**Variables** - We use variables to temporarily store data in the computer’s memory.

Examples: price = 10, name = ‘John’

**Comments** - We use comments to add notes to our code. Good comments explain the hows and whys, not what the code does. That should be reflected in the code itself. Use comments to add reminders to yourself or other developers, or also explain your assumptions and the reasons you’ve written code in a certain way. (#)

**Receiving Input** - We can receive input from the user by calling the input() function.

Example: birth\_year = int(input(‘Birth year: ‘))

\*The input() function always returns data as a string. So, we’re converting the result into an integer by calling the built-in int() function.

**Strings** - We can define strings using single (‘ ‘) or double (“ “) quotes.

* We can get individual characters in a string using square brackets [].
  + course = ‘Python for Beginners’
  + course[0] # returns the first character
  + course[1] # returns the second character
  + course[-1] # returns the first character from the end
  + course[-2] # returns the second character from the end
* Course[1:5] would return ytho

**Arithmetic Operations - PEMDAS**

* + # add
* - # subtract
* \* # multipy
* / # returns a float
* // # returns an int
* % # returns the remainder of division
* \*\* # exponentiation - x \*\* y = x to the power of y

**Comparison operators**

* a > b
* a >= b (greater than or equal to)
* a < b
* a <= b
* a == b (equals)
* a != b (not equals)

TLffde Method 
. forward (d) 
. backward (d) 
. right (a) 
. left (a) 
. goto (x, y) 
. sethead±ng (h) 
.pencolor (c) 
. penup 
. pendown ( ) 
.pensize (s) 
. turtlesize (s) 
Notes 
Moves the turtle in the direction it is facing for a distance of pixels 
Moves the turtle backward from the direction it is facing for a distance of ci pixels 
Turns the turtle to the right by degrees 
Turns the turtle to the left by a degrees 
Draws a circle with radius r 
Moves the turtle to location x , y 
Sets the direction the turtle is facing to a give value h, where h is a value between O 
and 360 
Changes the color of the drawing pen where c is the name of a color such as 
"Blue", and "yellow. " 
"red", 
Lifts the pen off the canvas so you can then move the turtle to another position 
without making a line on the canvas (note there is no parameter/value for this method) 
Places the pen back on the canvas so you can resume drawing (note there is no 
parameter/value for this method) 
Set the pen size to s 
Set the size of the turtle to s 

Turtle Time 
Turtles use the traditional coordinate plane with 
center (0,0) and x-axis and y-axis as 
shown. When a turtle is rendered on your 
screen, it starts at location 0,0 facing in the 
positive x-direction. This initial heading is 
referred to as a heading of O degrees and 
turtles can turn 360 degrees. 
Now that you know a bit more about how your 
turtle program works, you can modify its 
behavior and add some new functionality to it. 
y-axis 
X-aXIS 
(0.0) 
Figure 5. Coordinate Plane 