Write C++ programs for the following problems. Ensure that your program compiles and runs correctly. Upload the .cpp files. Name your files exactly as your instructor has asked.

Programming Project on Chapter 4
Making Decisions

1. **Time Calculator (4pts) – timeCalculator.cpp**
    Write a program that asks the user to enter a number of seconds.
    - There are 86,400 seconds in a day. If the number of seconds entered by the user is greater than or equal to 86,400, the program should display the number of days in that many seconds.
    - There are 3,600 seconds in an hour. If the number of seconds entered by the user is greater than or equal to 3,600, the program should display the number of hours in that many seconds.
    - There are 60 seconds in a minute. If the number of seconds entered by the user is greater than or equal to 60, the program should display the number of minutes in that many seconds.

    Sample output:

    ```
    Time Calculator
    Enter the seconds you would like to calculate into days,
    hours, minutes: 100000


                        100000 seconds have:
                             1 day(s)
                             3 hour(s)
                            46 minute(s)
                            40 second(s)
    ```

2. **The Speed of Sound in Gases (6 pts) – speedOfSound.cpp**
    When sound travels through a gas, its speed depends primarily on the density of the medium. The less dense the medium, the faster the speed will be. The following table shows the approximate speed of sound at 0 degrees centigrade, measured in meters per second, when traveling through carbon dioxide, air, helium, and hydrogen.

Medium	Speed (Meters per Second)
Carbon dioxide	258.0
Air	331.5
Helium	972.0
Hydrogen	1,270.0

Write a program that displays a menu allowing the user to select one of these four gases.

```
The Speed of Sound in Gases
    1. Calculate distance in Carbon dioxide
    2. Calculate distance in sound in Air
    3. Calculate distance in sound in Helium
    4. Calculate distance in sound in Hydrogen
    5. Quit
    Enter your choice (1-5):
```

If the user selects 5 you should quit the program. If the user selects 1—4, you should ask the user to enter the number of seconds it took for the sound to travel in this medium from its source to the location at which it was detected. The program should then report how far away (in meters) the source of the sound was from the detection location.

Input Validation: Check that the user has selected one of the available menu choices. Do not accept times less than 0 seconds or more than 30 seconds

3 Math Tutor (4 pts) – mathTutor.cpp

Write a program that can be used as a math tutor for a young student. The program should display two random numbers that are to be added, such as:

```
      247
    + 129
    ---------
```

The program should wait for the student to enter the answer. If the answer is correct, a message of congratulations should be printed. If the answer is incorrect, a message should be printed showing the correct answer.

4 **Mobile Service Provider (6 pts) – mobileService.cpp**

A mobile phone service provider has three different data plans for its customers:

Package A:	For $39.99 per month, 4 gigabytes are provided. Additional data costs $10 per gigabyte.
Package B:	For $59.99 per month, 8 gigabytes are provided. Additional data costs $5 per gigabyte.
Package C:	For $69.99 per month, unlimited data is provided.

Write a program that calculates a customer's monthly bill. It should ask which package the customer has purchased and how many gigabytes were used. It should then display the total amount due.

Input Validation: Be sure the user only selects package A, B, or C.