# **HackerRank**

# Day 5: Normal Distribution II

# **Objective**

In this challenge, we go further with normal distributions. We recommend reviewing the previous challenge's Tutorial before attempting this problem.

#### **Task**

The final grades for a Physics exam taken by a large group of students have a mean of  $\mu=70$  and a standard deviation of  $\sigma=10$ . If we can approximate the distribution of these grades by a normal distribution, what percentage of the students:

- 1. Scored higher than 80 (i.e., have a grade > 80)?
- 2. Passed the test (i.e., have a  $grade \geq 60$ )?
- 3. Failed the test (i.e., have a grade < 60)?

Find and print the answer to each question on a new line, rounded to a scale of  $\mathbf 2$  decimal places.

## **Input Format**

There are 3 lines of input (shown below):

```
70 10
80
60
```

The first line contains  $\mathbf{2}$  space-separated values denoting the respective mean and standard deviation for the exam. The second line contains the number associated with question  $\mathbf{1}$ . The third line contains the pass/fail threshold number associated with questions  $\mathbf{2}$  and  $\mathbf{3}$ .

If you do not wish to read this information from stdin, you can hard-code it into your program.

### **Output Format**

There are three lines of output. Your answers must be rounded to a scale of  $\bf 2$  decimal places (i.e.,  $\bf 1.23$  format):

- 1. On the first line, print the answer to question  ${\bf 1}$  (i.e., the percentage of students having grade>80 ).
- 2. On the second line, print the answer to question 2 (i.e., the percentage of students having  $grade \geq 60$ ).
- 3. On the third line, print the answer to question  $\bf 3$  (i.e., the percentage of students having  ${\it grade} < 60$  ).