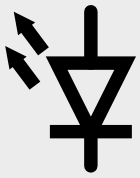
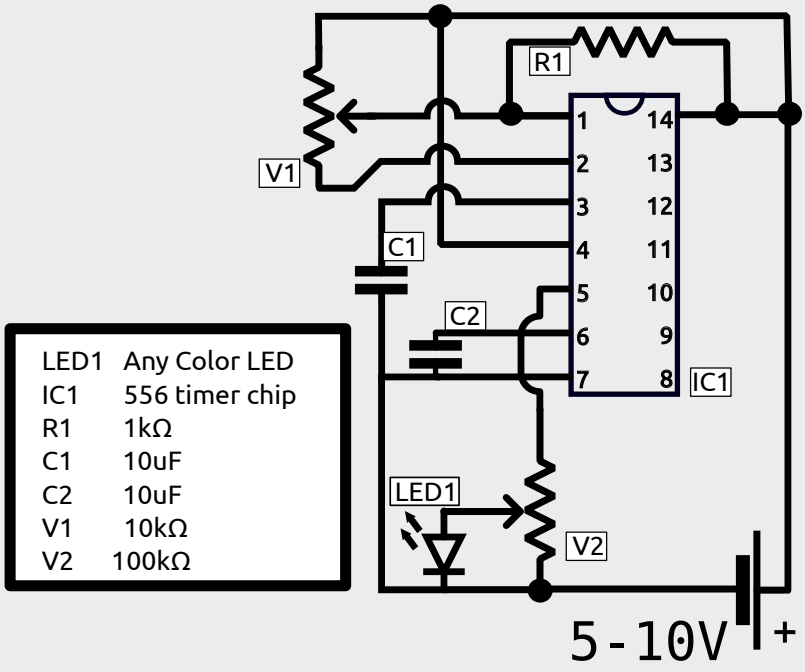
Puzzle 3
Use an integrated circuit to generate a signal



A triangle pointing to a negative symbol represents a 'diode', a kind of electronic ledge electrons travel over easily in one direction, but may be impossible to travel in the other.

The arrows pointing away from the device indicate that this is a 'light emitting' diode, as electrons fall off the ledge, they hit a new, lower voltage and have to give off extra energy as light!

A 'capacitor' is represented by rectangles with a gap in between. These two metal surfaces separated by a gap that prevents electrons from flowing from one side to the other, but each side acts as a 'parking lot' of 'bucket', and power collected on one side attracts electrons on the other. Filling up with electrons takes TIME (even if its tiny fractions of a second) making them useful for circuits that want to repeat themselves at a certain rate..



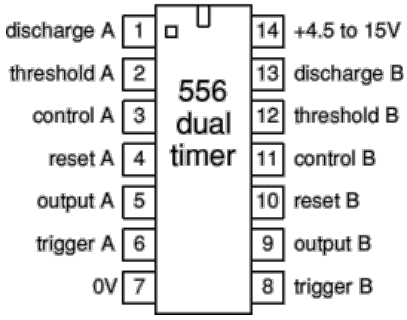
LED1	Any Color LED
IC1	556 timer chip
R1	1kΩ
C1	10uF
C2	10uF
V1	10kΩ
V2	100kΩ

Notice the entire right side of this IC is unused -- that's because the 556 is actually 2 chips in one, the left side and the right side are twins, performing the same task independently, sharing just pin 14 for power and pin 7 for GND

When building electronics, we don't have to do eveything from scratch. Circuits that have proved useful get manufactured into tiny patterns on silicon wafers and then packaged into what's called an "Integrated Circuit", or IC

Some of these Integrated Circuits can be microscopic - like the chip built into the Blinky RGB LEDs. To make these tiny circuits easier to work with, they are molded into larger 'packages' with legs in just the right spots to drop into the middle of our breadboard.

Every IC has many different uses described in its 'Data Sheet' -- the way the chip must be wired to perform different functions is described with a 'Pin Out':



1-0-0 x 10 = 1000 ohm = 1kΩ