

# Messy Chocolate

Andrew Rosen

Complete each of the four following parts as separate Python programs.

## 1 Chocolate is All I Need

The Harris-Benedict equation estimates the number of calories your body needs to maintain your weight if you do no exercise. This is called your basal metabolic rate, or BMR. The formula for the calories needed for a woman to maintain her weight is:<sup>1</sup>

$$BMR = 655.1 + (4.35 \cdot weight) + (4.7 \cdot height) - (4.7 \cdot age)$$

The formula for the calories needed for a man to maintain his weight is

$$BMR = 66 + (6.2 \cdot weight) + (12.7 \cdot height) - (6.76 \cdot age)$$

A typical chocolate bar contains 214 calories. Write a program that allows the user to input weight in pounds, height in inches, age in years. The program should then output the number of chocolate bars that should be consumed to maintain one's weight for person of the input height, weight, and age for both a male and a female. **You don't need to ask for the user's gender**, as we haven't learned if statements yet. Again, print out the result of both equations and be sure to print which is which.

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<sup>1</sup>Note that all units are in American Freedom Units™ (non-metric)

## 2 Debug My Messy Code

Create a python file called **Messy.py**. Copy and paste the following code in there and correct the errors so that it will run. Please also format it make it readable. The code should output 139.0 when 12 is entered.<sup>2</sup>

```
def main():

    print('It's time to go on a scavenger hunt!')
    print("You'd be amazed how many things can go wrong!")
    print('Please enter how long you want to travel for:')
    initialPos = 7.0;
    time = float(input());
    velocity == 5.0;
    acceleration = 1.0;

    # there is a math error in here causing
    # an incorrect answer in the line below
    position = initialPos + velocity * time + (1 // 2) * acceleration*time*time;

    #if you are stuck on the math error, look at the footnote
    print(position);

main()
```

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<sup>2</sup>There is a math error you must fix in the code. The program will still run, but you need to fix it to get full credit. The math error stems from the  $\frac{1}{2}$  in the code. Think what happens when you do integer division in Python.

### 3 Temperature

Write a program that converts a temperature from Celsius to Fahrenheit. It should (1) prompt the user for input, (2) read a floating point value from the keyboard, and (3) calculate the result.

Here is the formula. Be careful not to use integer division!

$$F = C \times \frac{9}{5} + 32$$

### 4 Seconds to Hours

Write a program that converts a total number of seconds to hours, minutes, and seconds. It should (1) prompt the user for input, (2) read an integer from the keyboard, (3) and calculate the result. For example, **"5000 seconds = 1 hours, 23 minutes, and 20 seconds"**.

*Hint:* Use the modulus operator.

### Grading

Each of the problems is worth 25 points. Remember to put them in 4 separate files.