

Name: \_\_\_\_\_

**Rules and Hints**

- You may use one handwritten 8.5 x 11" cheat sheet (front and back). This is the only additional resource you may consult during this exam. *No calculators.*
- When you write code, be sure that the indentation level of each statement is clear.
- Explain/show work if you want to receive partial credit for wrong answers.
- As long as your code is correct, you will get full credit. No points for style.
- As always, the SSU rules on academic integrity are in effect.

<b>Problem</b>	<b>Max Score</b>	<b>Your Score</b>
<i>Problem 1: Trace Code</i>	40	
<i>Problem 2: Write snippets of code</i>	30	
<i>Problem 3: Write a complete program</i>	30	
<b>Total</b>	100	

**Problem 1: Trace Code (40 points)**

Write what will be printed to the screen when each of the following snippets of code is executed in PyCharm or in the Online Python Tutor.

Be very clear with spacing, line breaks, etc.

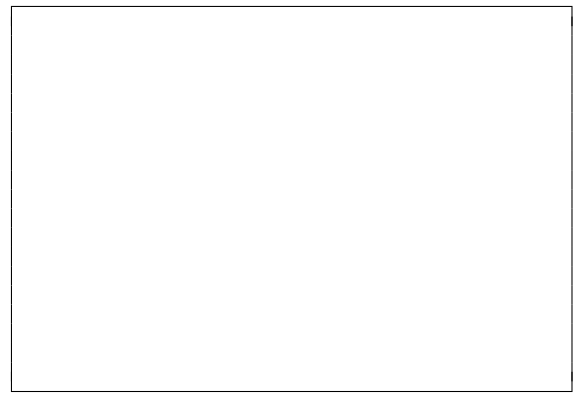
Write your final answer clearly in each box.

Treat each sub-problem as an independent question.

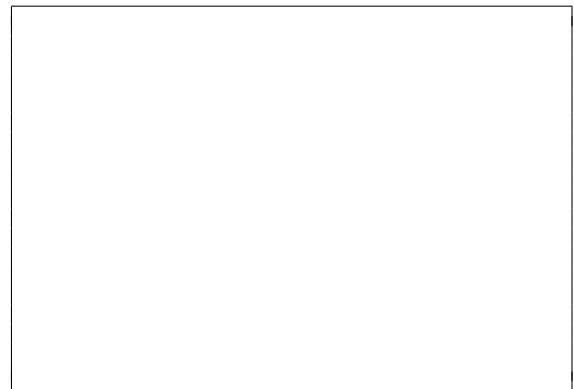
All questions in this section are worth 5 points.

**Problem 1A**

```
exams = 3
print(3*exams+2)
```

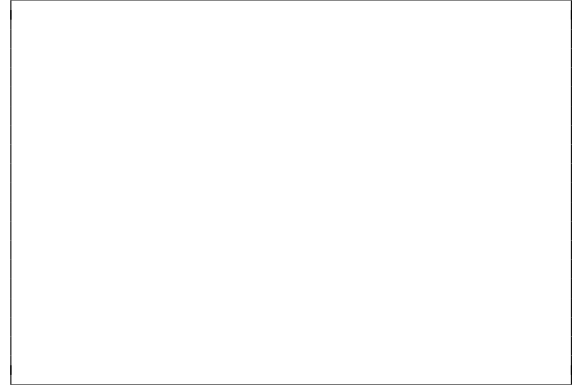
**Problem 1B**

```
y = 2 ** 3
print(y)
y = y + 2.0
print(y)
```

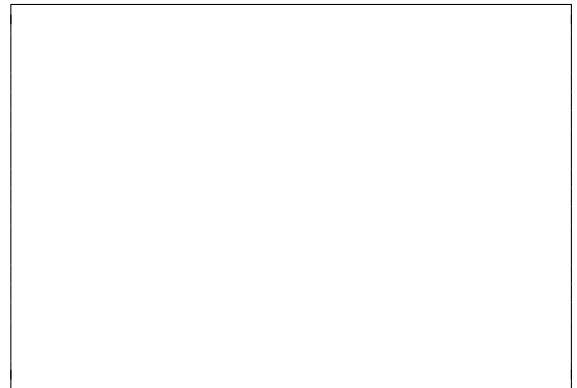


**Problem 1C**

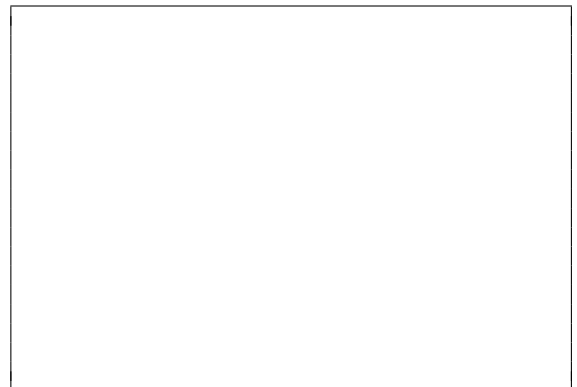
```
a = 4
b = 18
c = b % a
d = b // a
print(c,d)
print('d is', 'than b', sep='<')
```

**Problem 1D**

```
pie = '3.1415'
pi = float(pie)
print(pie, pi)
print('Tasty' + pie)
```

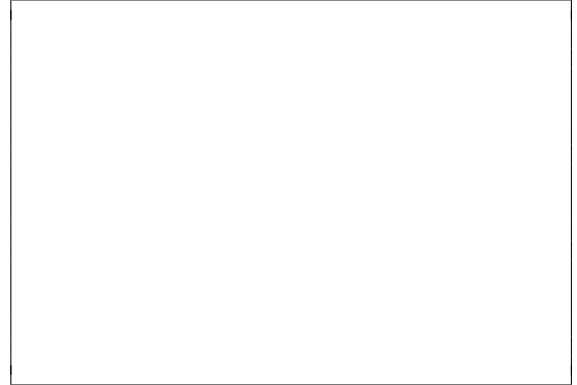
**Problem 1E**

```
six = 6
seven = 7
print(six != seven)
six = seven
print(six != seven)
```

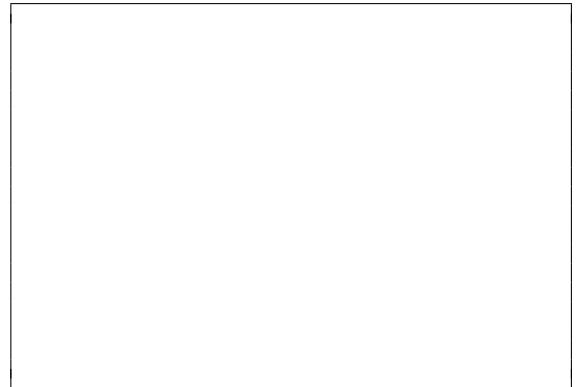


**Problem 1F**

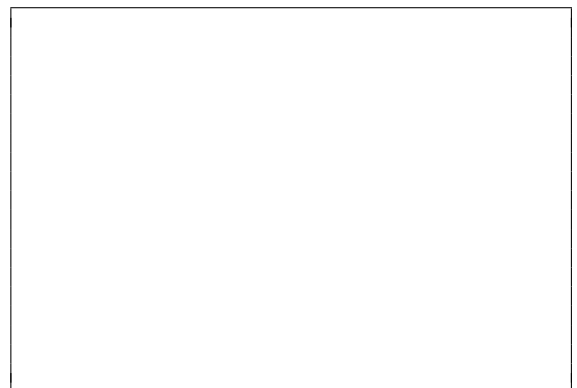
```
grade = 83
print("CS115 results:")
if (grade > 70):
    print("Got grade:",end=' ')
if (grade > 90):
    print("A")
elif (grade > 80):
    print("B")
elif (grade > 70):
    print("C")
else:
    print("Talk to instructor")
```

**Problem 1G**

```
total = 33
for i in range(3,6):
    print(i-2)
    total = total + i
print(total)
```

**Problem 1H**

```
for j in range(2):
    for k in range(2, 4):
        print(j, k)
        value = k + j
    print(value)
```



**Problem 2: Write snippets of code (30 points)**

Write snippets of code to do the following. Your code should only print the requested output. You will lose points for printing additional output.

You can assume that all your snippets are enclosed within a main function and that any necessary libraries have been imported. You only need to write the specific lines of code that accomplish each task.

**Problem 2A (10 points)**

Prompt the user to input the radius  $r$  (in feet) and height  $h$  (in feet) of a cylinder, then calculate and output the volume  $V$  of the cylinder (in cubic-feet). Round the volume to 3 decimal places when printing.

For example, using a radius of 1.5 feet and a height of 2.0 feet yields a volume of 14.137 cubic-feet.

Use the following formula to calculate the volume of cylinder:  $V = \pi r^2 h$

**Problem 2B** (10 points)

Ask the user to enter 500 integers, one at a time. After the user has entered all the integers, print the total number of *negative integers*, and print the *sum of the odd integers*. You may assume the user enters at least one positive integer and at least one negative integer.

For example, if the sequence 5, -2, 4, -15, 6, 21 was entered, the program should first output 2 (because there are two negative integers -2 and -15), then output 11 (since 5, -15, 21 are odd and their sum is 11).

**Problem 2C** (10 points)

A group of 4 students is doing a CS115 activity. The instructor gives them some candies to divide evenly among the team members and return any left-over ones. For example, if the group of 4 got 11 candies, each team member would receive 2 candies and there would be 3 left over candies.

Ask the user to enter number of candies they got from instructor. Then determine and print out the number of candies each team member got and the number of left-over candies.

If there are no left-over candies, remark by saying “Yay, we used em all!”

If there are 3 left-over candies, remark by saying “If only we had one more...”

For any other left-over amount, remark by saying “A candy or two is good for you.”

**Problem 3: Write a complete program (30 points)**

For this problem, you must write a complete program. This includes writing a docstring, logic in `def main()`, a call to `main()`, any necessary library imports, etc.

Read the instructions carefully before you start coding! If you get stuck, try to maximize your partial credit. Your program is a log that gathers data about rainfall in certain months. The program should do the following:

- Prompt the user to enter the total number of months.
- For each month:
  - Prompt for the name of the month, and the amount of rain that fell in that month (in mm), matching the example prompts below *exactly*.
  - If the amount of rainfall is greater than 15 mm, then output “Tropical weather this month!”.
- After the user has entered all of their data:
  - Print the average rainfall per month. If the average was less than 1 mm and user entered data for at least 6 months, print a warning “Watch out for drought”.
  - Print the number of months where there was no rainfall.
  - Print the month that received the maximum rain along with the amount of rain.

Your program should match the sample output below, *exactly*. User input is underlined.

```
* Rainfall Log *
Enter number of months: 3

Month 1: April
Rainfall (mm): 22.1
-> Tropical weather this month!

Month 2: May
Rainfall (mm): 5.8

Month 3: June
Rainfall (mm): 0

* Summary *
Average rainfall per month: 9.3 mm
Months with no rainfall: 1
April was the month with most rainfall (22.1 mm)
```



**Problem 3, continued ...**

**Extra Page**