CS21 PRACTICE QUIZ 3, Swarthmore College Spring 2009

1. Write a function called `max` that takes two numbers as parameters and returns the largest of the two numbers. In the case that both number are equal, your program should return either of the parameters. In addition to the `max` function, write a `main` function that calls your `max` function.

2. Consider the program shown below:

```python
def helper1(word, letter):
    for i in range(len(word)):
        if word[i] == letter:
            return i
    return -1

def helper2(word, letter):
    total = 0
    for ch in word:
        if ch == letter:
            total = total + 1
    return total

def main():
    test = "frisbee"
    check = "e"
    print helper1(test, check)
    print helper2(test, check)

main()
```

   (a) Define the term *argument* and give an example from the program above.
   (b) Define the term *parameter* and give an example from the program above.
   (c) Describe the steps that occur when a function call is executed. Use an example from the above program.
   (d) What would be better names for `helper1` and `helper2`?
   (e) Draw the status of the stack right before the call to `helper2` returns. Note, you will not need to draw a stack frame for `helper1`. Why?
   (f) What is printed when this program is run?
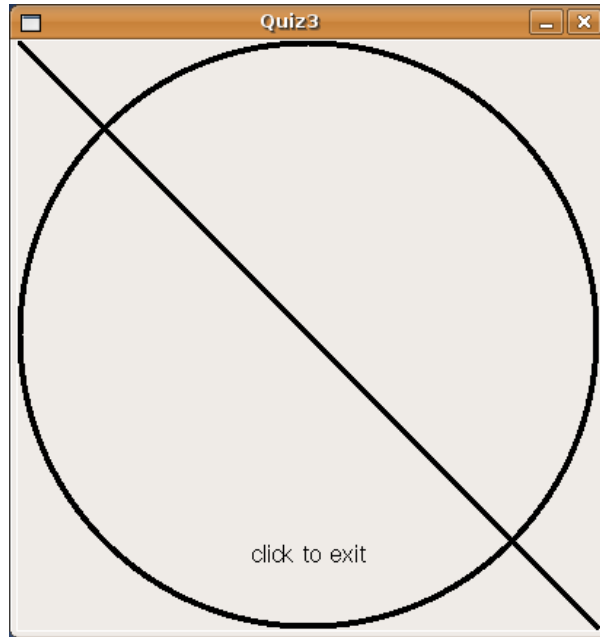
3. Using the graphics library, write a **complete program** that will draw a picture of a circle and a line as shown above. Use a window that is 200 by 200 pixels. Your program should wait for a mouse click before closing the graphics window.

4. Many US companies pay time-and-a-half for any hours worked above 40 in a given week. For example, an employee who makes \$10 an hour and worked 45 hours in a particular week would make $(\$10 \times 40) + (\$15 \times 5) = \$475$. Below is a program that takes the number of hours worked and the hourly rate as input and calculates the week's wages.

```
def main():
    hours = input("Enter the number of hours worked this week >> ")
    rate = input("Enter the hourly rate >> ")
    if hours <= 40:
        wages = hours * rate
    else:
        wages = 40 * rate + (hours - 40) * 1.5 * rate
    print "Wages are", wages
```

Rewrite this program so that it now uses a function called `wages` that takes the hours worked and hourly rate as parameters and returns the week's pay. Be sure to show the updated version of `main`.

Even though this second version is longer than the first version, give three reasons why it is better to use a function in this situation.