CS 150 Quiz 1 9/23/22 Section:____ Name:_____

Closed book, closed notes, log out of computer! Cheat sheet on reverse. Please write neatly!

1. Which of the following instructions in a recipe best shows why recipes can be an imperfect analogy for an algorithm in a Computer Science context? [1 point]

- ○ Boil for 10 minutes
- ○ Cook onions till softened
- ○ Add 0.5 teaspoons of ground black pepper
- ○ Add 1 cup of granulated white sugar

2. Write the value of `x` after this code executes in the box? [2 points]

```
y = 6
y + 2
x = y
# x = 2 * x
```

3. What value should you assign to the variable `n` to so that `sum` has the specified value after this code executes. The value must be an integer that results in valid Python code (i.e., not cause an error). [3 points]

```
sum = 0
for i in range(n):
    for j in range(2):
        sum = sum + 1
```

a) `sum` is 2	b) `sum` is 10

4. Write a function `dice` with a single parameter `n` that returns the sum of `n` independent and random rolls of a traditional six-sided die (sides are 1, 2, 3, 4, 5, and 6). You do not need to include comments or docstrings. For example: [4 points]

```
>>> dice(1)
2
>>> dice(2)
10
>>> dice(3)
8
```

CS 150 Fall 2022 – Quiz 1 "Cheat Sheet"

Numeric Operators

+, -, /, *: Addition, subtraction, division, multiplication
//: Floor division: Round division result down to nearest whole number
%: Modulus: Evaluate to remainder of division

- Range

range(stop): Equivalent to range(0, stop, 1)
range(start, stop[, step]): Create sequence of integers from inclusive **start** to exclusive **stop** by **step**

Strings

- The following functions are built-in
  len(string): Returns the number of characters in the string
  int(string), float(string): Converts numeric string to int or float
  str(object): Converts object, e.g. int or float, to a string
- String operators
  string1 + string2: Returns a new string that is the concatenation of string1 and string2
  string * int: Returns a new string that is string repeated int times

Modules

- **turtle** module
  forward(dist), backward(dist): Move the turtle forward/backward by the length `dist`. Doesn't change heading.
  right(angle) left(angle): Turn the turtle right/left by `angle` (in degrees)
  goto(x, y): Move turtle to position `x, y`
  setheading(angle): Set the turtles heading to angle
  circle(radius): Draw a circle with specified `radius`; the center is `radius` units left of the turtle
  dot(size): Draw a filled circle with diameter `size` centered on current position of the turtle
  penup(): Pull the pen up – no drawing when moving
  pendown(): Put the pen down – drawing when moving
  fillcolor(color): Change the fill color to `color`, where `color` is a string
  begin_fill(), end_fill(): Start and end filling shapes with fill color
- **random** module
  randint(a, b): Return a random integer `N` such that `a ≤ N ≤ b`
  uniform(a, b): Return a random floating point number `N` such that `a ≤ N ≤ b`
- **math** module
  sqrt(num): Return the square root of num