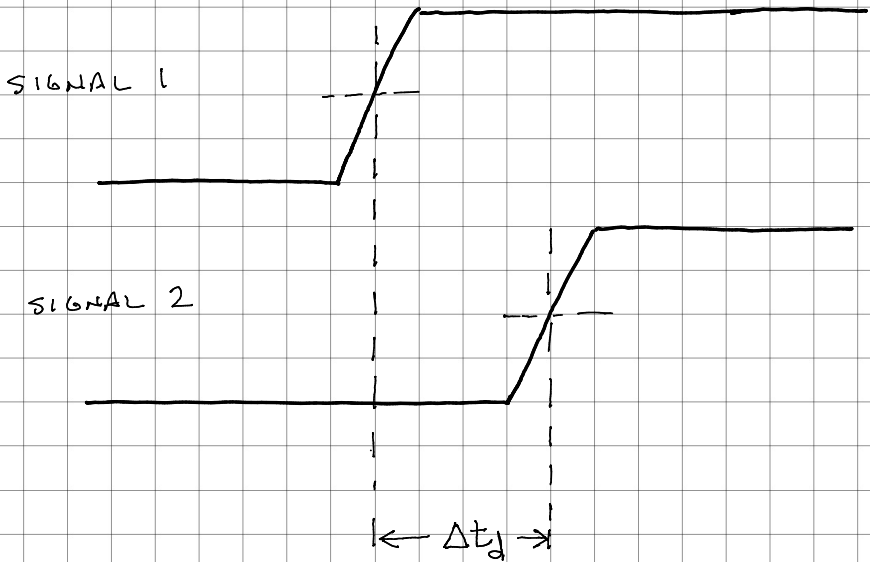


DELAY / SKEW MEASUREMENT

WZAEW

①



- DELAY IS TYPICALLY MEASURED BETWEEN THE 50% POINTS OF WAVEFORMS

- HOW TO MEASURE WITH OSCILLOSCOPE

- COUNT DIVISIONS & MULTIPLY BY TIME / DIV
- USE CURSORS
- AUTOMATIC MEASUREMENT

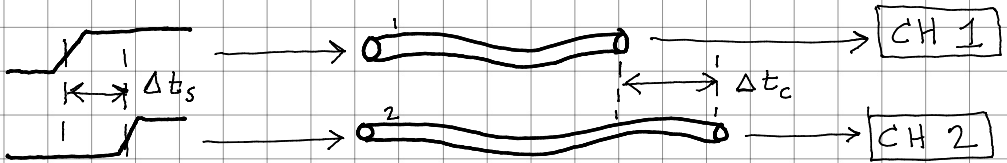
- BUT...

... WHAT IF THE PROBES OR CABLES ARE DIFFERENT LENGTHS / DELAYS ... ?

SIGNAL VS. PROBE / CABLE SKEW

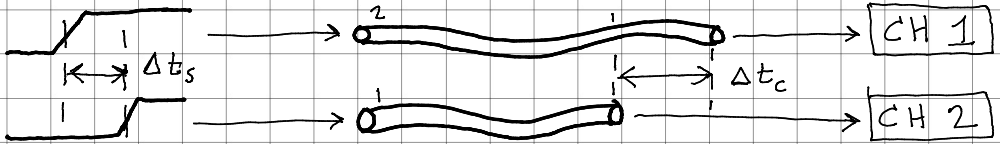
W2AEW
②

①



$$\text{MEAS 1} = \Delta t_s + \Delta t_c$$

②



$$\text{MEAS 2} = \Delta t_s - \Delta t_c$$

SIGNAL SKEW

$$\text{MEAS 1} + \text{MEAS 2} = \Delta t_s + \Delta t_s$$

$$\Delta t_s = \frac{\text{MEAS 1} + \text{MEAS 2}}{2}$$

CABLE SKEW

$$\text{MEAS 1} - \text{MEAS 2} = \Delta t_c + \Delta t_c$$

$$\Delta t_c = \frac{\text{MEAS 1} - \text{MEAS 2}}{2}$$

$$\text{MEAS 1} = 7.321 \text{ ns}$$

$$\text{MEAS 2} = 2.745 \text{ ns}$$

$$\Delta t_s = \frac{7.321 + 2.745}{2} = 5.033 \text{ ns}$$

$$\Delta t_c = \frac{7.321 - 2.745}{2} = 2.288 \text{ ns}$$