1. Talk about what we’ve done this week
2. Do some research on valves
   1. Solenoid DIY - natasha, annie, jennifer
      1. <https://www.youtube.com/watch?v=DvHiPvuWDPg>: not sure if we can control this with arduino though
   2. Solenoid - buy
      1. <https://www.amazon.com/4inch-Normally-Closed-Electric-Solenoid/dp/B084YTNG2P/ref=sr_1_8?dchild=1&keywords=solenoid+valves&qid=1587154421&sr=8-8>
   3. Needle Valve - jacob, hannah
      1. [How needle valve works](https://www.youtube.com/watch?v=CzBB1CEAAS4)
3. Split up what we will be ordering? Come up with a BOM and figure out total price
4. [Link to Bill of Materials](https://docs.google.com/spreadsheets/d/1STZnhj3kDCQ9465cDD34jmoI5NHmeL_VJD7JXBQfdQ4/edit?usp=sharing)
5. Pressure Sensors;
   1. BMP 180 <https://www.amazon.com/JBtek-Barometric-Pressure-Temperature-Altitude/dp/B00UUS12PO/ref=sr_1_6?dchild=1&keywords=pressure+sensor+arduino&qid=1587155589&sr=8-6>

Arduino set up: <https://www.circuitbasics.com/set-bmp180-barometric-pressure-sensor-arduino/>

<https://www.instructables.com/id/Arduino-BMP180/>

<https://learn.sparkfun.com/tutorials/bmp180-barometric-pressure-sensor-hookup-/all>

* 1. BME 280:

<https://www.amazon.com/Onyehn-Temperature-Humidity-Barometric-Pressure/dp/B07KR24P6P/ref=sr_1_13?dchild=1&keywords=pressure+sensor+arduino&qid=1587155589&sr=8-13>

Arduino set up (this isn’t the exact breakout board but it uses the BME 280):

<https://learn.adafruit.com/adafruit-bme280-humidity-barometric-pressure-temperature-sensor-breakout/arduino-test>

<https://learn.sparkfun.com/tutorials/sparkfun-bme280-breakout-hookup-guide/all>

Datasheet: <https://ae-bst.resource.bosch.com/media/_tech/media/datasheets/BST-BME280-DS002.pdf>

Unknowns:

* What kind of tubing are we using?
* How much do we need?
  + PVC, aquarium tubing, CPAP tubing

**Dan’s response:**

Jacob,

There are a lot of things that go into making a decision like that. How big is the opening? How much flow do you need? How quicky does it need to shut off? Does it need to be able to be controllable through a range of % open or is it just on/off? A servo motor sounds to me like a bad idea when all you need is on or off. The advantage of a servo is you can reliably set it at any position. If you need on/off, a solenoid valve seems to me like by far the best solution. How good does the seal have to be?

Some valves (like ball valves) require quite a bit of torque to move and therefore your servo motor would have to be extremely beefy/expensive (especially if you need a perfect seal at it will have a rubber seal rather than just metal on metal). If it's a small opening, something like a needle valve will require much less torque, but require more turns (therefore take more time to turn off/o completely) - something like that will also let you more precisely control flow rate.

Just things to think about. You could also build your own solenoid valve by building an electromagnet if you are trying to get less expensive.

[**https://www.bc-robotics.com/tutorials/controlling-a-solenoid-valve-with-arduino/**](https://www.bc-robotics.com/tutorials/controlling-a-solenoid-valve-with-arduino/)