

FIRST LEGO LEAGUE - Ontario

Activity Sheet	
Gr 6 - Lesson #4	Stop at Object – Discrete Sounds
Date:	Name(s):

<b>Check That I'm Done</b> <input checked="" type="checkbox"/>		
<input type="checkbox"/> Commented on my code	<input type="checkbox"/> Modify it task	<input type="checkbox"/> Coding Challenge

**Learn**

There is an important difference between discrete and continuous data.

Discrete data is **EXACT**, and is usually **counted**. It can only have certain values, and is considered perfectly accurate. For example, counting students in your classroom. You can have exactly 24 students, but cannot have 24.28 students.

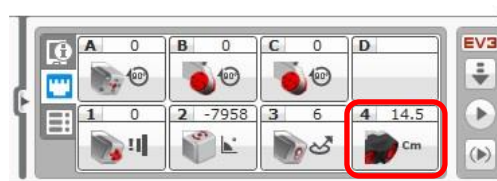
Just ask yourself, can you count them in a tally.



Continuous data, is just that, continuous. It can take any value, but then you must ask yourself how accurate the number is. This usually comes from **measuring** something.



The information coming into EV3 brick from the ultrasonic distance sensor is continuous. It is rounded and displayed as the nearest tenth of a centimeter on your computer screen (bottom left) or on the port view option on your brick.

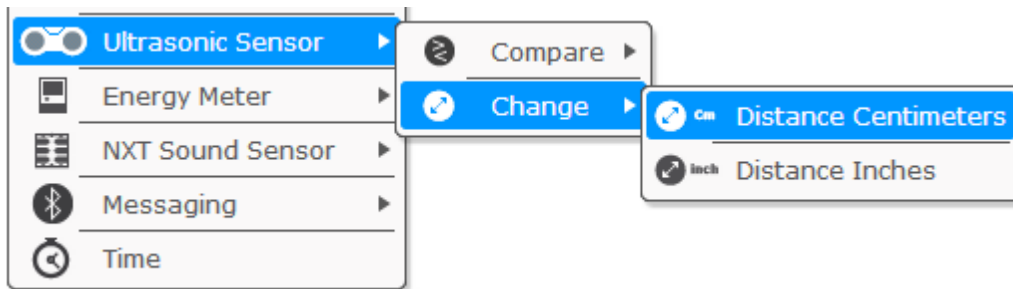


## FIRST LEGO LEAGUE - Ontario

Often in robotics it's important to make data more discrete by splitting it into sections, so you can make rules for each section. (For example, if the part on the assembly line is less than 30cm tall, discard it). There are several ways to do this.

### Predict and Plan

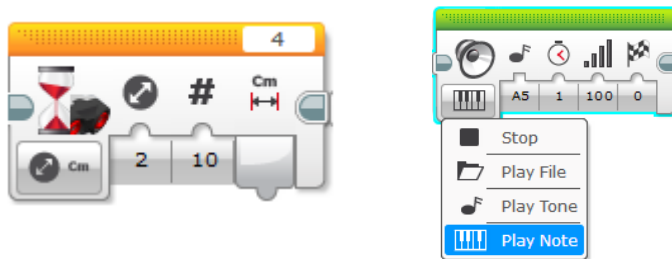
While programming the ultrasonic sensor earlier (using the wait block), you noticed you can either *compare* based on a threshold value if something is close or far, or measure a *change* in distance.



Explore this 'change' setting for 2 minutes with your partner.

### Demonstrate/Design/Discover

- ✓ Locate the "wait block" and the "sound block" found in the green tab.



- ✓ Drag them into your program and set the wait block to measure the change in the ultrasonic sensor and the sound block to play a note

## FIRST LEGO LEAGUE - Ontario

- ✓ Create a program that uses these blocks to split up a meter into 10 discrete equal length sections. Each time you move your robot 10cm farther from the wall, your robot should make a *different* tone.
- ✓ You can just gently move your robot backwards with your hands to do get the values you need on your own time, OR you can have the robot drive back slowly, it's up to you.

Tips: This will turn your robot into a kind of instrument. Change the notes to try and make a song as your robot is moved further away.

### Record

Lay out masking tape starting at the wall. Make sure its atleast 1m long (a big stride).

Using your robot as a ruler, mark out the sections your robot makes as you move it back. Make sure to mark it off preciecly when you hear the sound.

