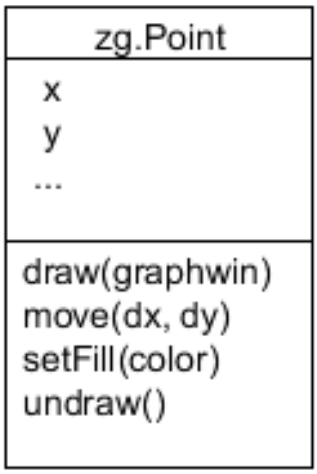
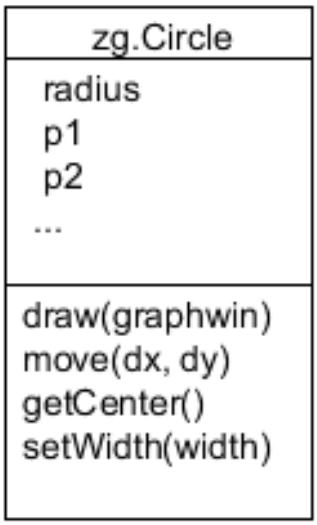
Name: _____ **Section:** **1** **2** **3** **4**

1 = Mutchler, 1st-2nd periods. **2 =** Mutchler, 3rd-4th periods. **3 =** Anderson, 7th-8th periods. **4 =** Anderson, 9th-10th periods.

Use this quiz to help make sure you understand the videos/reading. ***Answer all questions.*** Make additional notes as desired. ***Not sure of an answer?*** Ask your instructor to explain in class and revise as needed then.

Throughout, where you are asked to "underline your choice", you can underline or circle it (whichever you prefer).





Handout: ***Using Objects***
(Objects, Types and Values – and *Classes*)

1. The diagrams to the right are called

   _____ Class Diagrams, where _____ stands for Unified Modeling Language. (Fill in both blanks with the (same) 3-letter acronym for ***U***nified ***M***odeling ***L***anguage.)

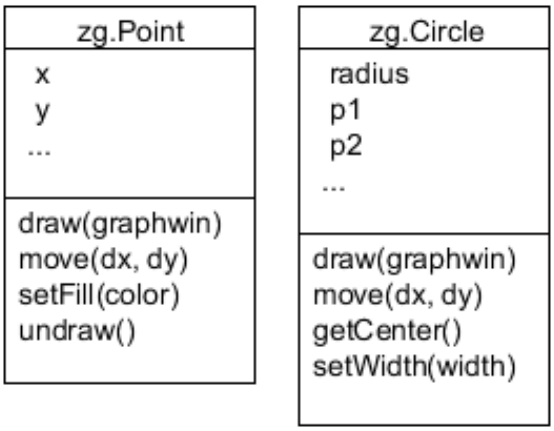
2. Consider the 2 UML class diagrams shown above and to the right. What are the names of the two ***classes*** shown?

3. Consider the UML class diagram for the ***zg.Point*** class shown above. For that class:
   - What are the names of the two ***fields*** that are shown?
   - What do you think that those fields represent? (You can't tell this authoritatively from the UML class diagram; just make your best guess based on the names of the fields.)
   - How many ***methods*** are shown?
   - How many parameters does the ***draw*** method require?
   - How many parameters does the ***move*** method require?
   - How many parameters does the ***undraw*** method require?

4. Consider the UML class diagram for the ***zg.Circle*** class shown above. For that class:
   - What are the three ***fields*** that are shown?
   - How many ***methods*** are shown?
   - How many parameters does the ***getCenter*** method require?
   - What do you think that the ***getCenter*** method does? (You can't tell this authoritatively from the UML class diagram; just make your best guess based on the name of the method.)

- What do you think that the ***setWidth*** method does? (You can't tell this authoritatively from the UML class diagram; just make your best guess based on the name of the method.)

In the following, continue to use the UML class diagrams for ***zg.Point*** and ***zg.Circle*** (repeated to the right for your convenience). Make additional reasonable assumptions as needed.



5. Write a statement that constructs a ***zg.Point*** at **(75, 30)**, putting the constructed object into a variable called ***p***.

6. Suppose that you have two ***zg.Points*** in variables ***p1*** and ***p2***, respectively. Write a statement that constructs a ***zg.Line*** from ***p1*** to ***p2***, putting the constructed object into a variable called ***line1***.

7. Suppose that you have two zg.Points in variables ***p1*** and ***p2***, respectively. Write statements that set ***p1***'s fill color to ***'red'*** and ***p2***'s fill color to ***'blue'***.

8. Suppose that you have a ***zg.Circle*** in variable ***circle1***.
   - Write a statement that sets the variable ***p*** to ***circle1***'s center.

   - After the above statement executes, variable ***p*** is (presumably) a zg.Point. Using that fact, write additional statements that set variables ***x1*** and ***y1*** to the x and y coordinates of ***circle1***'s center.

9. True or False: If you had a zg.Circle in variable ***circle2***, the following statement would set variable ***x2*** to the x-coordinate of ***circle2's*** center:

```
x2 = circle2.getCenter().x
```

   True or **False** (circle your choice)

10. Hint to the previous problem: The answer is *True*. Now, explain briefly WHY there are parentheses after ***getCenter*** in the above statement but NOT after ***x***.

Handout: ***Counted Loops* and *Range Expressions***

11. Write the sequence of numbers that each of the following range expressions generates:

- **`range(5)`** – generates the sequence:
- **`range(2)`** – generates the sequence:

12. When the code snippet below runs, what gets printed?

```
for k in range(3):
    print(k, k + 20)
    print(3 * 'hello')
```

13. Write the sequence of numbers that each of the following range expressions generates:

- **`range(1, 5)`** – generates the sequence:
- **`range(2, 12, 2)`** – generates the sequence:
- **`range(12, 2, -2)`** – generates the sequence:
- **`range(2, 4)`** – generates the sequence:
- **`range(4, 2)`** – generates the sequence:

14. Write a loop that prints `'funny'` 40,000 times.

15. Write a loop that prints the cubes of the numbers from 35 to ***m***
(where ***m*** is some integer bigger than 35).

Textbook Reading: ***Section 1.7 Problem Solving – Algorithm Design*** (pages 16 – 22) and ***Section 2.3 Problem Solving – First Do It By Hand*** (pages 45 – 46).

16. Do **problem 17 on page 47** of your textbook. Don't spend a long time on this problem; just enough to feel that you understand what pseudocode is and how to use the "First Do It By Hand" advice.

Textbook Reading: ***Section 2.4 Strings*** (pages 48 – 51) and ***Sections 2.5.1 – User Input*** and ***2.5.2 – Numerical input*** (pages 55-56).

17. Consider the following statement:

```
s = input('Enter your name: ')
```

Write a statement that sets the variable `t` to the string that is the same as `s`, followed by an upper-case version of `s`, followed by a lower-case version of `s`. For example, if the human enters *Rhonda*, so that the value of `s` is `'Rhonda'`, then your statement should make `t` have the value `'RhondaRHONDArhonda'`.

18. Consider the following statement:

```
s = input('Enter your name: ')
```

Suppose that the human user enters `43` in response to the prompt for input. What will the value of `s` be in that case?

19. Continuing the previous problem, what if the software developer intended that the value of `s` be 86 in the above case (and similarly for other inputs). What should the programmer change or add?