10
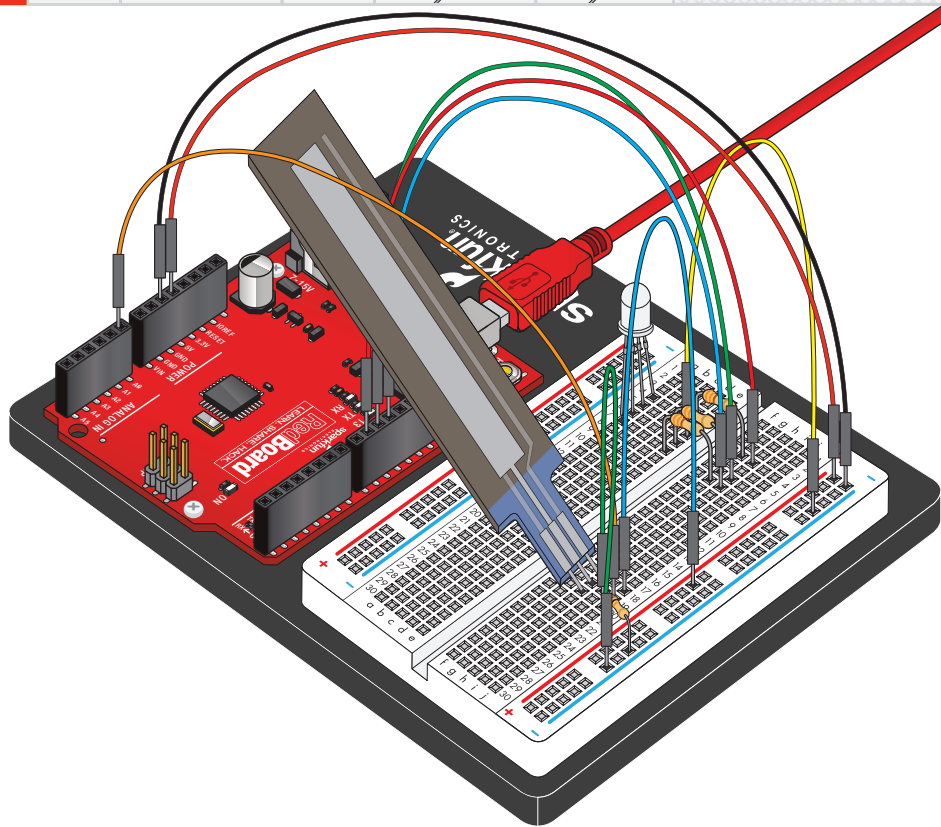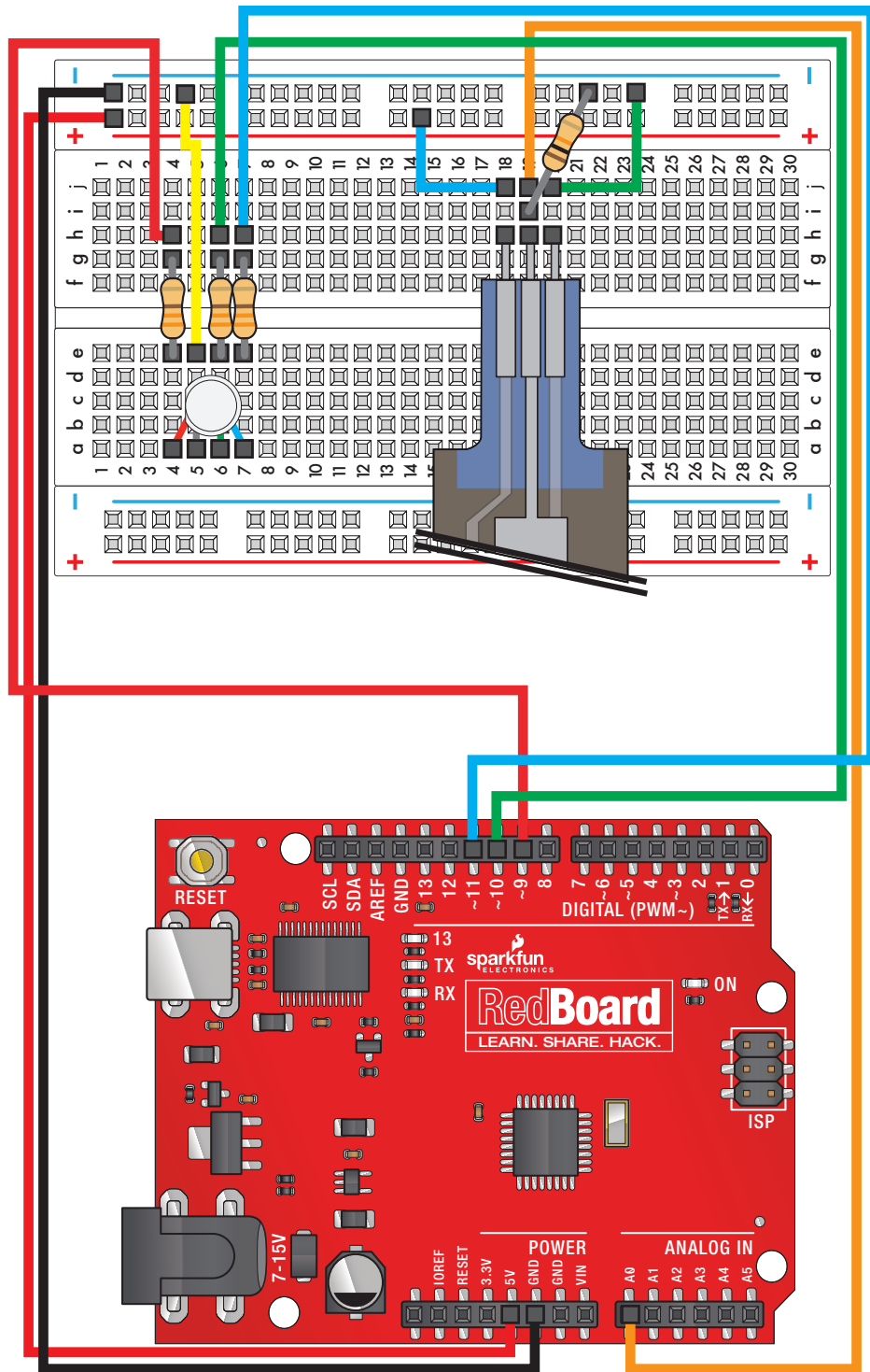
Soft Potentiometer

In this circuit, we are going to use yet another kind of variable resistor – this time, a soft potentiometer (or soft pot). This is a thin and flexible strip that can detect where pressure is being applied. By pressing down on various parts of the strip, you can vary the resistance from 100 to 10K ohms. You can use this ability to track movement on the soft pot, or simply as a button. In this circuit, we'll get the soft pot up and running to control an RGB LED.

RedBoard
PIN 11
PIN 10
PIN 9

5 volt

RedBoard
PIN A0

Soft Pot

Resistors (330 ohm)
(Orange-Orange-Brown)

Resistor (10K ohm)
(Brown-Black-Orange)

BLUE GREEN RED LED
(Light-Emitting Diode)

GND
(Ground)
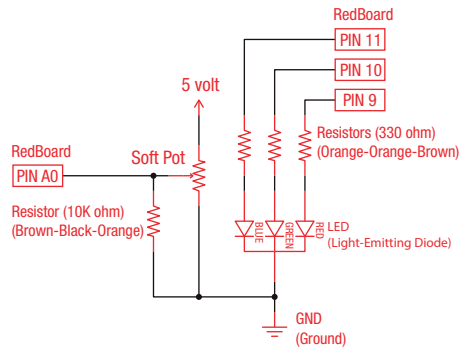
PARTS:

LED	Soft Potentiometer	Wire	330Ω Resistor	10KΩ Resistor
x 1	x 1	x 9	x 3	x 1

Component:	Image Reference:	Breadboard	Arduino/Power
Jumper Wire			5V / +
Jumper Wire			GND / -
RGB LED (5mm) ⚠		a4 a5 a6 a7	
Soft Potentiometer		h18-h19-h20	
330Ω Resistor		e4-g4	
330Ω Resistor		e6-g6	
330Ω Resistor		e7-g7	
10KΩ Resistor		j19 -	
Jumper Wire		h4	Pin 9
Jumper Wire		e5 -	
Jumper Wire		h6	Pin 10
Jumper Wire		h7	Pin 11
Jumper Wire		j18 +	
Jumper Wire		j19	A0
Jumper Wire		j20 -	

Open Arduino IDE // *File > Examples > SIK Guide >* *Circuit # 10*

Code to Note:

```
redValue = constrain(map(RGBposition, 0, 341, 255, 0), 0, 255)
 + constrain(map(RGBposition, 682, 1023, 0, 255), 0, 255);


greenValue = constrain(map(RGBposition, 0, 341, 0, 255), 0, 255)
 - constrain(map(RGBposition, 341, 682, 0,255), 0, 255);


blueValue = constrain(map(RGBposition, 341, 682, 0, 255), 0, 255)
 - constrain(map(RGBposition, 682, 1023, 0, 255), 0, 255);
```

These big, scary functions take a single Value (RGBposition) and calculate the three RGB values necessary to create a rainbow of color. The functions create three "peaks" for the red, green, and blue values, which overlap to mix and create new colors. See the code for more information! Even if you're not 100% clear how it works, you can copy and paste this (or any) function into your own code and use it yourself. If you want to know more about creating your own functions - take a look at circuit #11.

What You Should See:

You should see the RGB LED change colors in accordance with how you interact with the soft potentiometer. If it isn't working, make sure you have assembled the circuit correctly and verified and uploaded the code to your board, or see the troubleshooting tips below.
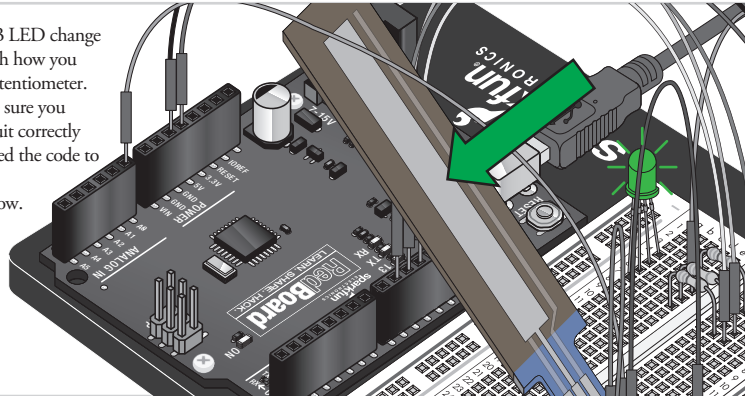
Troubleshooting:

LED Remains Dark or Shows Incorrect Color
With the four pins of the LED so close together, it's sometimes easy to misplace one. Try double checking each pin is where it should be.

Bizarre Results
The most likely cause of this is if you're pressing the potentiometer in more than one position. This is normal and can actually be used to create some neat results.

Real World Application:

The knobs found on many objects, like a radio for instance, are using similar concepts to the one you just completed for this circuit.