# Python Packet #1: Taming the Snake

> ### *Key Idea:*
> ### *Gaining and Using Variables*

**Before you solve these problems watch the following videos. Make sure you code along!**

Video 1: Food                                    Video 2: Shift Wage

Video 3: Equation of a Line                    Video 4: Pythagorean Theorem

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## *Scoring:*

*You need a minimum of 70 experience points to move on from this packet. How you choose to achieve that task is entirely up to you.*

*100 Points: A+*

*90 Points: A*

*80 Points: B*

*70 Points: C*

*Below 70 Points: F*

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**Challenge 1:** Write a program that gets the users food order. Then it calculates how much you spent on each item and your total bill at your favorite restaurant.

+20 Experience Points

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How many soft shell tacos? 1
How many Nacho Cheese Doritos Locos tacos? 3
How many Cinnamon Twists? 5
How many Crunchwrap Supremes? 2

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$1.29 for the soft shell tacos
$5.67 for the Nacho Cheese Doritos Locos
$5 for the Cinnamon Twists
$7.38 for the Crunchwrap Supremes
$19.34 total bill
```

**Challenge 2:** Mad Libs is a popular game where the player is given a list of word types (noun, verb, adjective, etc.) where they can "fill in the blank." The person fills in the words in a paragraph with blanks in the appropriate places and often the results are quite entertaining. Check out http://www.madglibs.com/ if want to see some examples. Your task is to create a program that plays the Mad Libs game with the user. For this to work, you'll need to write a paragraph with appropriate spots left out for blanks (which will be variables). Ask the user to input words that match the missing word type...then print out the whole paragraph for them to read.

+20 Experience Points

**Challenge 3:** Turf the field!  Updating a field with artificial turf is an expensive endeavor.  Write a program that lets a user enter the dimensions of the field (length and width in feet) and the cost per square foot of the material and outputs the _area_, _perimeter_ and _total cost of the field_.

Video Example

**Challenge 4:** Create a program that an air traffic controller could use to calculate the flight time given the speed, wind, destination, and distance to that destination. A Boeing 747 can travel at 576 miles per hour. However, they can travel much faster or slower depending on the wind speed.  Video Example With Test Values

**Challenge 5:** You have 10 feet of PVC pipe and are looking to make a triangular banner to advertise your lemonade stand. Create a program where you ONLY enter where you want to make the two cuts, and the three sides of the resulting triangle will be displayed and the area of the triangle will be given. (Hint: Looking up Heron's Formula will save you from having to re-invent mathematics all on your own) Video With Test Values

+30 Experience Points

+30 Experience Points

**Challenge 6:** It's happening. Mr. Nohner has looked a little gray around the eyes the last few weeks and now is walking with a limp mumbling something about brains. You quarantine yourself in the computer science room and research how fast zombies replicate to see how quickly the apocalypse is going to come. Create a program that asks for the number of initial zombies, number of zombies they infect a day, and the number of days since Mr. Nohner was infected. This program should then print out the number of zombies on that given day. For example, if Mr. Nohner is the only zombie on day 0 and he infects 2 more people (so 3 times more exist) a day the pattern would be 1, 3, 9, 27, etc. Video With Test Values

**Challenge #7:** The Mystery Box Challenge. We got a mystery program doing who knows what to every number we plug into it! Think you can figure out the pattern and code a replica?

**Here it is:**

**MYSTERY BOX CHALLENGE.**

+30
Experience
Points