

Math needed:

- Addition
- Subtraction
- Multiplication
- Division

Definitions:

- Variable -

A variable is a name associated with computer memory that can hold a value that can change or vary. (ex. The score in a game)

- Body Mass Index (BMI) -

A measure of body fat that is useful in screening for health issues.

- Strings -

Are sequences of characters. Created by typing characters between a pair of single, double, or triple quotes. (ex. 'hi', "hi", ""hi"")

- To combine (append) 2 strings you use (+)
- To repeat strings you use (*)
- If you want to make an all-caps string return as a regular capitalized sentence you can use (sentence.lower())

- Dot-notation -

You use the name of the variable followed by a . and then what you want it to do. (ex. sentence.lower())

- Turtle -

The original robot turtle had a physical pen in it. Student programmers would steer the robot around using programs, creating drawings.

- Library -

A group of programs that provides some functionality. (ex. The Turtle library it lets us create and work with **Turtle** objects.)

- Screen -

A space for the turtle to move in and draw on (ex. space = screen())

- Comment -

Explains what we're doing in the programs and are intended to be read by people, not computers.

- Code -

A set of instructions that a computer can understand. This is sometimes called a program.

- Pixel -

A pixel is one small part (element) of a picture. Pixels are stored in a grid and have both x (horizontal) and y (vertical) values. A pixel has a color which can be defined by an amount of red, green, and blue with values from 0 to 255.

- Program -

A program is a set of instructions that a computer can understand to accomplish some goal. This is sometimes called code.

Notes:

- Turtle was created in 1960's
- Import lets you import things from the library (ex. Turtle or math)
- The amount of red, green, blue in a pixel can range from 0-255. 0 is none of the color and 255 is the maximum amount of that color.
- Pixel is displayed using light not paint

Answers:

- **Q1:** Imagine that you are 5 foot 7 inches and weighed 140 pounds. What will this program print for your BMI?

A1: 21.92470483403876

- **Q2:** What would the following code print?

```
first = "Hi"  
next = "There"  
print ((first + next) * 2)
```

A2: HiThereHiThere

- **Q3:** Which direction will alex move when the code below executes?

```
from turtle import *  
space = Screen()  
alex = Turtle()  
alex.forward(100)
```

A3: East

- **Q4:** What shape will the program below draw when you click the Run button?

A4: Square

- **Q5:** Which way does y increase on an image?

A5: From top to bottom

- **Q6:** What do you think happens when you set all the colors to 0? Try changing (o, g, b) in line 15 to (0, 0, 0) and run it to check.

A6: The picture is all black.