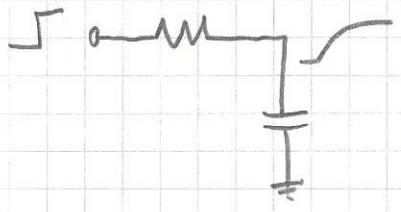


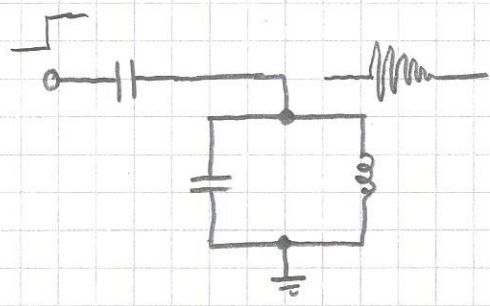
# MEASURE CAPACITORS & INDUCTORS WITH YOUR OSCILLOSCOPE

- USING THE "FAST-EDGE" PULSE GENERATOR CIRCUIT

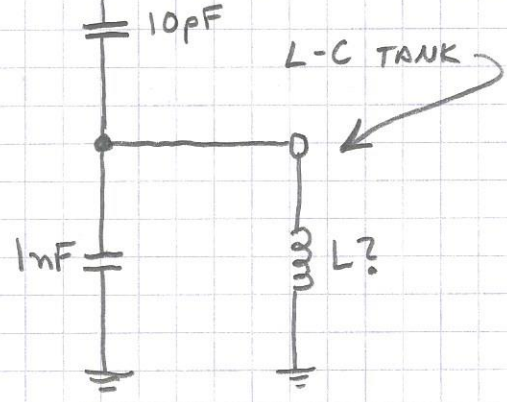
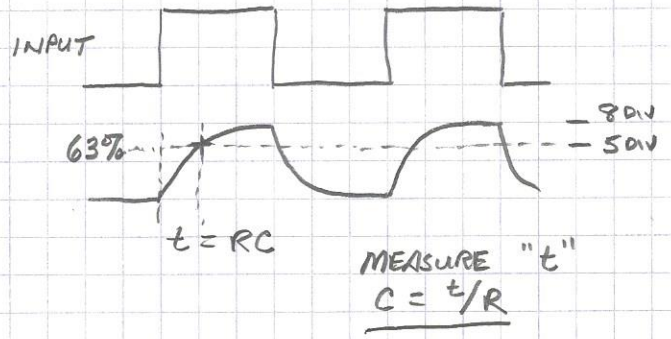
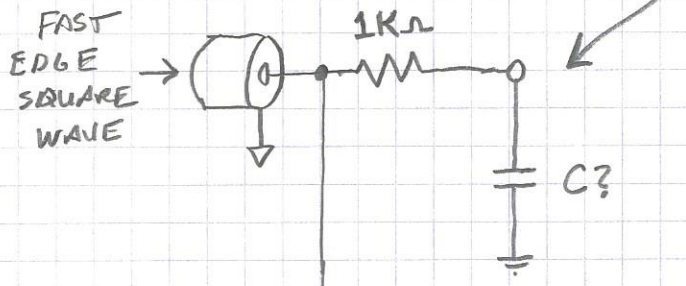
## CAPACITORS



## INDUCTORS



## R-C TIME CONSTANT



THE TANK WILL "RING" AT ITS RESONANT FREQUENCY

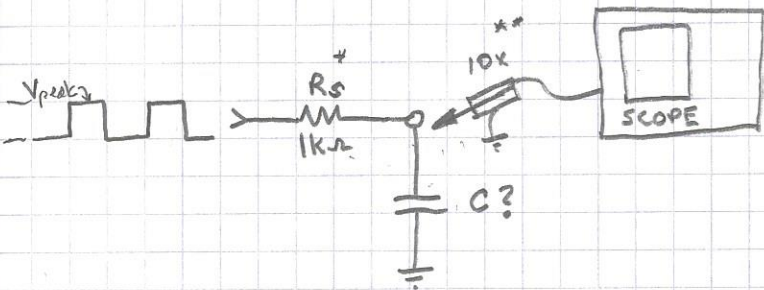
$$f_r = \frac{1}{2\pi\sqrt{LC}}$$

$$L = \frac{1}{(2\pi f)^2 C}$$

# MEASURE CAPACITANCE & INDUCTANCE WITH YOUR OSCILLOSCOPE

## & A SQUARE WAVE OSCILLATOR

FOR CAPACITORS...



- MEASURE R.C TIME CONSTANT

$$V = V_{peak} * (1 - e^{-t/RC})$$

WHEN  $t = RC$ , THE VOLTAGE HAS RISEN 63% OF FULL VALUE

### NOTES

- \* MAY WANT DIFFERENT VALUE
- \*\* WATCH PROBE CAPACITANCE FOR LOW C VALUES

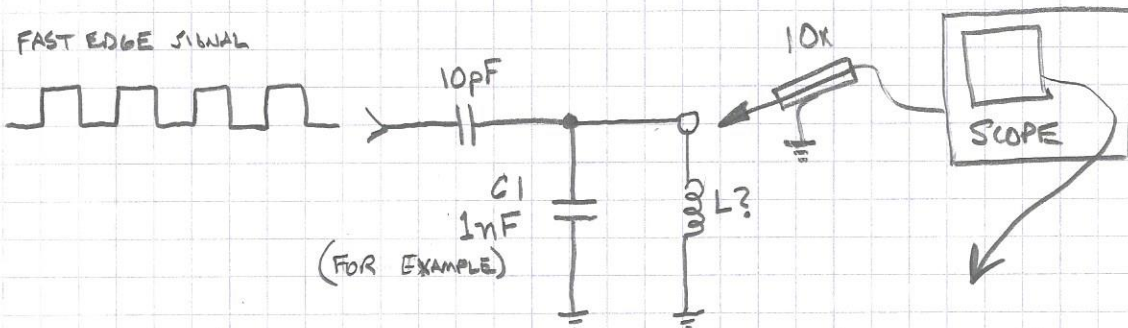
### EASY WAY

- ADJUST VERTICAL TO 8 DIVISIONS
- MEASURE  $\Delta t$  TO RISE 5 DIVISIONS

$$C = \frac{t}{R}$$

## FOR INDUCTORS... (& CAPACITORS TOO)

- START WITH A KNOWN CAPACITOR
- MAKE A PARALLEL TANK CIRCUIT
- "RING" IT WITH A FAST EDGE & MEASURE RING FREQUENCY



$$f_r = \frac{1}{2\pi\sqrt{L \cdot C}}$$

$$L = \frac{1}{(2\pi f_r)^2 \cdot C}$$

