Question 0: Stop… Do not proceed until you have read the entire lab in detail. The following questions come from all parts of the lab. When you meet with a TA to get this worksheet graded they will ask you questions that refer to the entire lab.

Question 1: Record the period and the min/max duty cycle for each axis of the accelerometer.

X-axis:
   Period _____   Min Duty-Cycle _____   Max Duty-Cycle_____

Y-axis:
   Period _____   Min Duty-Cycle _____   Max Duty-Cycle_____

How do these values compare to the values/formulas in the accelerometer datasheet?

_____
_____
_____

Question 2: What is the highest positive duty cycle you can obtain on both the x-axis and y-axis of the accelerometer at the same time?

   X-axis: _____   Y-axis: _____

What is the lowest positive duty cycle you can obtain on the x-axis and the y-axis of the accelerometer at the same time?

   X-axis: _____   Y-axis: _____

Question 3: How much is the "Duty Cycle Change per g" of the accelerometer? _____

Question 4: What is the largest Duty Cycle Change you should theoretically see assuming that you ignore noise (see hints)? _____

Question 5: What is the possible range of values that you can use to adjust the positive duty cycle of a PWM given that we will be using Timer2? Min: _____ Max: _____

Question 6: Given that we want a period of 4 ms for the accelerometer, how many counter increments will occur during the period of your accelerometer (See Question 1) given the following prescalars:

Clk/1 _____

Clk/8 _____

Clk/32 _____

Clk/64 _____

Clk/128 _____

Clk/256 _____

Clk/1024 _____

Question 7: Given that we want a period of <15 ms for outputting your PWM, how many counter increments will occur during the period of your PWM given the following prescalars:

Clk/1 _____

Clk/8 _____

Clk/64 _____

Clk/256 _____

Clk/1024 _____

Question 8: If all the interrupts fired at the exact same time, which interrupt should be serviced first in regards to the needs of the lab? (The interrupts are: Timer0 Output Compare, Timer1 Input Capture, External Interrupt 0, ADC)

Question 9: If use a have a scale of 0 to X where X is the highest value equaling a 100% duty cycle, derive a formula to produce the Output Compare Value so that the period of <15ms is maintained. Use a prescaler of clk/8.