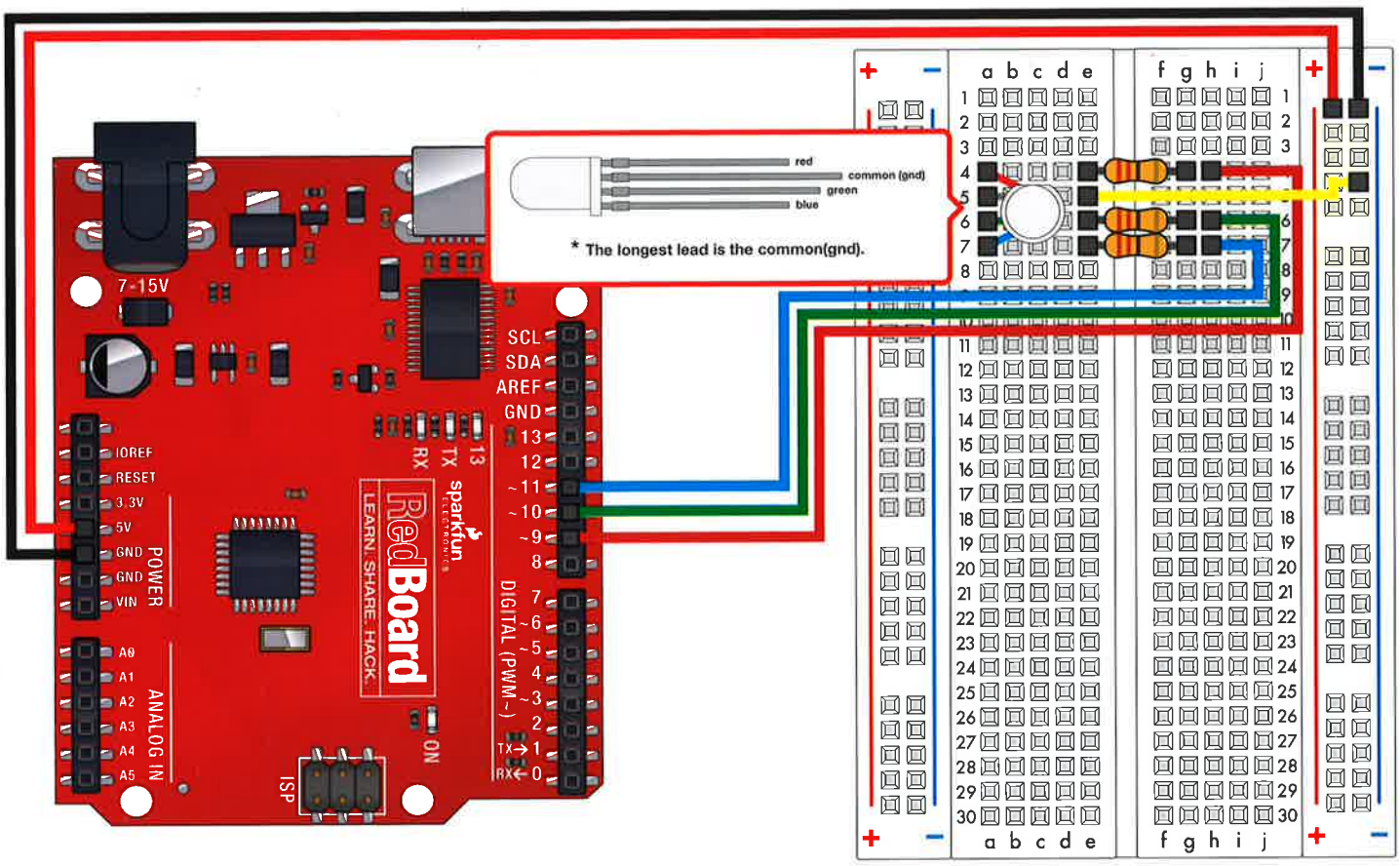
Circuit 3: RGB LED



Component:	Image Reference:		
RGB LED (5mm) ⚠			a4 a5 a6 a7
330Ω Resistor			e4 g4
330Ω Resistor			e6 g6
330Ω Resistor			e7 g7
Jumper Wire		Pin 9	h4
Jumper Wire			e5 -
Jumper Wire		Pin 10	h6
Jumper Wire		Pin 11	h7
Jumper Wire		5V	+
Jumper Wire		GND	-

The shocking truth behind analogWrite():

We've seen that the Arduino can read analog voltages (voltages between 0 and 5 volts) using the **analogRead()** function. Is there a way for the RedBoard to output analog voltages as well?

The answer is no... and yes. The RedBoard does not have a true analog voltage output. But, because the RedBoard is so fast, it can fake it using something called **PWM ("Pulse-Width Modulation")**. The pins on the RedBoard with "~" next to them are PWM/Analog out compatible.

The RedBoard is so fast that it can blink a pin on and off almost 1000 times per second. PWM goes one step further by varying the amount of time that the blinking pin spends HIGH vs. the time it spends LOW. If it spends most of its time HIGH, a LED connected to that pin will appear bright. If it spends most of its time LOW, the LED will look dim. Because the pin is blinking much faster than your eye can detect, the RedBoard creates the illusion of a "true" analog output.