Things to consider:

- **For the calculations, HS-SR04 operates in microseconds as it's "t"**
    - Therefore everything from the the speed of sound in centimeters/second
- Using IO trigger requirement:
    - 10us in high level signal
- The sensor sends eight 40 kHz (automatically)
    - This detects whether there is a pulse signal back.
        - If a signal is received back (through high level), as well as the time of the high output IO's duration. This is the time from sending - returning = duration.

Working Voltage	DC 5 V
Working Current	15mA
Working Frequency	40Hz
Max Range	4m or 13.1234 feet
Min Range	2cm or 0.0656168 feet
Measuring Angle	15 degrees
Trigger Input Signal	10uS TTL (Time to live) pulse
Echo Output Signal	Input TTL (Time to live) level signal and the range in proportion
Dimension	45*20*15mm

Given:

- The speed of sound in dry air
    - At 20 Celcius is 343 meters/second (**0.0343 centimeters/microseconds**)

Calculations:

- The test distance:
    - (high level time*velocity of sound*(340m/s)/2
- The range through the time interval between sending the trigger signal and receiving echo signal back:
    - **uS / 58 = centimeters** (or uS / 148 =inch)

Must haves in the code:

- Define the pins (inputs and outputs):
    - Whether if it's the trigger or echo
- Variables. That will hold the time between sending. As well as the time receiving the signal.
- A loop, since the sensor is triggered by a high pulse as mentioned.
- A conversion of the time into a distance
    - Given by the calculations of **0.0343 centimeters/microseconds**
        - Distance = Duration * .0343 / 2