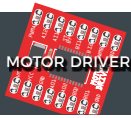
Circuit 5B: Remote-Controlled Robot

In this circuit, you'll control two motors and build your own remote-controlled roving robot! You will also learn how to read information from a serial command so that you can use the Serial Monitor to tell the robot in what direction to move and how far to move.

YOU NEED


MOTOR DRIVER


2 GEAR MOTORS


SWITCH


16 JUMPER WIRES

2 WHEELS

DUAL LOCK TAPE

BINDER CLIP

SCISSORS (NOT INCLUDED)

NEW CONCEPTS

ASCII CHARACTERS: ASCII is a standard for character encoding, formalized in the 1960s, that assigns numbers to characters. When typing on a computer keyboard, each character you type has a number associated with it. This is what allows computers to know whether you are typing a lowercase "a," an uppercase "A" or a random character such as ampersand (&). In this experiment, you will be sending characters to the Serial Monitor to move your remote-controlled robot. When you send a character, the microcontroller is interpreting that as a specific number. ASCII tables available online (**http://sfe.io/ASCII**) make it easier to know which character is represented by which number.

CONVERTING STRINGS TO INTEGERS: String variables hold words like "dog" or "Robert Smith" that are made up of multiple characters. Arduino has a set of special built-in methods for string variables that you can call by putting a period after the variable name, as follows:

```
string_variable_name.toInt();
```

The `.toInt()` method converts the string to a number, and there are a dozen other methods that can do things like tell you the length of a word or change all of the characters in a string to uppercase or lowercase.

ASSEMBLY

Before you build this circuit, you'll need to make a few modifications to the breadboard baseplate to make it more robot-like!

1. Cut and attach two short pieces of Dual Lock tape to the very corners of the baseplate on the side located under the breadboard.