Name:

1. (4 pts) Fill in the missing code for a linear search. Pay close attention, some variable names have changed compared to the review sheet. Use the correct variable name according to what is listed here.

items = [2,5,7,9,12,15,18,19,22,24]

desired\_element = 23

# Linear search

position=0

while and != desired\_element:

if

 print( *"Not Found"* )

else:

 print( *"Found at position"*,i)

1. (1 pt) If a list has *n* elements, in the best case how many elements would the computer need to check before it found the desired element?
2. (1 pt) If a list has *n* elements, in the worst case how many elements would the computer need to check before it found the desired element?
3. (1 pt) If a list has *n* elements, how many elements need to be checked to determine that the desired element does not exist in the list?
4. (1 pt) If a list has *n* elements, what would the average number of elements be that the computer would need to check before it found the desired element?
5. (5 pts) Fill in the missing code for a binary search:

# Binary search

number\_list = [2,5,7,9,12,15,18,19,22,24]

desired\_element = 23

lower\_bound = 0

upper\_bound =

found = False

while and found == False:

 middle\_pos = (int) ( )

 if

 lower\_bound = middle\_pos+1

 elif

 upper\_bound = middle\_pos

 else:

 found = True

if found:

 print( *"Found at position"*,middle\_pos)

else:

 print( *"Not found."* )

1. (1 pt) If a list has *n* elements, in the worst case how many elements would the computer need to check before it found the desired element?
2. (1 pt) Under what circumstances would a linear search work well, but a binary search would not work at all?

Given the following grid of numbers:


1. (1 pt) Write the code that would print the cell that contains the number 1
2. (1 pt) Write code that would set the cell that contains a 2, to the number 3 instead.
3. (1 pt) Write code that would set each cell to the number 5.
4. (2 pts) Explain 2 points about the following line of code:

class **Cat**(Animal):
5. (2 pts) Explain 2 points about the following code:

 def **\_\_init\_\_**(*self*):

 Animal.\_\_init\_\_(*self*)

1. (1 pt) How does a programmer create his/her own library file in Python?
2. (3 pts) Write a function that takes two numbers and returns the largest.
3. (4 pts) Write code for a function that will take in an array and set each element to zero.
4. (4 pts) Write code that creates a class called Cat. Give it one attribute and one method.
5. (3 pts) Write code that creates an instance of Cat. Set the attribute and call the method.