

# FRANKLIN'S LAB



## Reference Sheet

### Quick Reference



**Workbench** Enter Workbench to troubleshoot components.



**Duplicate** Hold down on CTRL key and click on the object to be duplicated.



**Exit Workbench** Return to breadboard.

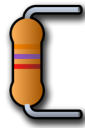


**Current Flow** Yellow = Low, Red = High

### Backpack



Batteries



Resistors



Motors



Wires



Lights



Switches

### Context Menu

Press the right stylus button to access. Different options appear when pointing at the scene or pointing at an object.



**Move** Click and drag on objects in the scene to move them.



**Flip Polarity** Reverse polarity and direction of current.



**Stylus Cam** Click center stylus button to take a picture. Zoom in and out using left and right buttons.



**Delete** Remove object from scene.



**Add Note** Add text. Drag and attach note to object in scene.



**Attach Image** Add picture to Note.



**Show/Hide Labels** Select to change label visibility



**Text to Speech** Listen to text written in Note.

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### How to Start the Motor

The amount of current (**I**) will change the speed of the motor.

Minimum current required for motor to spin: **100 mA**

Motor will burn out when **2 A** or more current reaches the motor.

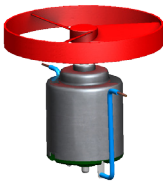
**Tip** Ohm's Law: **V = IR**

**V** = Volts provided by the battery

**I** = Amps of current traveling through the circuit

**R** = Ohms of resistance provided by resistors or the circuit parts such as LED and motor

### Workbench Troubleshooting



Motor



Switch



AA Battery

Click the icon above the component to enter the Workbench.

Review the parts of the component to determine if anything is broken or missing.

Use the inventory to replace or add parts.

Click on the icon to exit the Workbench and return the component to the breadboard.

### How to Light the LEDs

