3.3 Pre-lab worksheet

To be turned in at the start of lab. Completed individually, but you are welcome to talk to others about the material.

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

1. Give three reasonably distinct examples of where an analog output might be useful.

Lots of options here: motor speed, LED brightness. Some of you had "speaker frequency" which is sort of correct: we're using internal timers to control the frequency, but the duty cycle is always 50% — we're not really simulating anything "analog". Still, your hearts are in the right place, so I'll give it to you.

2. What is the duty cycle of a PWM signal created with the statement `analogWrite(5, 42);`?

duty cycle = (42 + 1) / 256 = 0.168 = 16.8%

3. What is the frequency of an 8-bit timer on an Arduino Uno if the prescaler is 8 and `TOP` is set to 199?

f = 1 / delta T = 16x10^6 / ((199+1) * 8) = 10kHz