



# Intro to Soldering

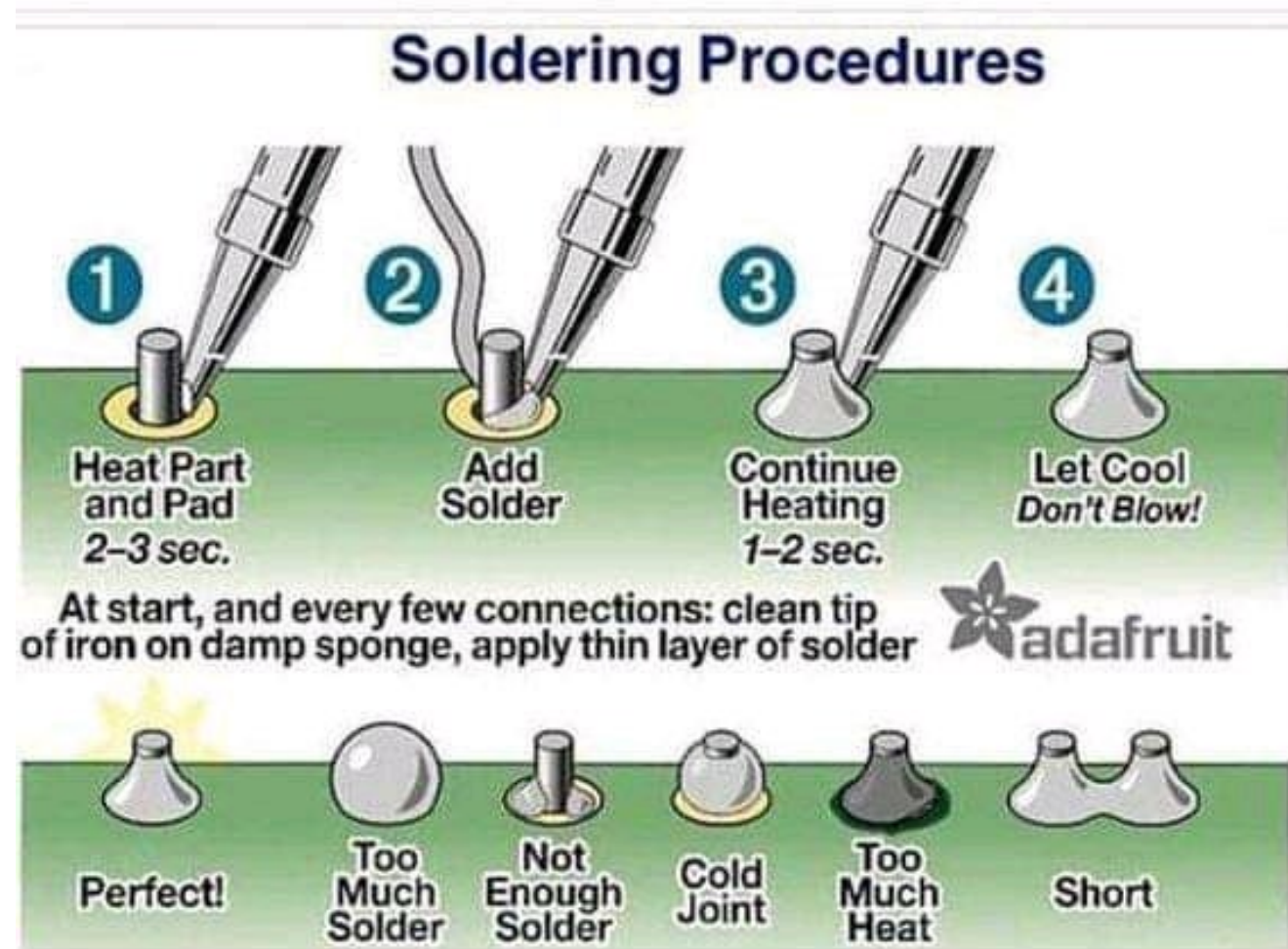
Villanova IEEE

# What is solder?

- Previously lead-based
- Flux core vs. solid wire
- Used as a bonding agent between electrical components and PCB pads



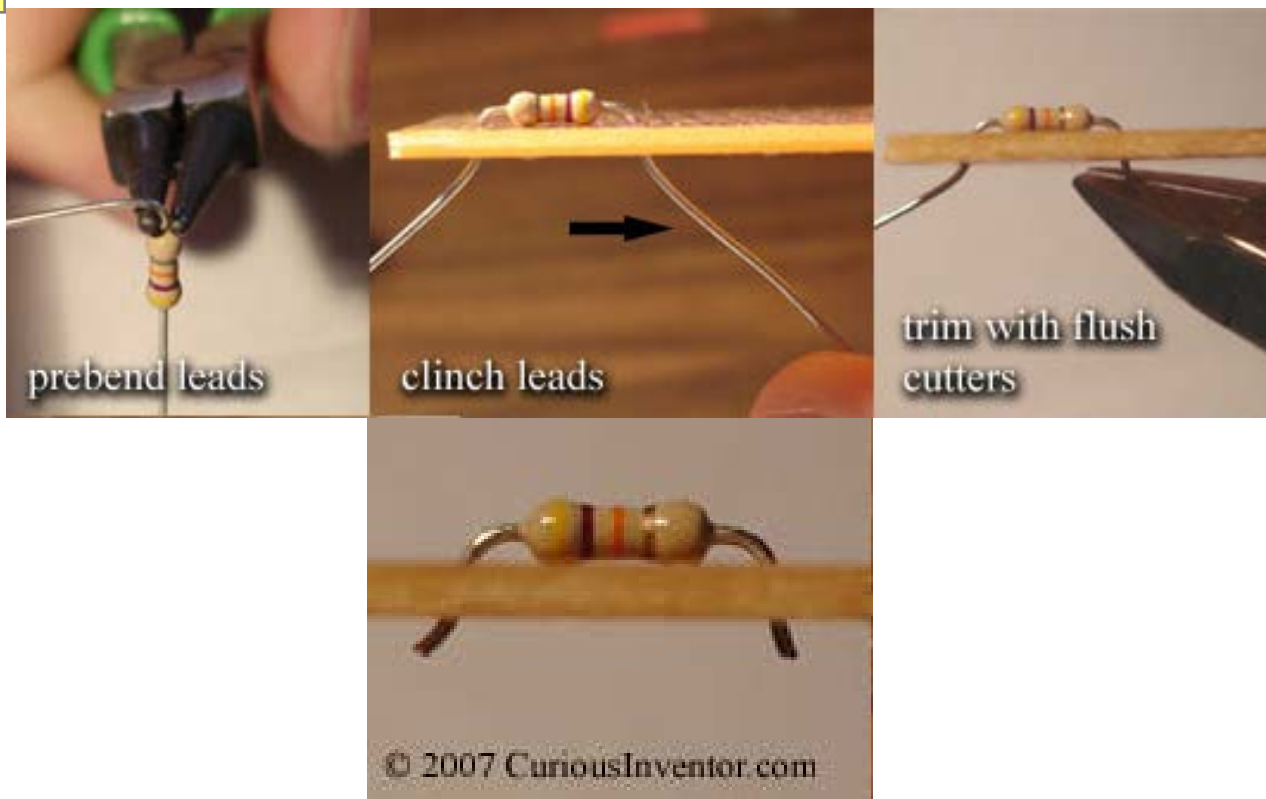
# How to Solder



\*\*Turn Temperature Gauge to ~400 °C







## Active Components

VS



## Passive Components

## Trimming Components

- Passive Components
  - Fine to solder and trim
- Active Components
  - Should be trimmed before soldering
  - Trim to the height of your capacitors
- If you trim too low, reflow the solder by applying heat



## Cutter Types





# Desoldering

- Solder sucker
- Solder wick
- Desoldering gun





# Safety Tips

- Stay ventilated
- Hold the soldering iron by the handle like a pencil
- DO NOT try to catch the soldering iron if dropped. Move out of the way and then pick it up off the floor.
- Goggles/glasses are encouraged.
- Wash hands afterwards, *especially* before eating.





COLOR	1 <sup>ST</sup> BAND	2 <sup>ND</sup> BAND	3 <sup>RD</sup> BAND	MULTIPLIER	TOLERANCE
Black	0	0	0	1 $\Omega$	
Brown	1	1	1	10 $\Omega$	$\pm 1\%$ (F)
Red	2	2	2	100 $\Omega$	$\pm 2\%$ (G)
Orange	3	3	3	1K $\Omega$	
Yellow	4	4	4	10K $\Omega$	
Green	5	5	5	100K $\Omega$	$\pm 0.5\%$ (D)
Blue	6	6	6	1M $\Omega$	$\pm 0.25\%$ (C)
Violet	7	7	7	10M $\Omega$	$\pm 0.10\%$ (B)
Grey	8	8	8	100M $\Omega$	$\pm 0.05\%$
White	9	9	9	1G $\Omega$	
Gold				0.1 $\Omega$	$\pm 5\%$ (J)
Silver				0.01 $\Omega$	$\pm 10\%$ (K)



# Christmas Tree Soldering Resistors

330: R6 → Orange, Orange, Black, Black

1k: R4 → Brown, Black, Black, Brown

2k: R2 → Red, Black, Black, Brown

10k: R1/R3/R5/R7 → Brown, Black, Black, Red