Tutorial Worksheet (5 points)

To be turned in Wednesday, Jan. 24 at the start of class. One per team.

Answers with incomplete or incorrect units will be marked as wrong!

1. Give 10 examples of every day devices that incorporate microprocessors, microcontrollers, or DSPs.

varies - lots of good answers

2. What is a *floating input*? How do we combat them?

when a pin is left unconnected and changes randomly between high & low.

Combat with a pull-up or pull-down resistor.

3. With an Arduino powered at 5V, what is the voltage threshold above which a digital input is *guaranteed* to produce a HIGH reading?

3V

4. What is the largest number that can be returned by `millis()`? **Be exact.** Roughly how long will it take to roll over (from 0 all the way back to 0)?

$2^{32}-1 = 4294967295 \approx 50$ days

5. Current through the LED in Experiment 1: _____

$I = \frac{5-1.4}{330} = 10.9\,mA$

6. Current through the $10k\Omega$ pull-up resistor: _____

$I = \frac{5}{10\times10^3} = 0.5\,mA$

7. Why do you use a fairly large resistor for a pull-up?

to avoid wasting power and generating heat

8. Attach your code for turning on and off the LED with the two buttons.

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