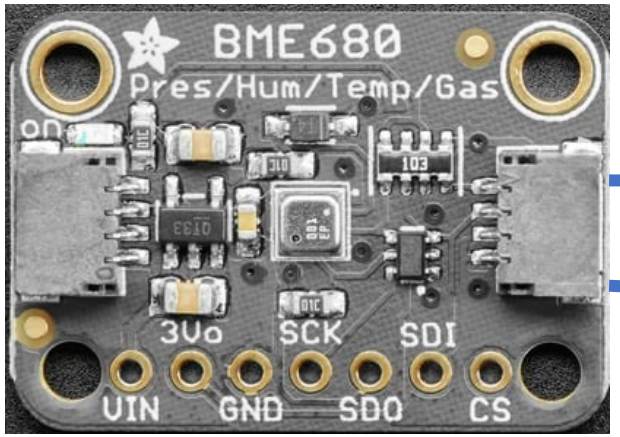
P524 Unit 1a - continued

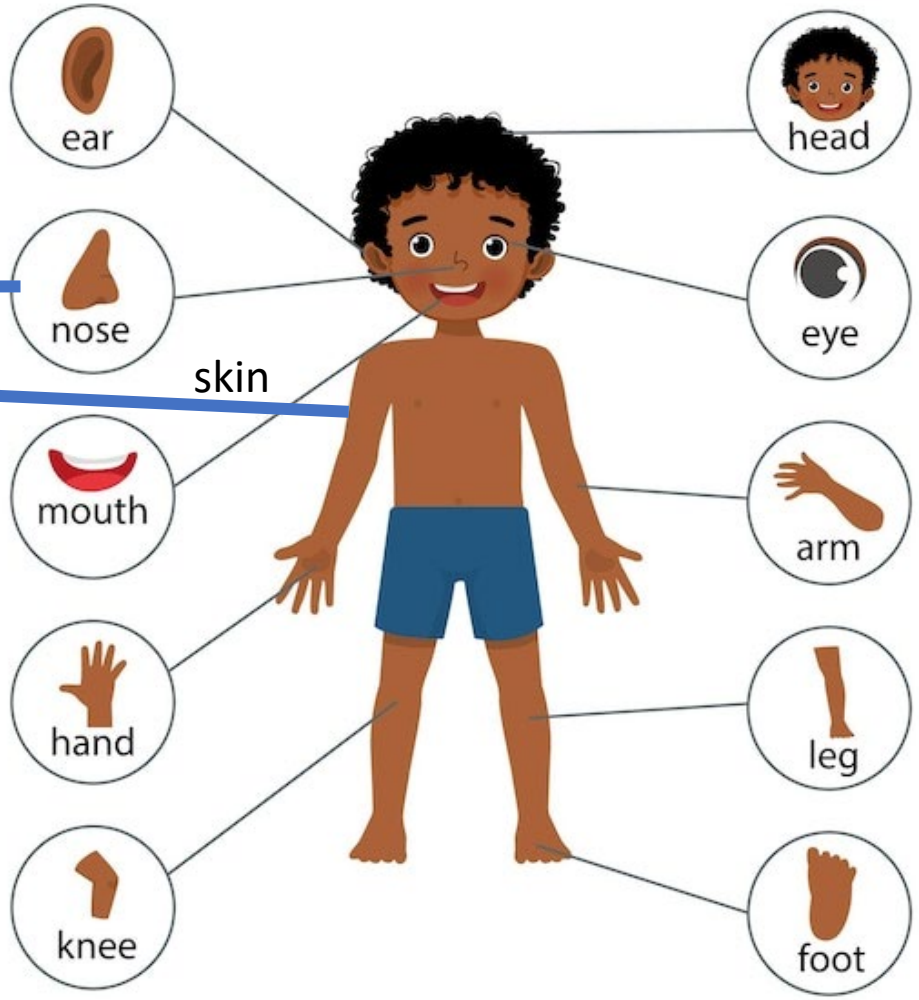
BME680 sensor

Basic circuit schematic

Breadboard wiring

Adafruit (Bosch)BME680





BME680 measures

- Pressure (+/- 100 Pa)
- Humidity (+/- 3%)
- Temperature (+/- 1.0 °C)
- Gas (Volatile Organic Compounds)
  - Resistance of metal oxide sensor
  - decreases when exposed to ions (pollution)

Task: read out with ARDUINO

ARDUINO – BME680 schematic

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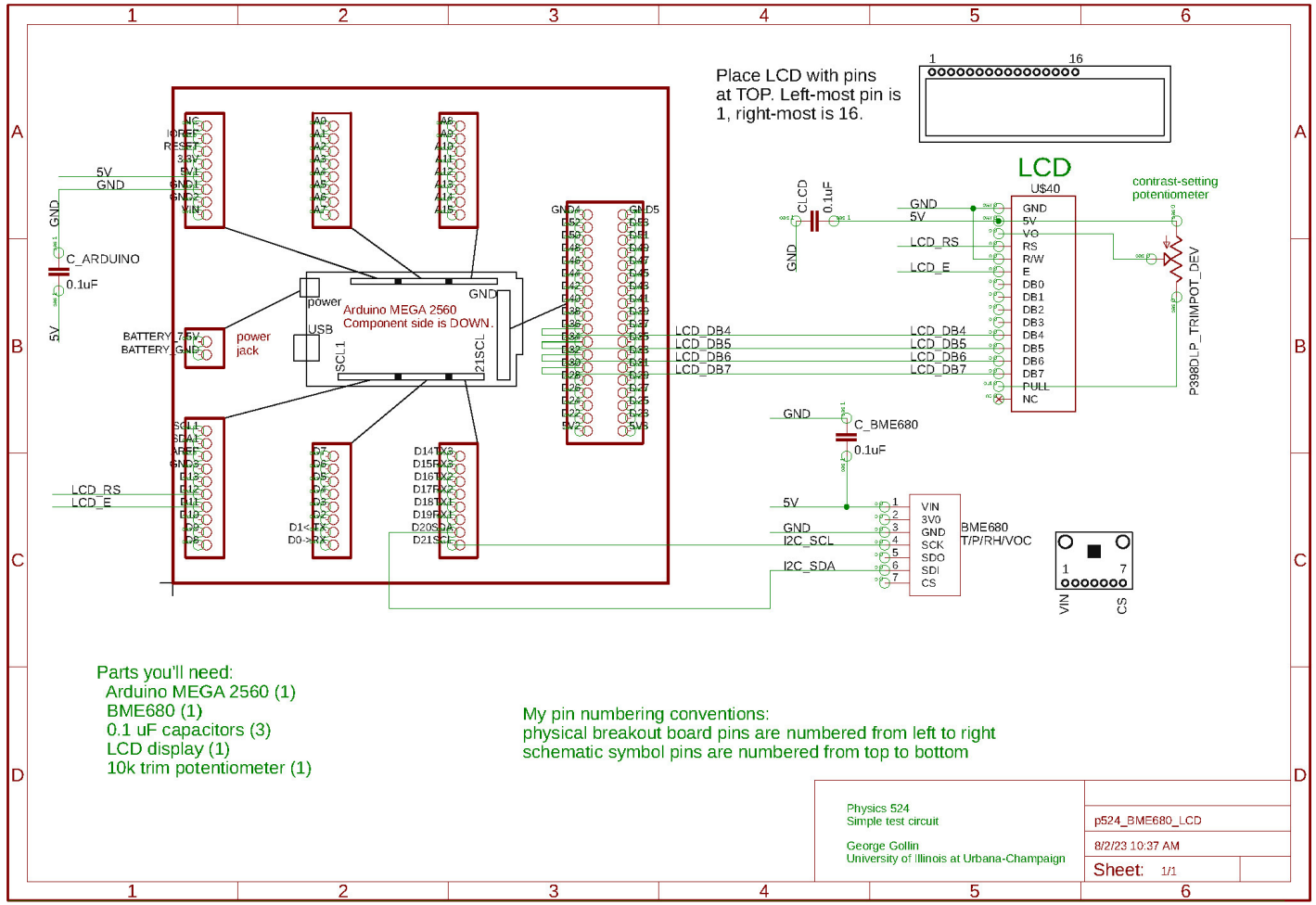
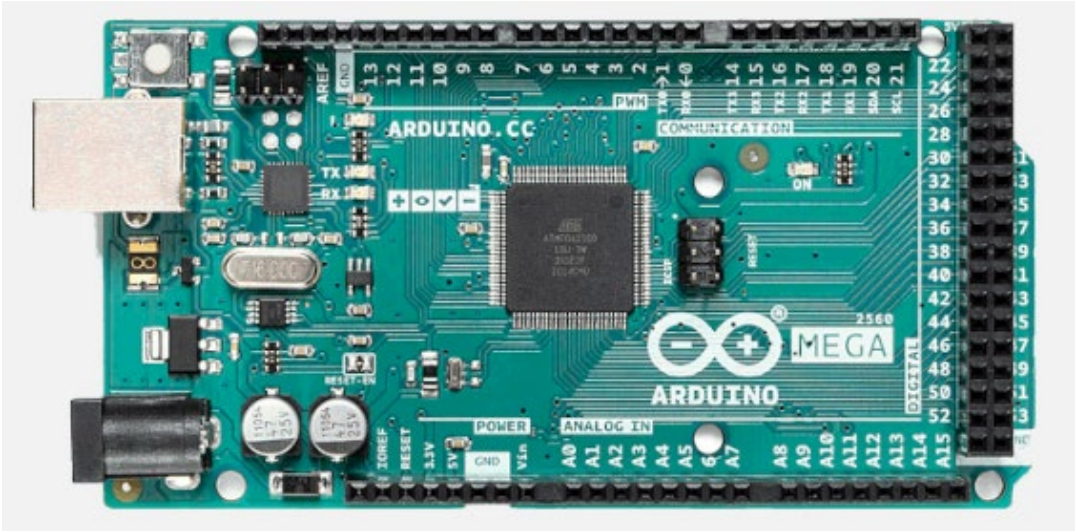


- Verify pin-outs
- Not all connections explicit (lines); watch labels
- Junctions (connected lines) = dots



Breadboard – internal connections

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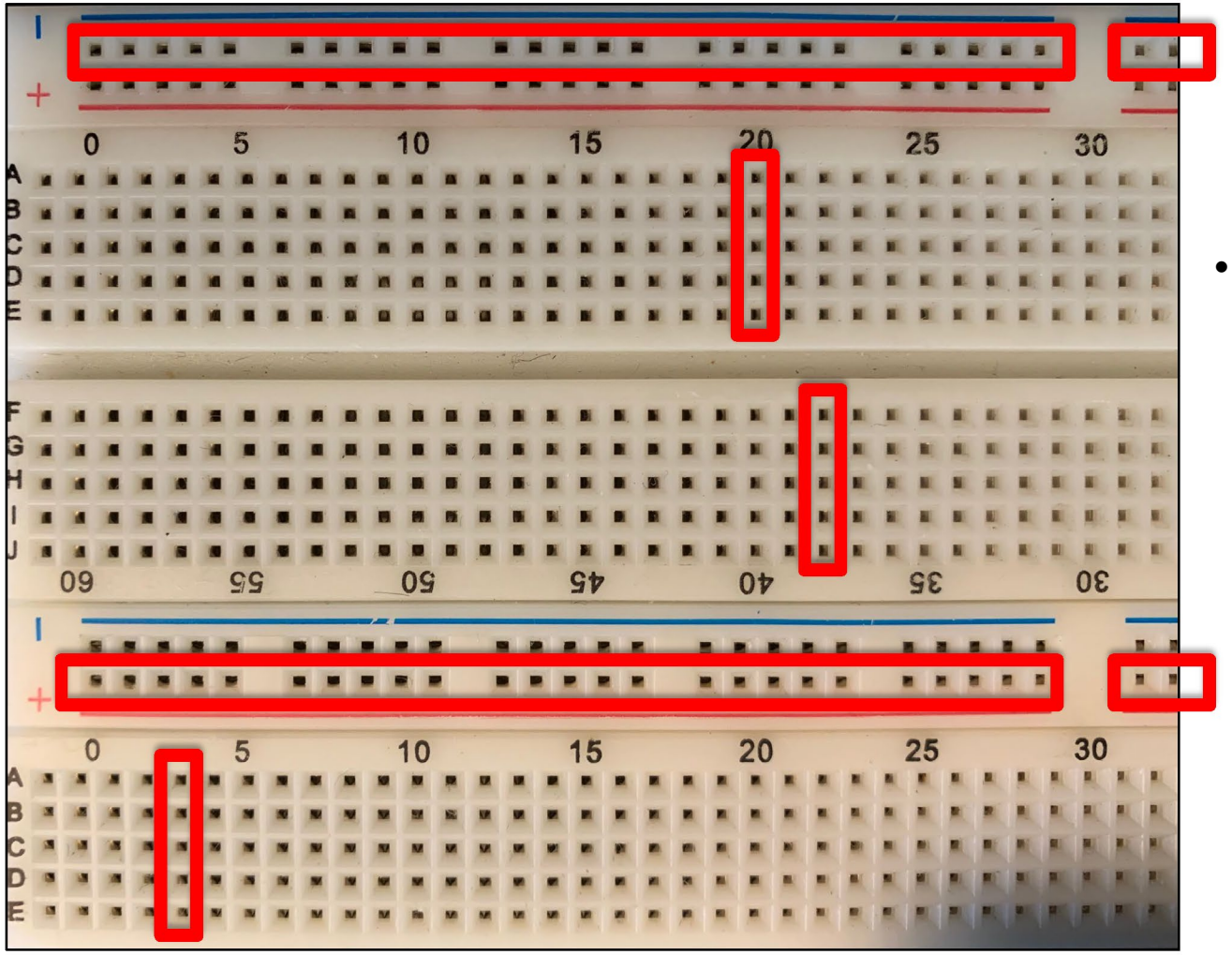

- 25 holes in each row connected
- 5 holes in each column connected

Recommended ARDUINO placement

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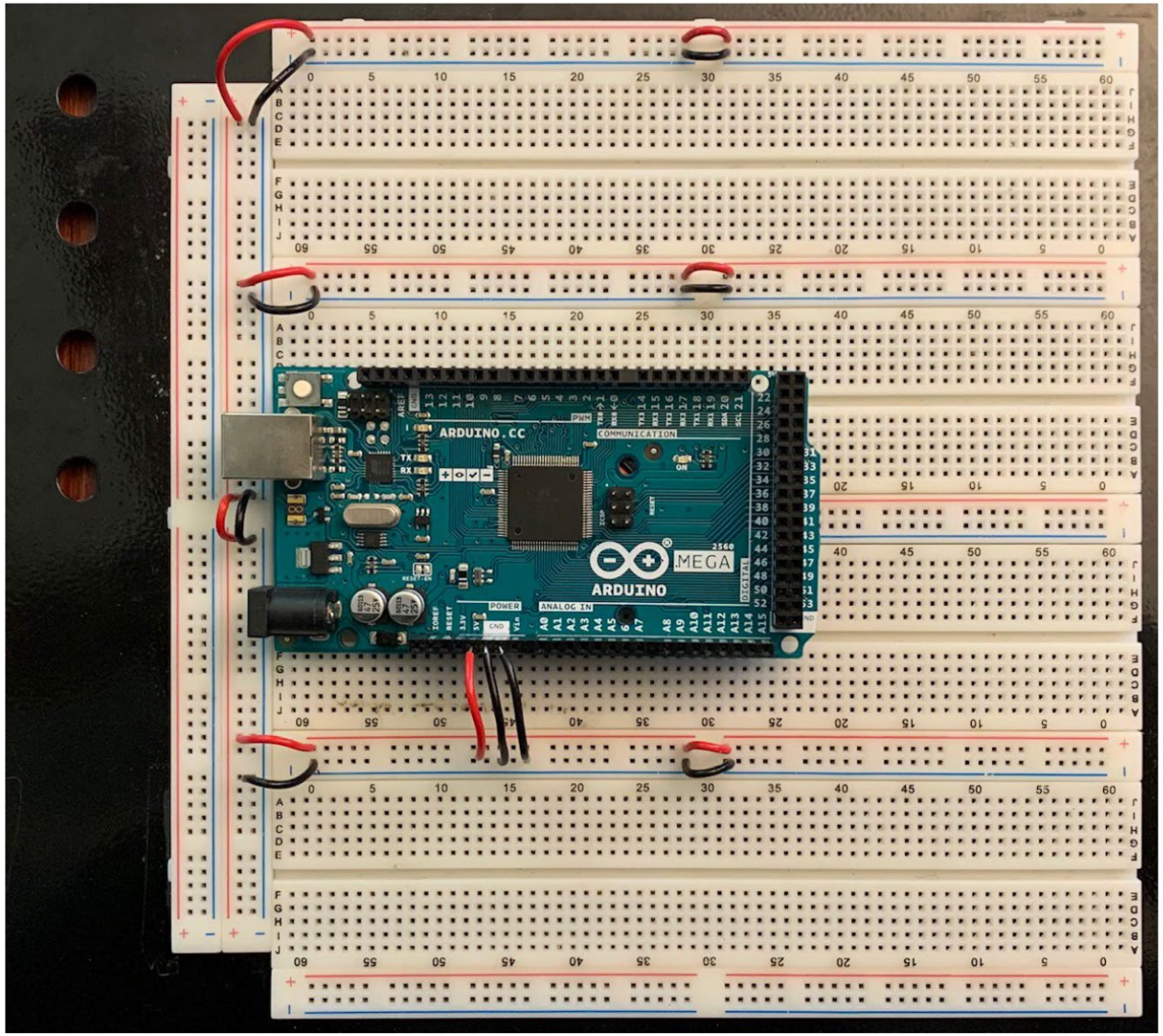

- Tape ARDUINO to board (optional)
- Strip 5 mm insulation from wire ends
- Color code: + 5V = red, GND = black
- Jumper the 25-hole rows (“+” and “-”)
- Double GND connection

In-class assignment and Homework (due 9/4)

- Connect the BME680 (see 1a write-up)
- Install BME680 Adafruit library (from menu in ARDUINO IDE: >Sketch>Include Library>Manage Libraries; search)
- Compile and run BME680 demo program (>File>Examples>Adafruit BME680 Library>BME680test)

- Wire the LCD (with 10 k trimpot), 3 x 4 keypad, and microSD card; run demo programs for each
  - Corresponding Adafruit libraries and P523 code repository will be useful
- (email finished programs to jcl11@illinois.edu)