1) (6 pts) Explain the difference between the specifiers, `sep` and `end` used in the print statement in python. Be clear and specific in your explanation.

sep specifies the separator between different arguments within that particular print statement while end specifies what gets printed after all of the items in the print (and the separators in between) get printed. (3 pts for each, partial possible)

2) (10 pts) What are the values of the following expressions in Python?

a) `6 + 4*5`   **26**

b) `207%20`   **7**

c) `13 - 4*(8 - 26//5)`   **1**

d) `14/4 + 19%22 - 16991//16992`   **22.5**

e) `15 + 36/(22 - 3*(5000%1000 + 105%11)`   **24.0**

Grading: 2 pts for each, all or nothing

3) (12 pts) Mary runs each day. She runs the same distance every weekday and the same distance every weekend day. Complete the program below that asks her how far she runs (in miles) on each weekday, and how far she runs (in miles) on each weekend day, and prints out how far she runs in a whole week.

```
def main():

    week_len = int(input("How far do you run on a weekday?\n"))
    weekend_len = int(input("How far do you run on a weekend?\n"))

    dist = 5*week_len + 2*weekend_len # 8 pts lhs, 2 pts rhs


    print("You run", dist , "miles in a week.") # 2 pts

main()
```

4) (12 pts) When going to the beach, Sam only goes in the water if the temperature is in between 70 and 82 degrees Fahrenheit, inclusive, and if the size of the waves is 5 or fewer feet high. Complete the program below so that it reads in the water temperature and the height of the waves and prints out whether or not Sam will go in the water.

```
def main():

    tempF = int(input("What is the water temperature(F)?\n"))
    waveH = int(input("What is the height of the waves(ft)?\n"))

    if tempF >= 70 and tempF <=82 and waveH <= 5:  # 8 pts
        print("Sam will go in the water.")          # 1 pt
    else:                                            # 2 pts
        print("Same will not go in the water.")      # 1 pt




main()
```

5) (15 pts) A geometric sequence is one where each subsequent term is created by multiplying the previous term by a common ratio. For example, the geometric sequence of 5 terms, starting with 3 with a common ratio of 2 is 3, 6, 12, 24 and 48. Complete the program below so that it calculates the _**sum**_ of the geometric sequence specified by the user.

```
def main():

    numTerms = int(input("How many terms in the sequence?\n"))
    firstTerm = int(input("What's the first term of the sequence?\n"))
    ratio = int(input("What is the common ratio of the sequence?\n"))
    total = 0

    for i in range(numTerms):                # 5 pts
        total += firstTerm                   # 5 pts
        firstTerm = firstTerm*ratio          # 5 pts

    print("The sum of the sequence is ",total)

main()
```

6) (10 pts) What is the output of the following Python program?

```
def main():

    a = 1
    b = 8
    for i in range(5):
        c = b + 2*a
        print(a,b,sep=",",end=" : ")
        b = c//2
        a = c - a
main()
```

1,8 : 9,5 : 14,11 : 25,19 : 44,34 :
Grading: 1 pt per value, no partial, commas and colons not necessary

7) (20 pts) Write a python program below using the turtle so that it creates a hexagon with each side length 100 and each internal angle equal to 120, and fill the hexagon with the color purple. You must use a loop to get full credit.

```
import turtle

turtle.begin fill()                 # 3 pts
turtle.fillcolor("purple")          # 3 pts

for i in range(6):                  # 3 pts
    turtle.forward(100)             # 4 pts
    turtle.right(60)                # 4 pts

turtle.end fill()                   # 3 pts
```

8) (10 pts) Recall that the function random.randint(a,b) returns a random integer in between a and b, inclusive. Complete the program below so that it simulates rolling 1000 dice with 20 sides each, labeled 1 through 20, inclusive, and keep track of the sum of all the rolls, printing out this value.

```
import random

def main():

    total = 0

    for i in range(1000):            # 4 pts
        total += random.randint(1,20)   # 6 pts


    print("The sum of your dice rolls was ",total,".",sep="")

main()
```

9) (5 pts) What sound does Cap't Crunch cereal make when one eats it?

Crunch

Relevant Turtle Functions

```
# Call right before a shape is to be filled
begin_fill()

# Fill the shape drawn after the last call to begin_fill
end_fill()

# Set the fill color to the color designated by the string
# colorstr
fillcolor(colorstr)

# Moves the turtle forward by len pixels
forward(len)

# Turns the direction of the turtle right by angle degrees.
right(angle)
```