NAME: _____

CS 111 Exam #1 – Winter 13

Directions:
You have 65 minutes to complete this exam. Please show your work, and carefully indicate your answers. Please write your final answers legibly. Don't spend too much time on any one of the questions. You do not need to include comments in any code you write unless you are unsure about the syntax you use, in which case describing the correct algorithm will earn partial credit. You do not need to use main() either, however your indentation should be clear. Good luck!

1 (5)	2 (20)	3 (5)	4 (3)	5 (8)	6 (1)	7 (8)	(50pts)

1. (5) Given the following excerpt taken from help(math) about the **factorial** function, write a program that properly imports and uses the math module to calculate the factorial of a number. Your program should ask the user for a number and then print the factorial of that number. You do not need to do any error checking, you can assume the user will enter a valid integer.

```
factorial(...)
        factorial(x) -> Integral
        Find x!. Raise a ValueError if x is negative
                 or non-integral.
```

Example output (bold designates user input):

```
please enter an integer: 4
Factorial: 24
```

2. (20) Given the following snippets of code, for each write the **value** and **type** of ANS, or write "ERROR" if that snippet would cause an error:

Example: ANS = 4+3 You would write: **7, int**

a. ANS = 8/3

b. ANS = 8//3

c. ANS = 8%3

d. ANS = round(1.576)

e. ANS = int(1.576)

f. ANS = ord('C')-ord('A')

g. s = "abcd"
ANS = len(s)

h. s = "abcd"
ANS = s[1] + s[3]

i. s = "abcdef"
ANS = s[:4]

j. s = "abcdef"
ANS = s[-2]

3. (5) Given the following code:

```
for i in range(-10,2,4):
    i += 2
    print i
```

a. What is printed by this code?

b. Write a while loop to do the same thing as the above code, producing the same results. Your loop should be general such that it would still produce the same output as the for loop if I changed any of the given values (e.g. used -4 as the starting range value instead of -10).

4. (8) Given a string **s**, write a program that prints the sum of all of the **digits** in **s**, ignoring all other characters. More efficient answers will receive more points.

For example given the string "`ab45c* d2`" the sum would be 4+5+2=11.

5. (8) Write a Python program that inputs an integer N from the user, and outputs the smallest number after 1 that is a divisor of N (meaning the number divides evenly into N, with no remainder), or a message that N is prime if N is in fact prime (meaning there is no divisor greater than 1 except for N itself). More efficient solutions will receive more credit.

   Example output (bold designates user input):

```
please enter an integer: 15
smallest divisor is 3

please enter an integer: 17
that number is prime!
```