1. (4 points) The expression $3 ** 3 - (6 - 2) / 2$ has the value of twenty-three. Is it an integer value or a float value? __________________________
   Why is it that type? __________________________

   The expression $33 \% 7$ has what value? __________________________ what type?  
   The expression $191.0 \div 20$ has what value? __________________________ what type?

2. Multiple choices. Choose the best choice(s)

   1. What is not a possible output of the if statements?
      
      ```python
      x = int(input("give me a number: "))
      if x < 100:
         print("smaller")
      if x < 1000:
         print("bigger")
      ```
      
      A. Smaller  
      B. both smaller and bigger are printed (in that order)
      C. nothing is printed  
      D. Bigger

   2. What is the body of this function?
      
      ```python
      def almostSquare(x,y):
         return (x - 1) * (y + 1)
      ```
      
      A. return (x - 1) * (y + 1)  
      B. def almostSquare():
      C. def almostSquare(x,y):  
      D. return times

   Consider satisfying the following problem statement: *sum the numbers from a to b* (inclusive). What is wrong, if anything, with this attempt?

   ```python
   def sum(a,b):
      total = 0
      for i in range(0,b+1,1):
         total = total + i
      return total
   ```

   A. The range should end at $b$, not $b +1$  
   B. The range should start at $a$, not 0
C. The function is correct
D. The total should start at a, not 0

Consider satisfying the following problem statement: *sum the numbers from a to b (inclusive)*. What is wrong, if anything, with this attempt?
def sum(a,b):
    total = b:
    for i in range(a,b,1):
        total = total + i
    return total

A. The total should start at 0, not b
B. The function is correct
C. The range should end at b +1, not b
D. The range should start at 0, not a

Consider satisfying the following problem statement: *sum the numbers from a to b (inclusive)*.
def sum(a,b):
    total = a
    for i in range(a+1,b+1,1):
        total = total + i
    return total

What is wrong, if anything, with this attempt?

A. The range should end at b, not b +1
B. The total should start at 0, not a
C. The range should start at a, not a +1
D. The function is correct

Consider satisfying the following problem statement: Consider the problem statement: *sum the numbers from a to b (inclusive)*. What is wrong, if anything, with this attempt?
def sum(a,b):
    total = a
    for i in range(a,b+1,1):
        total = total + i
    return total

A. The total should start at 0, not a
B. The range should start at 0, not a
C. The range should end at b, not b +1
D. The function is correct

Is this function definition correct?
```python
def pow(x, y):
    return x ** y
```

A. no, there should only be one formal parameter
B. no, there should be a comma between formal parameters
C. no, there should be two colon characters
D. yes, it is correct as written

Does the function call match the function definition?
```python
def square(x):
    return x * x
```

result = square()

A. yes
B. no, there are too many arguments
C. no, there are too few formal parameters
D. no, there are too few arguments

Does the function call match the function definition?
```python
def square(x):
    return x * x
```

result = square(3,7)

A. yes
B. no, there are too many arguments in the call
C. no, there are too few formal parameters in the definition
D. no, the function call should pass the variable x twice

1. What is the output of the following code:
```python
def printHi():
    print("Hi There!")

printHi = 4
printHi()
```

A. 5Hi There!
B. Hi There!5
What is the output of the following code:
```python
def show():
    print("Hi There!")

    show = "print"
    print(show)
```

A. print  
B. <function show @ 192817392>  
C. no output, an error occurs  
D. def show(): show("Hi There!")

3. From time to time, Macys makes a one day sale. Suppose during this sale Macys offers a Calvin Klein coat which is originally costs $100 and is double discounted; first by 20% and then by an additional 25%. Macys on the other days sells the same cost with a single discount of 40%. Write a program that helps Sally choose the sale that save her money.

4. Will the following lines of code print the same thing? Explain why or why not.
   ```python
   x = 7
   print(x)
   print("x")
   ```

5. Classify each of the following as either a legal or illegal Python identifier:
   - (a) fred  
   - (b) if  
   - (c) 2x  
   - (d) -4  
   - (e) sum_total  
   - (f) sumTotal  
   - (g) sum-total  
   - (h) sum total  
   - (i) sumtotal  
   - (j) While
6. Given the following assignments:

   i1 = 2
   i2 = 5
   i3 = -3
   d1 = 2.0
   d2 = 5.0
   d3 = -0.5;

7. Evaluate each of the following Python expressions.
   (a) i1 + i2
   (b) i1 / i2
   (c) i1 // i2
   (d) i2 / i1
   (e) i2 // i1
   (f) i1 * i3

8. Write the shortest way to express each of the following statements.
   (a) x = x + 1
   (b) x = x / 2
   (c) x = x - 1
   (d) x = x + y
   (e) x = x - (y + 7)
   (f) x = 2*x
   (g) number_of_closed_cases = number_of_closed_cases + 2*ncc

9. Write a Python program that requests an integer value from the user. If the value is between 1 and 100 inclusive, print ”OK;” otherwise, do not print anything
From geometry: Write a computer program that, given the lengths of the two sides of a right triangle adjacent to the right angle, computes the length of the hypotenuse of the triangle. (See Figure ??.) If you are unsure how to solve the problem mathematically, do a web search for the Pythagorean theorem.

![Right Triangle Diagram](image)

Figure 6.4: Right triangle

. What is printed by the following code fragment?

```python
a = 0
while a < 100:
    print(a)
    a += 1
print()
```

. Rewrite the code in the previous question so it uses a `for` instead of a `while`. Your code should behave identically.

. What is printed by the following code fragment?

```python
a = 0
while a > 100:
    print(a)
    a += 1
print()
```

Write a Python program that allows the user to enter exactly twenty floating-point values. The program then prints the sum, average (arithmetic mean), maximum, and minimum of the values entered.

Write a Python program that allows the user to enter any number of non-negative floating-point values. The user terminates the input list with any negative value. The program then prints the sum, average (arithmetic mean), maximum, and minimum of the values entered. The terminating negative value is not used in the computations.