```
//Speed of sound in air
#define pin_trigger       8
#define pin_echo          9
#define contrast          6  \\ LCD contrast pin


#include <LiquidCrystal.h>
const int rs = 12, en = 11, d4 = 5, d5 = 4, d6 = 3, d7 = 2;
LiquidCrystal lcd(rs, en, d4, d5, d6, d7);


float sa = 14.0; // insert the air columm height in "cm"
float t;
float va;


void setup() {
        lcd.begin(16, 2);
        pinMode(pin_trigger, OUTPUT);
        pinMode(pin_echo, INPUT);
        analogWrite(contrast, 110);


        lcd.print(" SPEED OF SOUND ");
        lcd.setCursor(0, 1);
        lcd.print("      IN AIR    ");
        delay(2000);
        lcd.clear();
}


void loop() {
        digitalWrite(pin_trigger, LOW);
        delayMicroseconds(2);
        digitalWrite(pin_trigger, HIGH);
        delayMicroseconds(10);
        digitalWrite(pin_trigger, LOW);
        t = pulseIn(pin_echo, HIGH); // t in microseconds
        va = float((2 * sa * 10000.0) / t); // 10000.0 factor converts va value to m/s


        lcd.clear();
        lcd.setCursor(0, 0);
        lcd.print("t = ");
        lcd.print(time ); // print t in microseconds
        lcd.print("us");


        lcd.setCursor(0, 1);
        lcd.print("v_a = ");
        lcd.print(va, 1); // print va in microseconds
        lcd.print(" m/s");
        delay(1000);     // Wait for 1000 ms

}
```

**// Speed of sound in water**

```
#define pin_trigger       8
#define pin_echo          9
#define contraste         6
#include <LiquidCrystal.h>
const int rs = 12, en = 11, d4 = 5, d5 = 4, d6 = 3, d7 = 2;
LiquidCrystal lcd(rs, en, d4, d5, d6, d7);


float sa = 343.0;    // speed fo sound in air

float sa = 7.0;     // insert the air columm height in "cm"
float sw = 30.0;    // insert the water columm height in "cm"
float t;
float vw,va;


void setup() {
        lcd.begin(16, 2);
        pinMode(pin_trigger, OUTPUT);
        pinMode(pin_echo, INPUT);
        analogWrite(contraste, 110);


        lcd.print(" SPEED OF SOUND ");
        lcd.setCursor(0, 1);
        lcd.print("    IN WATER    ");
        delay(2000);
        lcd.clear();
}

void loop()
{
        digitalWrite(pin_trigger, LOW);
        delayMicroseconds(2);
        digitalWrite(pin_trigger, HIGH);
        delayMicroseconds(10);
        digitalWrite(pin_trigger, LOW);
        t = pulseIn(pin_echo, HIGH);     // time in us
        vw = 2. * sa * va / ((va * t * 0.0001) - (2. * sa)); // 0.0001 factor converts va value to
m/s
        lcd.clear();
        lcd.setCursor(0, 0);
        lcd.print("t= ");
        lcd.print(t);
        lcd.print(" us");

        lcd.setCursor(0, 1);
        lcd.print("v_w= ");
        lcd.print(vw, 1);
        lcd.print(" m/s");
        delay(1000);
}
```