

Week 2 Review

[Re-submit Assignment](#)

Due Sunday by 11:59pm **Points** 17 **Submitting** a text entry box or a file upload

Overview

When attempting these problems, please keep in my mind the nature of [Academic Honesty](#) in this course. This week you should submit your response to the Week 2 Review. This will support your review of the topics covered this week and prepare you for writing your program.

Programming Exercises

1. **[ball_filler.py]** You have been contracted by a bowling ball manufacturer to write a program that estimates the amount of ball "filler" they will need to order for a new line of bowling balls.

Each spherical bowling ball has a diameter that can vary from 8.4 to 8.6 inches. Inside that ball there are two things: (1) a uniquely shaped metal object called the *core* that affects the spin of the ball, and (2) stuff packed around the core making the ball's spherical shape called the *filler*. Given the intended diameter of a bowling ball, the volume of the ball's core, and the number of bowling balls to produce, your program should calculate the amount of filler the company should order.

For example, let assume a company wants to produce 100 bowling balls with a diameter of 8.5 inches. Each of these balls will contain a core that has a volume of 124 inches cubed. Then each ball will require 197.55 inches cubed of filler (i.e., the total [volume of the spherical ball](#) (<https://www.mathopenref.com/spherevolume.html>) containing no core, which can be computed with the formula $V = \frac{4}{3}\pi r^3$, minus the volume of the core). If each ball needs 197.55 inches cubed of filler, and the company is producing 100 balls, then in total they will need ~19,755 inches cubed of filler.

Your program should prompt a user to input *in this order*: the number of balls to manufacture, the diameter of each ball in inches, and the volume of the core in inches cubed. It should then compute and output the total amount of filler required.

Below is an example interaction with a program correctly solving this problem (recall that user inputs are in **bold text**):

```
How many bowling balls will be manufactured? 100
What is the diameter of each ball in inches? 8.5
What is the core volume in inches cubed? 124
You will need 19755.509806430524 inches cubed of filler
```

2. **[total_service_score.py]** A franchise restaurant is attempting to understand if customers think their service is good day-to-day by summarizing a series of daily scores. The restaurant computes a daily score based on the number of positive comments and negative comments it receives that day. Each the score begins at 0. A positive comment adds 1 to the score, and a negative comment subtracts 1. So on a given day if there were 5 positive comments and 2 negative comments, the score for that day would be 3 (5 - 2).

Your task is to write a program that enables a restaurant manager to input these daily scores and report the total score for those days. For example, if the score on Monday is 3, Tuesday is 4, Wednesday is -2, and Thursday is 3, then the total score for those days would be $3 + 4 + (-2) + 3$, which is 8. This would indicate the service is being positively reviewed over the past few days.

You program should prompt the user for how many days of scores they will be entering, and then prompt them for the score for each day. The score prompt should include the number of the day for which they entering a score (i.e., notice the `day 1` phrase in the prompt of the example below).

Once all the scores have been entered, it should then output the number total score for those days.

Below is an example interaction with a program correctly solving this problem:

```
How many days of scores? 4
Enter score for day 1: 2
Enter score for day 2: 4
Enter score for day 3: -2
Enter score for day 4: 1
The total score of the 4 days is 5
```

Submission

Please post all necessary .py files to Canvas and include your answers to the questions under the "Canvas Submission" banner in the textbox provided.

Canvas Submission

When you submit this assignment here in Canvas, I would like you to answer the following question(s):

1. How many hours do you estimate you used completing this assignment?
2. What was easiest for you when completing this assignment?
3. What was the most difficult challenge you experienced when completing this assignment?

Week 2 Review Rubric (1)

Criteria	Ratings				Pts
1. Ball Fill Input	2.0 pts Full Marks		0.0 pts No Marks		2.0 pts
1. Ball Fill Output	2.0 pts Full Marks		0.0 pts No Marks		2.0 pts
1. Ball Fill Correctness	2.0 pts Full Marks		0.0 pts No Marks		2.0 pts
1. Ball Fill Math Library Usage	1.0 pts Used math library where appropriate			0.0 pts No Marks	1.0 pts
2. Service Score Input	2.0 pts Full Marks		0.0 pts No Marks		2.0 pts
2. Service Score Output	2.0 pts Full Marks		0.0 pts No Marks		2.0 pts
2. Service Score Correctness	2.0 pts Full Marks		0.0 pts No Marks		2.0 pts
2. Service Score Algorithm Design	3.0 pts Chose and applied appropriate algorithmic patterns for solution	2.0 pts Algorithm works in some cases but not all	1.0 pts Algorithm incomplete	0.0 pts No Marks	3.0 pts
Answers Questions in Canvas Submission	1.0 pts Full Marks		0.0 pts No Marks		1.0 pts
Total Points: 17.0					