to write a program that takes two integers as input and prints their sum.
Sample input: 4 5
Sample output: 9

Problem 7: Write two functions - one that squares a given number, and one that returns the cube of a positive integer. Combine these functions to create a function that returns x^{12}, given the value of x. Finally, write a program that takes a small positive integer 'x' and prints the value of x^{12} for it.

Sample input: 2
Sample output: 4096

Problem 8: Write a function that exchanges the values of two integer variables. Use that function to create program that takes as input two integers, and exchanges the values of the variables containing them, and

then print them in that order.
Sample input: 4 6
Sample output: 6 4.

Problem 9: Write a function that takes five numbers as input and returns the largest of them all. Then write a program to take 5 numbers from the user and prints
Sample input: 12 13 4 3 21
Sample output: 21

Problem 10: Write a program that takes three real number as input and determines the minimum amongst them.
Sample input: 21 43 22
Sample output: 21

Problem 11: Write a program that takes two rectangles as input (each rectangle is represented by four numbers, [x1,y1]-[x2,y2]) and determines if the rectangles intersect or not.

Sample input: 10 10 40 40 20 20 90 30
Sample output: The rectangles intersect.

Sample input: 10 10 40 40 41 41 90 90
Sample output: The rectangles do not intersect.

Problem 12: Write a program to print the sum of 'n' integers. Take ‘n’ as input from the user and then the n integers.
Sample input: 10 1 2 3 4 5 6 7 8 9 10
Sample output: 55

Problem 13: Write a program that prints the following pattern:
```
*
**
***
****
*****
******
*******
********
*********
```

Problem 14: Write a program to print the following pattern:
```
          0
         101
        21012
       3210123
      432101234
     54321012345
    6543210123456
   765432101234567
  87654321012345678
 9876543210123456789
```

Problem 15: Write a function that takes a positive integer as input and returns the integer with the reverse digits. Use this function to take a number as input from the user, and print it with its digits reversed.

Sample input: 1034
Sample output: 4301

Problem 16: Write a program that takes an integer as input and determines if it is a prime number or not.

Sample input: 17
Sample output: yes

Sample input: 1032
Sample output: no

Problem 17: Write a program that takes two integers as input and determines their greatest common divisor (GCD, or HCF).
Sample input: 12 15
Sample output: 3

Problem 18: Write a program that takes two integers as input and determines their least common multiple (LCM).
Sample input: 12 15
Sample output: 60

Problem 19: Write a function to calculate x_n given a positive integer n and a real number x as input. Write a program then to calculate x_n taking the values of x and n from the user.

Sample input: 10 2
Sample output: 100.000

Sample input: 1.5 2
Sample output: 2.25

Problem 20: Write a simple program that takes a sentence (ending with a \n) as input and prints the number of words in it.

Sample input: Hello this is a word count program
Sample output: 7