

**1. TRUE / FALSE QUESTIONS**

\_\_\_\_\_ The following statement will check to see if the turtle's pen color is green:

```
if turtle.pencolor() == 'green':
```

\_\_\_\_\_ The following code snippet will change the background color to green if it is presently red:

```
if turtle.bgcolor() == 'red':  
    turtle.bgcolor() = 'green'
```

\_\_\_\_\_ Reducing duplication of code is one of the advantages of using a loop structure.

\_\_\_\_\_ In a flowchart, both the decision structure and the repetition structure use the diamond symbol to represent the condition that is tested.

\_\_\_\_\_ Both of the following for clauses would generate the same number of loop iterations.

```
for num in range(4):  
    for num in range(1, 5):
```

\_\_\_\_\_ A while loop is called a pretest loop because the condition is tested after the loop has had one iteration.

\_\_\_\_\_ A condition-controlled loop always repeats a specific number of times.

**2. COMPLETION QUESTIONS: Fill in the blanks.**

The `turtle.isdown()` function returns \_\_\_\_\_ if the turtle's pen is up.

a) A(n) \_\_\_\_\_ structure causes a set of statements to execute repeatedly.

b) A(n) \_\_\_\_\_-controlled loop causes a statement or set of statements to repeat as long as the condition is true.

c) A(n) \_\_\_\_\_ loop usually occurs when the programmer does not include code inside the loop that makes the test condition false.

d) In Python, you would use the \_\_\_\_\_ statement to write a count-controlled loop.

e) The following for loop iterates \_\_\_\_\_ times to draw a square.

```
for x in range(4):  
    turtle.forward(200)  
    turtle.right(90)
```

f) The \_\_\_\_\_ statement is used to create a single-alternative decision structure.

g) A(n) \_\_\_\_\_ statement will execute one block of statements if its condition is true or another block if its condition is false.

h) The logical \_\_\_\_\_ operator reverses the truth of a Boolean expression.

i) A(n) \_\_\_\_\_ expression is made up of two or more Boolean expressions.

**3. ALGORITHM WORKBENCH QUESTIONS**

a) Write Python code that changes the turtle's pen size to 4 if it is presently less than 4.

b) Write a `for` loop that uses the range function to display all odd numbers between 1 and 100.

c) Write a `for` loop that uses the range function to display all even numbers between -100 and 100 inclusively in descending order.

- d) Write a while loop that lets the user enter a number. The number should be multiplied by 10, and the result assigned to a variable named `product`. The loop should iterate as long as `product` is less than 100.

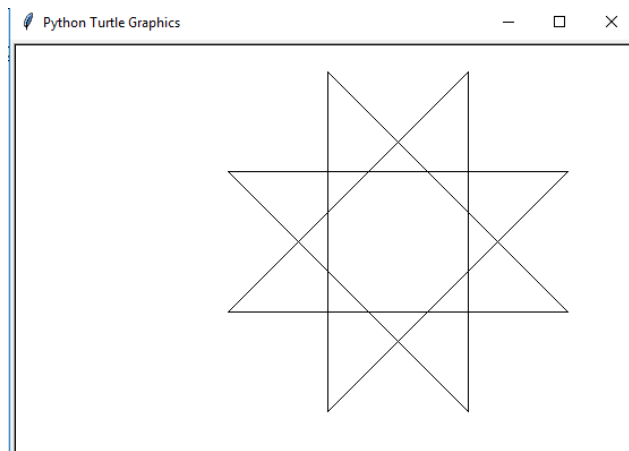
**MULTIPLE CHOICE QUESTIONS**

4. Which of the following will hide the turtle if it is visible?
- a) `if turtle.isvisible():`  
    `turtle.invisible()`
  - b) `if turtle.isvisible`  
    `turtle.hideturtle()`
  - c) `turtle.isvisible():`  
    `turtle.hide()`
  - d) `if turtle.isvisible():`  
    `turtle.hideturtle()`
5. What type of loop structure repeats the code a specific number of times?
- a) condition-controlled loop
  - b) number-controlled loop
  - c) count-controlled loop
  - d) Boolean-controlled loop
6. What type of loop structure repeats the code based on the value of Boolean expression?
- a) condition-controlled loop
  - b) number-controlled loop
  - c) count-controlled loop
  - d) Boolean-controlled loop
7. What are the values that the variable `num` contains through the iterations of the following for loop?
- ```
for num in range(4):
```
- a) 1, 2, 3, 4
  - b) 0, 1, 2, 3, 4
  - c) 1, 2, 3
  - d) 0, 1, 2, 3
8. When will the following loop terminate?
- ```
while keep_on_going != 999:
```
- a) when `keep_on_going` refers to a value less than 999
  - b) when `keep_on_going` refers to a value greater than 999
  - c) when `keep_on_going` refers to a value equal to 999
  - d) when `keep_on_going` refers to a value not equal to 999

9. Each repetition of a loop is known as a(n) \_\_\_\_\_.  
a) cycle  
b) revolution  
c) orbit  
d) iteration

**PROGRAMS**

10. The area of a rectangle is the rectangle's length times its width. Write a program that asks for the length and width of two rectangles. The program should tell the user which rectangle has the greater area, or if the areas are the same.
11. Running on a particular treadmill you burn 4.2 calories per minute. Write a program that uses a loop to display the number of calories burned after 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, and 60 minutes in tabular form.
12. Use a loop with the turtle graphics library to draw the design shown in Figure.



13. Serendipity Booksellers has a book club that awards points to its customers based on the number of books purchased each month. The points are awarded as follows:
- If a customer purchases 0 books, he or she earns 0 points.
  - If a customer purchases 2 books, he or she earns 5 points.
  - If a customer purchases 4 books, he or she earns 15 points.
  - If a customer purchases 6 books, he or she earns 30 points.
  - If a customer purchases 8 or more books, he or she earns 60 points.
- Write a program that asks the user to enter the number of books that he or she has purchased this month, then displays the number of points awarded.

14. The distance a vehicle travels can be calculated as follows:

$$\text{distance} = \text{speed} \times \text{time}$$

For example, if a train travels 40 miles per hour for three hours, the distance traveled is 120 miles.

Write a program that asks the user for the speed of a vehicle (in miles per hour) and the number of hours it has traveled. It should then use a loop to display the distance the vehicle has traveled for each hour of that time period.

An example of the desired output of the program shown below:

```
What is the speed of the vehicle in mph? 40 Enter
How many hours has it traveled? 5 Enter
Hour   Distance-Traveled
1       40.00
2       80.00
3      120.00
4      160.00
5      200.00
```

15. Create a change-counting game that gets the user to enter the number of coins required to make exactly one dollar. The program should prompt the user to enter the number of pennies, nickels, dimes, and quarters. *If the total value of the coins entered is equal to one dollar, the program should congratulate the user for winning the game.* Otherwise, the program should display a message indicating whether the amount entered was more than or less than one dollar.

**Note:** Remember

1penny=1cent, 1nickel=5cents, 1dime=10cents, 1quarter=25cents, and 1dollar=100cents.

16. Write a program that prompts the user to enter a number within the range of 1 through 10. The program should display the Roman numeral version of that number. If the number is outside the range of 1 through 10, the program should display an error message. The following table shows the Roman numerals for the numbers 1 through 10:

Number	Roman Numeral
1	I
2	II
3	III
4	IV
5	V
6	VI
7	VII
8	VIII
9	IX
10	X