Variables

1. What is an object in Python? Provide examples.

2. What object classes have you seen?

3. Why would you want to convert an object from one class to another? And what function would you use to do so?

Assignment

1. What does an assignment statement do?

2. Why would we want to use variables?

3. Are Python variables the same as variables you have used in math courses?
4. Does it matter which side of the assignment token the name is on and which side the value is on? If so, which sides should they be on?

5. Which of the following are valid variable names? If a name is invalid, explain why.

   1. 3_num_avg
   2. avg_of_3_nums
   3. average of three numbers
   4. avg0f3nums
   5. avg_of_three_numbers
   6. avg0fThreeNumbers

6. What is the difference between these two operators: * and **?

7. What is the difference between these two operators: / and //?

8. What is the difference between these two operators: // and %?
Practice Problems

What is the output of the following statements, expressions, and functions? If an error occurs, which type of error?

1.

```python
>>> len("1234567890")
```

2.

```python
>>> print(type("This is the best class ever!"))
```

3.

```python
>>> 1234 = x
>>> print(x)
```

4.

```python
>>> random = 'hello'
>>> random = 'my'
>>> random = 'name'
>>> random = 'is'
>>> print(random)
```
5.

```python
>>> x = 3
>>> y = '4'
>>> z = x + y
>>> print(z)
```

6.

```python
>>> sams$ = 34.56
>>> jacks$ = 55.63
>>> print('Together Sam and Jack have', sams$+jacks$, 'dollars')
```

7.

```python
>>> name1 = 'Alice'
>>> name2 = 'Bob'
>>> college = 'Colgate University'
>>> print(name1, 'met', name2, 'at', college, 'and they became best friends.')
```

8.

```python
>>> a = 3
>>> print('a is a', type(a))
>>> str(a)
>>> print('a is now a', type(a))
```
9.

```python
>>> length = len('three')
>>> print('the length of three is', length)
>>> length_plus_seven = length+7
>>> print('plus seven =', plus_seven)
```

10.

```python
>>> a = 6 / 7
>>> print(a)
>>> b = 6 // 7
>>> print(b)
>>> c = 6 % 7
>>> print(c)
```