

Name: _____

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Chapter 21 Written Problems Worksheet

Use this sheet to record your answers to the following Chapter 21 Challenge Problems.

- 21-8.** Identify which of the Teensy 3.2's signal pins are analog pins and which are digital pins.
- 21-9.** One bare lightbulb is lit in an otherwise dark room. Rascal and Honey point their identical VDB/photoresistor sensors (see page 791) directly at the bulb. Rascal's sensor returns a raw digital value of 900 and Honey's returns a value of 600. Who is closer to the lightbulb?
- 21-12.** To determine who has the strongest grip, three brothers – Gy, Joey, and Douglas – each squeeze a force sensor (see page 797) between their thumb and index finger. The sensor is connected to a voltage divider board (VDB), which is connected to an analog pin on the Teensy 3.2. If Gy's sensor reading was 410, Joey's reading was 405, and Douglas' was 400, which brother has the strongest fingers?
- 21-13.** Brett and Jimmy use identical DRV5053 Hall-effect sensors (see pages 799-802) to measure the magnetic field of the same magnet. Brett claims his sensor consistently returns raw digital values near 915, while Jimmy claims his sensor has readings near 72. Which one of them is not telling the truth, and how do you know?
- 21-14.** Polly and Pacho use identical DRV5053 Hall-effect sensors (see pages 799-802) to measure two different magnetic fields. As good scientists do, they ensured that the sensor-magnet distance was the same for each as was their orientation. Polly's sensor returned raw digital values near 60, while Pacho's sensor output values near 560. Which magnet was stronger, Polly's or Pacho's?

Turn in this sheet to be graded.