1. Amount in Piggy Bank

A Kid has a hobby of collecting coins. Assume the denominations to be twenty five paise, fifty paise, and one rupee in a piggy bank. Write a C++ code to calculate the amount of money collected by the kid in the piggy bank.

Input Format:

First input is "m", the number of twenty five paise coins

Second input is "n", the number of fifty paise coins

Third input is "p", the number of one rupee coins

Output Format:

Rupees in piggy bank

Paise in piggy bank

Boundary Conditions:

m, n, p $>= 0$

2. Atomic Weight

The atomic weight of an element is calculated **by adding the mass** of each isotope multiplied by its fractional abundance. For example, for an element with two isotopes a and b:

atomic weight = $mass_a$ x $fract_a$ + $mass_b$ x $fract_b$

For example, if chlorine has two naturally-occurring isotopes CI-35 and CI-37 :

Cl-35 mass is 34.968852 and fract is 0.7577
Cl-37 mass is 36.965303 and fract is 0.2423

atomic weight = $mass_a$ x $fract_a$ + $mass_b$ x $frac_b$

atomic weight = 34.968852 x 0.7577 + 36.965303 x 0.2423

atomic weight = 35.45 amu

Write the c++ code to determine atomic weight of chlroine.

Input Format:

mass of isotope 'a'

fract of 'a'

mass of isotope 'b'

fract of 'b'

Output Format:

atomic weight of the element

Boundary Conditions:

mass and fract >= 0

3. *The Mangoes Problem*

One night the King couldn't sleep, so he went down into the Royal kitchen, where he found a bowl full of mangoes. Being hungry, he took 1/6 of the mangoes. Later that same night, the Queen was hungry and couldn't sleep. She, too, found the mangoes and took 1/5 of what the King had left. Still later, the first Prince awoke, went to the kitchen, and ate 1/4 of the remaining mangoes. Even later, his brother, the second Prince, ate 1/3 of what was then left. Finally, the third Prince ate 1/2 of what was left, leaving only 'm' mangoes for the servants. Write an algorithm and a c++ code to determine the number of mangoes that were originally in the bowl? For example, if m was 3 then the number of mangoes that were originally in the bowl was 18. Round the number of mangoes to zero decimal places.

Input Format

Number of mangoes left for the prince

Output Format

Number of mangoes initially in bowl

4. **Distance Travelled by Seconds Hand**

Given the circumference of a circular clock as 'C' cms, find the distance travelled by seconds clock in 'S' seconds. For example, if circumference of the clock is 64 cm then the distance travelled by the clock in 15 seconds is 16 cm. Display only two decimal places for floating point values.

Input Format:

Read circumference of the circular clock

Read number of seconds 'S' for which distance travelled is to be computed

Output Format:

Display only distance travelled by seconds hand in 'S' seconds

5. **Reopening Day**

Given last working day in April and the number of holidays, develop an algorithm and write a C++ code to determine the reopening day of school. For example, if the day given is April 16 (input as 16 4) and number of holidays as 53 the reopening day will be June 9 and print it as 9, 6. The number of holidays can be only to the maximum of 60.

Input Format:

Read a day in April

Read number of holidays

Output Format:

Reopening date of school

Boundary Condition:

All inputs > 0

6. Given a sequence of numbers design an algorithm and write a c++ program to determine the number of multiples and non-multiples of 7. For example given a sequence of numbers as 24, 35, 12, 28, 31, number of multiples of 7 is 2 and number of non-multiples of 7 is 3.

Input Format:

Read 'n' for total number of elements in the sequence

Read 'n' sequence of inputs

Output Format:

Print number of multiples of 7 and non-multiples of 7

Boundary Condition:

n>0 and sequence of inputs should be greater than '0'

7. **Circular Ground**

Given that the radius of a circular ground is in meters and speed of a bike in m/s. Determine the approximate number of seconds that will be taken by the bike to go around the ground once. Formula to calculate circumference of a circular ground = 2*pi*r. Assume that the radius of ground and speed of bike are integers and bike will maintain an uniform speed. You can round the number of seconds taken to upper bound. That is 10.1, 10.5, 10.9 etc should be 11. For example, if the radius of the ground is 100 m and speed of bike as 40m/s, then the time taken to go around once is approximately 16 seconds. Display only two decimal places for floating point values.

Input Format:

Read radius of circular ground in meters

Read speed of bike in m/s

Output Format:

Display only time taken by the bike

8.Design an algorithm, draw a flow chart and write a c++ code to find the product of first 'n' even numbers. For example, if n = 4 then 2*4*6*8 = 384. Check boundary conditions and print 'Invalid input' for wrong output.

Input Format: 'n' as integer

Output Format:product of first 'n' even numbers

Boundary Condition:n>0