```
#include <AccelStepper.h>

//setup pins to interface with motor controller boards
#define HALFSTEP 8

#define motorPin1 3
#define motorPin2 4
#define motorPin3 5
#define motorPin4 6
#define motorPin5 9
#define motorPin6 10
#define motorPin7 11
#define motorPin8 12

//use variable for final setup
AccelStepper stepper1(HALFSTEP, motorPin1, motorPin3, motorPin2, motorPin4);
AccelStepper stepper2(HALFSTEP, motorPin5, motorPin7, motorPin6, motorPin8);

//create variables for speed ratio and rotation ammounts
float rotation;
float rotation2;
float ratiospd;
float Maxspeed = 500;


void setup() {


Serial.begin(9600);
```

```
//set accelerations to same value
stepper1.setAcceleration(500.0);
stepper2.setAcceleration(500.0);

}

void loop() {

// dump serial monitor value
int var = Serial.read();

// read rotation ammount for motor 1
Serial.println("Number of motor 1 Rotations");
while (Serial.available() == 0) {}
rotation = Serial.parseInt();
//convert number to number of steps per rotation
rotation = rotation * 4076;
delay(200);

//dump serial monitor value
var = Serial.read();

// read number of rotations for motor 2
Serial.println("Number of motor 2 Rotations");
while (Serial.available() == 0) {}
rotation2 = Serial.parseInt();
//convert number to number of steps per rotation
rotation2 = rotation2 * 4076;
```

```
delay(200);

//determin which motor speed needs to be reduced
if (rotation > rotation2) {
  //if motor1 needs to be slower
  //defining the ratio the speed needs to be multiplied by
  ratiospd = rotation / rotation2;
  //setting speeds
  stepper1.setMaxSpeed(Maxspeed  * ratiospd);
  stepper2.setMaxSpeed(Maxspeed);
} else if (rotation < rotation2) {
  //if motor2 needs to be slower
  //defining the ratio the speed needs to be multiplied by
  ratiospd = rotation2 / rotation;
  //setting speeds
  stepper1.setMaxSpeed(Maxspeed);
  stepper2.setMaxSpeed(Maxspeed  * ratiospd);

}



// printing spped values and their ratio (unnecessary code but useful)
Serial.println(Maxspeed);
Serial.println(Maxspeed * ratiospd);
Serial.println(ratiospd);
//run both while they are not the correct value
while (stepper1.currentPosition() != rotation || stepper2.currentPosition() != rotation2) {
  //move stepper1
  if (stepper1.currentPosition() != rotation) {
```

```
   stepper1.moveTo(rotation);
   stepper1.run();
  }
  //move stepper2
  if (stepper2.currentPosition() != rotation2) {
   stepper2.moveTo(rotation2);
   stepper2.run();
  }

}
//redefine stepper position
stepper1.setCurrentPosition(0);
stepper2.setCurrentPosition(0);
}
```