

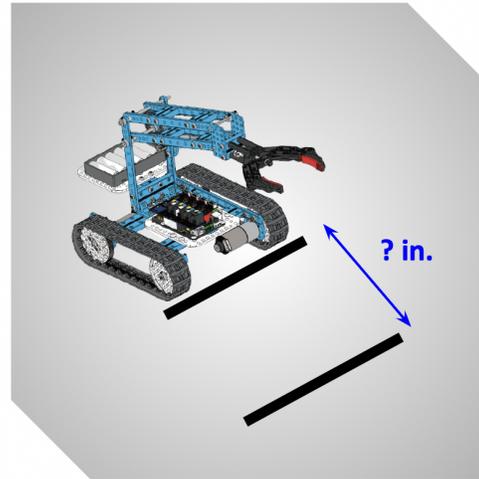
Activity 2: Measuring Distances

Next, investigate how far the Ultimate travels when moving forward at 50% for 1 second.

Note: Measurements may change over time depending on battery charge.

How much time it will take for the Ultimate to turn right/left the amount you need?

🔧 Experiment with different time frames and record.



Activity 3: Adjusting Code for Distances

Now, we're going to use **ratios** to compare the distance and time of the Ultimate's movements. This will help us determine how many seconds we need to input in our code for a specific forward distance.

$$\frac{\text{Distance}}{\text{Time}}$$

For example, if we found that the Ultimate goes forward 30 inches in 1 second, the ratio would look like this:

$$\frac{30 \text{ in}}{1 \text{ s}}$$

Let's say we needed the Ultimate to go forward **18 inches** in the maze. We can **cross multiply** these two ratios:

$$\frac{30 \text{ in}}{1 \text{ s}} = \frac{18 \text{ in}}{x}$$

Can you solve for x?

Unit 5 Mission 5

Activity 3: Adjusting Code for Distances

Solving the equation would go like this:

(in inches)

$$\frac{30 \text{ in}}{1 \text{ s}} = \frac{18 \text{ in}}{x}$$

$$30x = 18$$

$$x = \frac{18}{30}$$

$$x = 0.6 \text{ seconds}$$

(in cm)

$$\frac{76.2 \text{ cm}}{1 \text{ s}} = \frac{45.72 \text{ cm}}{x}$$

$$76.2x = 45.72$$

$$x = \frac{45.72}{76.2}$$

$$x = 0.6 \text{ seconds}$$

Cross multiply.

Isolate x.

Lastly, input the time duration into the code:

 move forward at power 50 % for 0.6 secs

Unit 5 Mission 5