

# Quiz 2 - Units

Math 1030 - Dylan Zwick's Class

Fall 2007

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

Here are some unit conversions you might need

60 seconds = 1 minute

60 minutes = 1 hour

24 hours = 1 day

7 days = 1 week

12 months = 1 year

12 inches = 1 foot

201 meters = 1 furlong

149,598,000,000 meters = 1 astronomical unit

2.204 pounds = 1 kilogram

## 1. Simple Conversions

- (a) *2 points* - How many seconds are in a week?
- (b) *2 points* - How many cubic inches ( $in^3$ ) are there in a cubic foot ( $ft^3$ )? *Note* - The exam originally had a typo that said square inches and square foot.
- (c) *2 points* - How many furlongs are in an astronomical unit?

## 2. Fundamental and Derived Units

*4 points* - For each of the following units place them in the appropriate list. The lists are fundamental units and derived units.

{ time, speed, distance, mass, power, energy, acceleration, density,  
volume, temperature }

**Fundamental Units**

**Derived Units**

### 3. Temperature

The formulas to convert from Celsius to Fahrenheit, and from Celsius to Kelvin are:

$$F = \frac{9}{5}C + 32$$

$$K = C + 273$$

(a) *2 points* - What is the Celsius temperature of “body temperature”, which is 98.6° Fahrenheit?

(b) *1 point* - What is the Kelvin temperature of “body temperature”?

(c) *3 points* - At what temperature do the Fahrenheit and Celsius scales have the same value?

#### 4. Compound Conversion Problem

A person spends \$65 per month on gasoline. Gas costs \$3.15/*gallon*, and the person's car gets 36 miles to the gallon. Each gallon releases 19 pounds of carbon dioxide into the atmosphere when used.

(a) *4 points* - How far does the person drive in one year?

(b) *4 points* - How many pounds of carbon dioxide does the person release into the atmosphere in one year?