Term 3 Test 2 REVIEW Name:

Tuples and Dictionaries

1) **State the output**

a.
```
my_dict = {'one': 2, 'two':5, 'three':4, 'four':1}
for num in my_dict:
	if my_dict[num] < my_dict['three']:
		my_dict[num] *= 2
	else:
		my_dict[num] -= 1
print(my_dict)
```

b.
```
dogs = ['lucy', 'suki', 'hazel', 'lexi']
dt = {}
for dog in dogs:
	x = len(dog)
	dt[x] = dog
print(dt)
```

c.
```
lst = [(x,x%2) for x in range(5)]
y = 0
for a, b in lst:
	if b == 1:
		y += a
print(y)
```

d.
```
animals = ['cat', 'monkey', 'dog', 'cow', 'horse', 'hippopotamus']
d = {0:[], 1:[], 2:[]}
for animal in animals:
	if len(animal) <= 3:
		d[0].append(animal)
	elif len(animal) <= 6:
		d[1].append(animal)
	else:
		d[2].append(animal)
print(d)
```

2) Harper wants to use a python dictionary as a reading log. Let `log` be a dictionary with three keys. The first is `'book'` whose value is a list of book titles, the second is `'author'` whose value is a list of the books' authors in the same order, and the third is `'pages'` whose value is a list of the number of pages each book has in the same order. Below is an example:

```
log = {'book': ["The Hobbit", "Little Women"], 'author': ["JRR Tolkien", "Louisa May Alcott"], 'pages': [304, 759]}
```

Fill in the code below

```
# initialize log with the keys 'book' and 'author'. Include the following books:
# Charlotte's Web by E.B. White
# Holes by Louis Sachar
```

```
# add the key 'pages'. Charlotte's Web has 192 pages and Holes has 272.
```

```
# Harper finished reading BFG by Roald Dahl, which has 208 pages. Update log.
```

```
# During the break, Harper forgot to log their books but has a list of the details for each one. Use a for loop and the following list to add all of these books to log.
x = [("Stuart Little", "EB White", 128), ("Matilda", "Roald Dahl", 232), ("A Wrinkle in Time", "Madeline L'Engle", 416)]
```

```
# Find and print how many pages total Harper has read since starting their log

# Find and print the title of the longest book Harper has read

# Find and print the number of unique authors Harper has read books by.

# Bonus if you finish questions 3 and 4: What information would you like to know if
you logged your reading this way? Write your idea and the code below.
```

3) Let `x` be a list of `(class, minutes spent on homework)` tuples. **Use tuple unpacking to print a list** of the three classes that take the most time (order does not matter). You may assume there are more than three classes in the list, but you may not assume that the numbers are unique!

Example:

```
x = [('History',30), ('Math',45), ('English', 30), ('Spanish', 10), ('PE', 0)]
# output:
['History', 'Math', 'English']  #in any order
```

4) **Write a function** `factors` which accepts a list of positive integers as a parameter and outputs a dictionary of `number:[list of factors]` key-value pairs.

Example:

```
factors([12, 5, 8])
# returns {12: [1,2,3,4,6,12], 5: [1,5], 8: [1,2,4,8]}
```