NewPing Instructions and Code

Teacher Directions:

Set up a class account on Arduino Create. In this way you can manage what sketches students are using. More than one device may be open with the same account.

Directions:
Read this notes section prior to copying and pasting the code. Make sure to save it in your account to make it easier to modify if necessary.

Calibration:
The highlighted value may need to change depending on calibration. For purposes of student understanding of integer values, the following calibration was given by Sunfounder. This is a rounded value.

The more accurate calibration for the sensor is listed below:
Distance= sonar ping (uS) * 1e6 (to change to m/s) * 340/2 (speed of sound/2) * 1e2 (converting from m to cm)

Extension: You could have students use the more accurate calibration in the code instead, and possibly suggest adjusting the 340 m/s (optimal measure of the speed of sound in air) for slight disturbances.

Copy the following code below and paste into Arduino Create—make sure to title it for your students

```
// ------------------------------------------------------------------------
// Example NewPing library sketch that does a ping about 20 times per second.
// ------------------------------------------------------------------------------

#include <NewPing.h>

#define TRIGGER_PIN  12  // Arduino pin tied to trigger pin on the ultrasonic sensor.
#define ECHO_PIN     11  // Arduino pin tied to echo pin on the ultrasonic sensor.
#define MAX_DISTANCE 400 // Maximum distance we want to ping for (in centimeters).
Maximum sensor distance is rated at 400-500cm.

NewPing sonar(TRIGGER_PIN, ECHO_PIN, MAX_DISTANCE); // NewPing setup of pins and maximum distance.

void setup() {
  Serial.begin(115200); // Open serial monitor at 115200 baud to see ping results.
```

```
}

void loop() {
  delay(50);                  // Wait 50ms between pings (about 20 pings/sec). 29ms should be the
shortest delay between pings.
  unsigned int uS = sonar.ping(); // Send ping, get ping time in microseconds (uS).
  Serial.print("Ping: ");
  Serial.print(uS/58); // Convert ping time to distance in cm and print result (0 = outside set
distance range)
  Serial.println("cm");
}
```