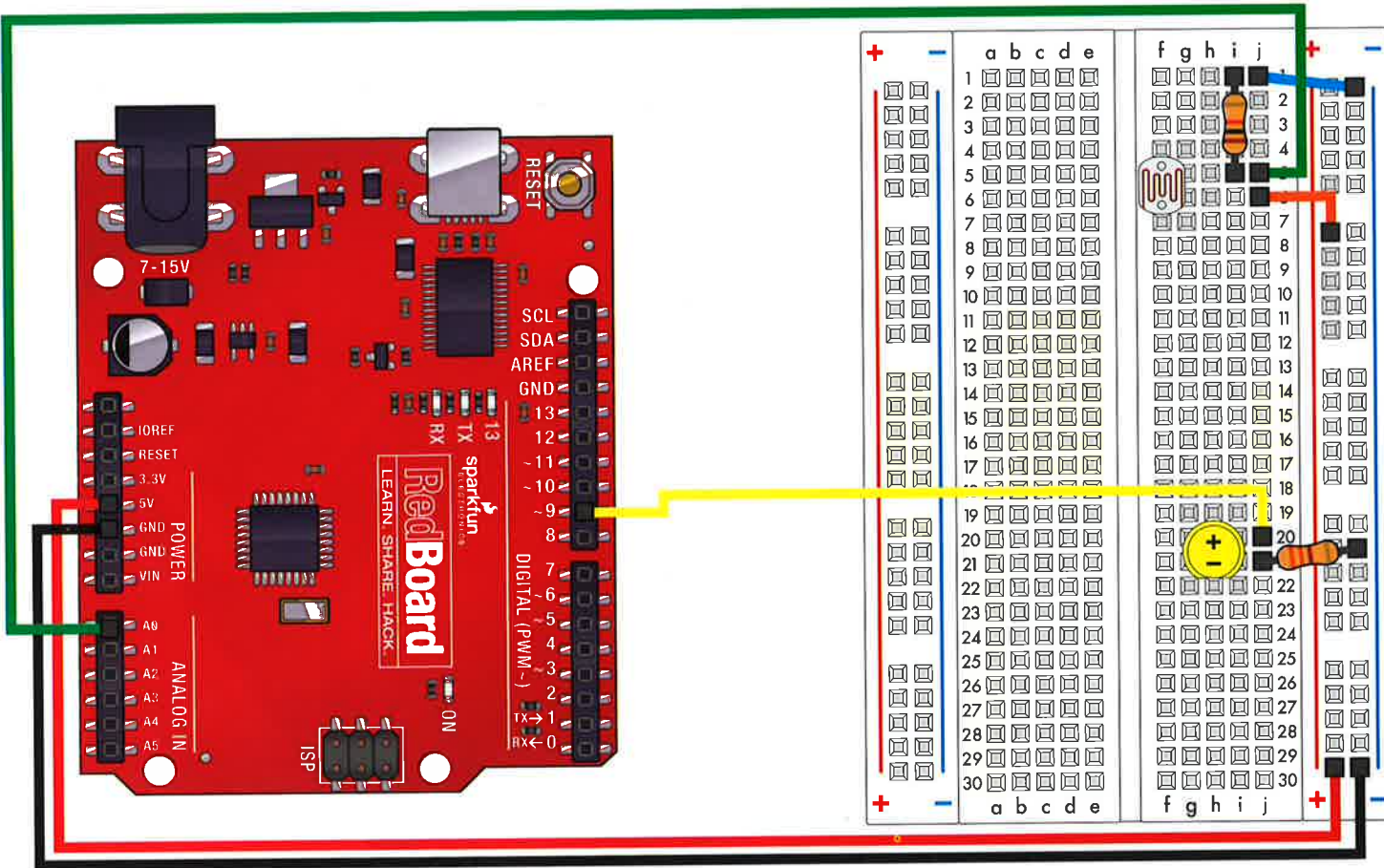


Circuit 6 : Photo Resistor

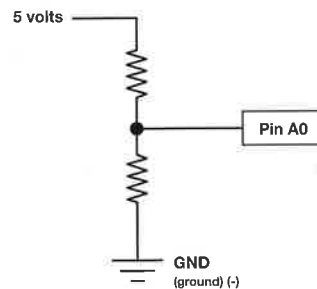


Component:	Image Reference:		
Photo Resistor		f5	f6
LED (5mm)		h20	h21
330Ω Resistor (sensor)		j21	-
10KΩ Resistor		i1	i5
Jumper Wire		j1	-
Jumper Wire		A0	j5
Jumper Wire		j6	+
Jumper Wire		Pin 9	j20
Jumper Wire		5V	+
Jumper Wire		GND	-

Measuring resistive sensors:

Many of the sensors you'll use (potentiometers, photoresistors, etc.) are resistors in disguise. Their resistance changes in proportion to whatever they're sensing (light level, temperature, sound, etc.).

The RedBoard's analog input pins measure voltage, not resistance. But we can easily use resistive sensors with the RedBoard by including them as part of a "voltage divider".



A voltage divider consists of two resistors. The "top" resistor is the sensor you'll be using. The "bottom" one is a normal, fixed resistor. When you connect the top resistor to 5 volts, and the bottom resistor to ground. The voltage at the middle will be proportional to the bottom resistor relative to the total resistance (top resistor + bottom resistor). When one of the resistors changes (as it will when your sensor senses things), the output voltage will change as well!

Although the sensor's resistance will vary, the resistive sensors (flex sensor light sensor, softpot, and trimpot) in the SIK are around 10K ohms. We usually want the fixed resistor to be close to this value, so using a 10K resistor is a great choice for the fixed "bottom" resistor. Please note the fixed resistor isn't necessarily the bottom resistor. We do that with the photodiode only so that more light = more voltage, but it could be flipped and we'd get the opposite response.