Problem 1
[0 pts] *Compute the volume of a cylinder*: Write a program that reads in the radius and length of a cylinder and computes the area and volume using the following formulas:

$$area = radius * radius * \pi$$

$$volume = area * length$$

Problem 2
[0 pts] *Sum the digits in an integer*: Write a program that reads an integer between 0 and 1000 and adds all the digits in the integer. For example, if an integer is 932, the sum of all its digits is 14.

Hint Use the % operator to extract digits, and use the / operator to remove the extracted digit. For instance, 932 % 10 = 2 and 932 / 10 = 93.

Problem 3
[0 pts] *Financial application: calculate tips*: Write a program that reads the subtotal and the gratuity rate, then computes the gratuity and total. For example, if the user enters 10 for subtotal and 15% for gratuity rate, the program displays $1.5 as gratuity and $11.5 as total.

Problem 4
[0 pts] *Physics: acceleration*: Average acceleration is defined as the change of velocity divided by the time taken to make the change, as given by the following formula:

$$a = \frac{v_1 - v_0}{t}$$

Write a program that prompts the user to enter the starting velocity v_0 in $\frac{m}{s}$, the ending velocity v_1 in $\frac{m}{s}$, and the time span t in *seconds*, then displays the average acceleration in $\frac{m}{s^2}$.

Note: All the above problems come from the Y. Daniel Liang "Introduction to Java Programming and Data Structures", 12^{th} edition.