

Name _____

Group _____

Micropython Basics

1. What is python?
 - a. A programming language
 - b. A snek
2. What do you do on python?
 - a. Write code to make the robot do stuff
 - b. Slither
3. **Modules** are _____.
4. T/F You need to **import modules** for every sensor and motor that you use.

Modules you need to import at the start of each program:

```
main.py from pybricks.hubs import EV3Brick Untitled-2 Python - Get St  
1 from pybricks.hubs import EV3Brick  
2 from pybricks.ev3devices import Motor, TouchSensor  
3 from pybricks.paramaters import Port, Stop, Direction, Color  
4 from pybricks.robotics import DriveBase  
5 from pybricks.media.ev3dev import SoundFile  
6
```

5. **Variables** are (hint: boxes) _____.
6. **Variables** are useful because they allow you to access information that _____.

Variables for motors and sensors:

```
brick = EV3Brick()  
left_motor = Motor(Port.A)  
right_motor = Motor(Port.B)  
button = TouchSensor(Port.S1)  
color = ColorSensor(Port.S2)  
vroom = DriveBase(left_motor, right_motor, wheel_diameter=55, axle_track=190)
```

7. The **drive base** is what makes the bot _____.
8. **wheel_diameter** is _____.
9. **Axle_track** measures the distance between _____ in _____(units).
10. **If statements** cause _____ to happen when certain _____ are met.
11. **If statements** are broken into 3 types, explain each of them:
 - a. **If:**
 - b. **Elif:**
 - c. **Else:**
12. Write an **if statement** for a real world scenario (such as weather).

If statement sample syntax:

```
20  if color == Color.RED:
21  |     vroom.turn(180)
22  elif color == Color.BLUE:
23  |     speaker.beep(1000,100)
24  else:
25  |     vroom.run(50)
```

13. **Loops** make the program _____.

14. There are two types of **loops** _____ loops and _____ loops.

While loop:

```
while True:
    while button.pressed():
        vroom.run(50) #will run at 50 mm/s
    while not button.pressed():
        speaker.beep(1000,100) #frequency, duration
```

For loop with if statement:

```
27  for color in color_list:
28  |     # Wait for one second between each sorting action.
29  |     wait(1000)
30  |
31  |     # Run the conveyor belt motor to the right position based on the color.
32  |     if color == Color.BLUE:
33  |         ev3.speaker.say('blue')
34  |         belt_motor.run_target(500, 10)
35  |     elif color == Color.GREEN:
36  |         ev3.speaker.say('green')
37  |         belt_motor.run_target(500, 132)
38  |     elif color == Color.YELLOW:
39  |         ev3.speaker.say('yellow')
40  |         belt_motor.run_target(500, 360)
41  |     elif color == Color.RED:
42  |         ev3.speaker.say('red')
43  |         belt_motor.run_target(500, 530)
```

15. **Lists** create a _____ of items.

Sample list syntax

```
sensors_list = [color, ultrasonic, touch, gyro]
```