The parts below are what was selected for the parts the boys ordered. A full, unabridged list is listed under “Robotics Shopping List”

Gabriel Staples

Copied out of my “Arduino Products to Purchase – Gabriel.odt” doc on 25 March 2017 2253hrs.

-Addendum and L298N additional research info (approx. pgs. 6~10) added on 26 Mar 2017-2140 hrs

* **Shopping List for Kevin Nufer for Scouts in Rockledge Ward.** 
  + Notes to Kevin:
    - Yellow = IS my recommended best buy for you (but I don’t need any at this time).
    - Green = NOT my recommended best buy for you (but I am buying this anyway for myself)
    - Cyan = IS my recommended best buy for you (and I am buying this too for myself)
  + Arduino Nanos WITH USB CABLES
    - Ebay search for “arduino nano usb” - <http://www.ebay.com/sch/i.html?_from=R40&_sacat=0&_nkw=arduino+nano+usb&rt=nc&LH_BIN=1>
      * Ex: $2.86 - <http://www.ebay.com/itm/Hot-Mini-USB-Nano-V3-0-ATMEGA328P-Module-Board-USB-Cable-for-Arduino-LJ-/161813099349> x 1 per boy
  + Dupont Connectors
    - Ebay search for “dupont 20cm” - <http://www.ebay.com/sch/i.html?_odkw=dupont+20cm+male+to+male&LH_BIN=1&_osacat=0&_from=R40&_trksid=m570.l1313&_nkw=dupont+20cm&_sacat=0>
    - M-M
      * ex: <http://www.ebay.com/itm/40PCS-Dupont-wire-jumper-cables-20cm-2-54MM-male-to-male-1P-1P-For-Arduino-BE-/122158688081> ($0.99) x 2 or so
    - M-F
      * ex: <http://www.ebay.com/itm/Arduino-Shield-40pcs-20cm-male-to-female-Dupont-cablesJumper-KY-/112122451039> ($0.99) x 2 or so
    - F-F
      * ex: <http://www.ebay.com/itm/40pcs-20cm-Dupont-Female-to-Female-Breadboard-Jumper-Wire-Raspberry-Pi-Arduino-/272375803104> ($0.99) x 2 or so
  + Female 0.1” headers
    - Ebay search for “2.54 40 10 header female” - <http://www.ebay.com/sch/i.html?_from=R40&_sacat=0&_nkw=2.54+40+10+header+female&rt=nc&LH_BIN=1>
      * ex: <http://www.ebay.com/itm/10Pcs-2-54mm-40-Pin-Female-Single-Row-Pin-Header-Strip-KY-/112123384284> ($0.99 for 10 pcs) x 1 or 2
  + Medium Breadboards
    - Ebay search for “breadboard 400” - <http://www.ebay.com/sch/i.html?_from=R40&_sacat=0&_nkw=breadboard+400&rt=nc&LH_BIN=1>
      * ex: <http://www.ebay.com/itm/Mini-DIY-Solderless-400-Contact-Breadboard-Bread-Board-Available-Test-Develop-/132127156897> ($0.99) x 1 per boy
  + Standard Servos (REQUIRES 5V 3A+ BUCK CONVERTER/UBEC SOLD SEPARATELY; SEE BELOW)
    - Ebay search for “9g servo digital” - <http://www.ebay.com/sch/i.html?_from=R40&_sacat=0&_nkw=9g+servo+digital&rt=nc&LH_BIN=1>
      * ex: $1.88 - <http://www.ebay.com/itm/9g-Digital-Servo-Motor-Gear-High-Speed-Torque-For-RC-Helicopter-Car-Airplane-HR-/252521990199>
  + DC Motors WITH GEARBOXES & wheels (REQUIRES H-BRIDGE SOLD SEPARATELY)
    - Ebay search for “robot motor arduino wheel” - <http://www.ebay.com/sch/i.html?_from=R40&_sacat=0&_nkw=robot+motor+arduino+wheel&rt=nc&LH_BIN=1>
      * ex: $1.97 - <http://www.ebay.com/itm/New-Smart-Car-Robot-Plastic-Tire-Wheel-with-DC-3-6v-Gear-Motor-for-arduino-/122317977561>
  + L298N Dual H-bridge motor driver with large heat sink
    - Datasheet: <https://www.sparkfun.com/datasheets/Robotics/L298_H_Bridge.pdf>
    - Ebay search for “L298N” - <http://www.ebay.com/sch/i.html?_from=R40&_sacat=0&_nkw=L298N&rt=nc&LH_BIN=1>
      * ex: $1.79 - <http://www.ebay.com/itm/Dual-H-Bridge-Stepper-Motor-Drive-Controller-Board-Module-For-Arduino-L298N-LC-/162227129149>
  + Stepper Motors WITH H-BRIDGES
    - Ebay search for “28byj-48” (be sure to choose one WITH INCLUDED H-BRIDGE) - <http://www.ebay.com/sch/i.html?_odkw=stepper+motor&LH_BIN=1&_osacat=0&_from=R40&_trksid=m570.l1313&_nkw=28byj-48&_sacat=0>
      * ex: $1.57 - <http://www.ebay.com/itm/5V-ULN2003-28BYJ-48-4-Phase-Stepper-Motor-with-Driver-Board-for-Arduino-PI-PIC-A-/201010046635> – Note: even though it’s rated for 5V, it should be able to tolerate a little more without a 5V buck converter, ex: up to the 8.4V the robot’s battery supplies
      * IMPORTANT DRIVING INFO & RESOURCES CAN BE FOUND HERE: <https://www.adafruit.com/products/858>
  + Electromagnet (12V) (REQUIRES A SEPARATE DRIVER—EX: TRANSISTOR, TRANSISTOR BOARD, H-BRIDGE, RELAY, ETC)
    - 5.6lb holding force:
      * Ebay search for “electromagnet 5.6” - <http://www.ebay.com/sch/i.html?_from=R40&_sacat=0&_nkw=electromagnet+5.6&rt=nc&LH_BIN=1>
        + ex: $2.30 - <http://www.ebay.com/itm/5-6lbs-DC-12V-Holding-Electromagnet-Lift-Solenoid-LW-/172365747485>
    - 11lb holding force (get this one if you want, instead of the 5.6lb one above—your call!):
      * Ebay search for “electromagnet 11” - <http://www.ebay.com/sch/i.html?_odkw=electromagnet+5.6&LH_BIN=1&_osacat=0&_from=R40&_trksid=m570.l1313&_nkw=electromagnet+11&_sacat=0>
        + ex: $3.51 - <http://www.ebay.com/itm/Electromagnet-11-LB-DC-12V-Holding-Electromagnet-Lift-Magnet-Electric-Motor-DT-/262541155723>
  + Power driver (ex: FOR ELECTROMAGNETS):
    - Use the large L298N H bridges above. These are the best solution unless we want to breadboard our own logic-level MOSFETs (which cost about the same anyway) with flyback diode and resistor.
  + Boost Converters (for electromagnets 7.4V battery → 12V)
    - 12V (or adjustable) boost converter
      * Ebay search for “12v boost converter” - <http://www.ebay.com/sch/i.html?_odkw=bec+5v&LH_BIN=1&_osacat=0&_from=R40&_trksid=m570.l1313&_nkw=12v+boost+converter&_sacat=0>
        + ex: $1.69, 3V~32V in, 5V~35V out, 4A max - <http://www.ebay.com/itm/141678637457>
  + 5V 3A+ Buck Converters (Switching regulators/UBECs) (MANDATORY FOR DRIVING STANDARD SERVOS, 2+ 9g MICRO SERVOS, ETC; OPTIONAL (I THINK) FOR STEPPER MOTOR, BUT WOULD BE A GOOD IDEA TO HAVE IT FOR THE STEPPER MOTORS TOO)
    - Ebay search for “buck converter 5a” - <http://www.ebay.com/sch/i.html?_from=R40&_sacat=0&_nkw=buck+converter+5a&rt=nc&LH_BIN=1>
      * ex: $1.59 - <http://www.ebay.com/itm/Buck-Module-24V-12V-9V-5V-DC-to-DC-4V-38V-to-1-25V-36V-5A-Step-Down-Power-Supply-/271701783241>
  + Ultrasonic (“ping”) Sensors
    - Ebay search for “hc-sr04” - <http://www.ebay.com/sch/i.html?_from=R40&_sacat=0&_nkw=hc-sr04&rt=nc&LH_BIN=1>
      * ex: $0.90 - <http://www.ebay.com/itm/1pcs-Ultrasonic-Module-HC-SR04-Distance-Measuring-Transducer-Sensor-for-Arduino-/141975951132>
  + Pulleys
    - Ebay search for “pulley robot” - <http://www.ebay.com/sch/i.html?LH_BIN=1&_from=R40&_sacat=0&_nkw=pulley+robot&_sop=15>
      * TAKE YOUR PICK. SORT BY “BEST MATCH” TOO FOR OTHER OPTIONS:
        + ex: $0.79 for 7pcs - <http://www.ebay.com/itm/7pcs-Plastic-Gears-Belt-Pulley-for-DIY-Robot-62A-132A-16-82A-182A-242A-102B-122B-/272496426546>
        + Another misc. option ($3.85) - <http://www.ebay.com/itm/Plastic-Gears-Pulley-Module-Robot-Parts-DIY-Necessary-Model-Toys-/172389745003>
  + Long Push Buttons
    - Ebay search for “6x6x15 tactile button” - <http://www.ebay.com/sch/i.html?_from=R40&_sacat=0&_nkw=6x6x15+tactile+button&rt=nc&LH_BIN=1>
      * ex: 50pcs $2.55 - <http://www.ebay.com/itm/50x-Tactile-Push-Button-Switch-Momentary-Tact-6x6x15mm-4-pin-Through-Hole-NEW-/172431856245>
  + IR range finders
    - Ebay search for “ir distance sensor” ($3.72+) (lowest price first) - <http://www.ebay.com/sch/i.html?_sacat=0&_nkw=ir+distance+sensor&_sop=15&_frs=1>
    - Ebay search for “ir range” (best match) - (~$14 for what looks like a pretty nice one...) - <http://www.ebay.com/sch/i.html?_from=R40&_sacat=0&_nkw=ir+range&_sop=12>
  + 10k Potentiometers
    - Ebay search for “10k potentiometer” - <http://www.ebay.com/sch/i.html?_from=R40&_sacat=0&LH_BIN=1&_nkw=10k+potentiometer&_sop=15>
      * ex: $0.99 for 10pcs 10k trimmer pot - <http://www.ebay.com/itm/10-Pcs-6mm-10k-ohm-Horizontal-Pot-Variable-Cermet-Potentiometer-Trimmer-Resistor-/171747398851>
  + END
  + **Addendum 1:**
  + IR remotes (for consistency, I recommend you CHOOSE THE SAME TYPE AS WHAT THE ELEGOO ROBOT COMES WITH, AND MAKE SURE IT COMES \*WITH\* AN IR RECEIVER AND SENDER LED):
    - Ebay search for “nec ir remote” - <http://www.ebay.com/sch/i.html?_from=R40&_sacat=0&_nkw=nec+ir+remote&rt=nc&LH_BIN=1>
    - Ebay search for “ir remote hx1838” - <http://www.ebay.com/sch/i.html?_from=R40&_sacat=0&_nkw=ir+remote+hx1838&rt=nc&LH_BIN=1>
      * ex: $1.07 - <http://www.ebay.com/itm/HX1838-VS1838-Arduino-Infrared-IR-Wireless-Remote-Control-Sensor-Module-Kits-GM-/262136733321>
  + CR2025 button batteries for the IR remotes above:
    - Ebay search for “cr2025” - <http://www.ebay.com/sch/i.html?_from=R40&_sacat=0&_nkw=cr2025&rt=nc&LH_BIN=1>
      * ex: $0.99 for 5 pcs - <http://www.ebay.com/itm/5X-CR2025-Batteries-3V-Coin-Cell-Button-For-Toys-Remote-Weigher-Boards-Ornate-/262648267086>
  + HC-06 4-pin bluetooth modules
    - Ebay search for “hc-06” - <http://www.ebay.com/sch/i.html?_from=R40&_trksid=m570.l1313&_nkw=hc-06&_sacat=0>
      * ex: $3.07 - <http://www.ebay.com/itm/HC-06-RS232-Wireless-Serial-Bluetooth-RF-Transceiver-Module-4-Pin-for-Arduino-/191022351189>
  + Extra Wheels (optional)
    - Ebay search for “wheel robot” (try sorting the results by Lowest Price First AND Best Match to get different results) - <http://www.ebay.com/sch/i.html?_sop=15&_from=R40&_sacat=0&_nkw=wheel+robot&rt=nc&LH_BIN=1>
      * ex: see the “belt transmission wheels,” “universal wheel smart car” caster wheels, etc.