



Resistor Helper

Created by Becky Stern



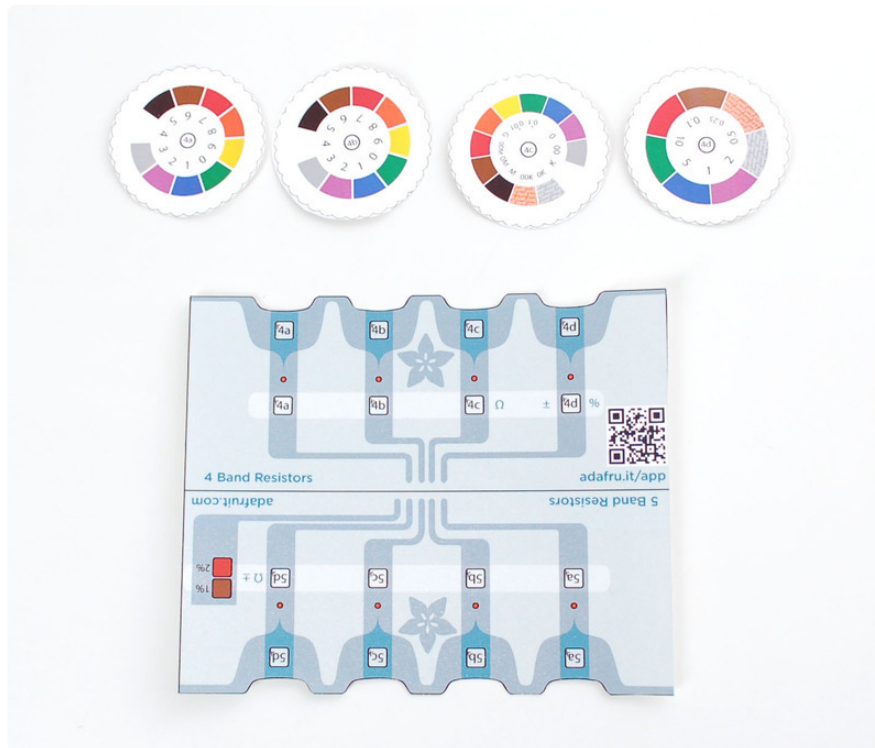
<https://learn.adafruit.com/papercraft-resistor-helper>

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Overview



Papercrafts at Adafruit! We're excited to share this Resistor Helper you can download and make yourself. It's the newest tool in our [Circuit Playground](https://adafruit.com/Circuit-Playground) (<https://adafruit.com/Circuit-Playground>) family– when you can't get to your iPhone or iPad, use paper! One side helps you read 4-band types and the other side takes care of 5-band types. The Resistor Helper is on [Thingiverse as a PDF](https://adafruit.com/Thingiverse) (<https://adafruit.com/Thingiverse>) (with Illustrator editability preserved). Designed by Adafruit with [Matthew Borgatti](https://adafruit.com/Matthew-Borgatti) (<https://adafruit.com/Matthew-Borgatti>). You can also grab the [PDF on github](https://adafruit.com/github) (<https://adafruit.com/github>).

Tools/materials:

- Craft knife
- Cutting mat
- Ruler
- Scissors
- Wire cutters/pliers
- Color printer
- Heavy card stock paper
- 4 paper fasteners

Prep



Download and print out your Resistor Helper in color. It's sized to fit on one 8.5" x 11" sheet. You can get the file from either [Thingiverse \(https://adafru.it/aHg\)](https://adafru.it/aHg) or [Github \(https://adafru.it/aHi\)](https://adafru.it/aHi).



The wheels are paired with small arrows. Cut around the holder and separate your wheel pairs from each other.

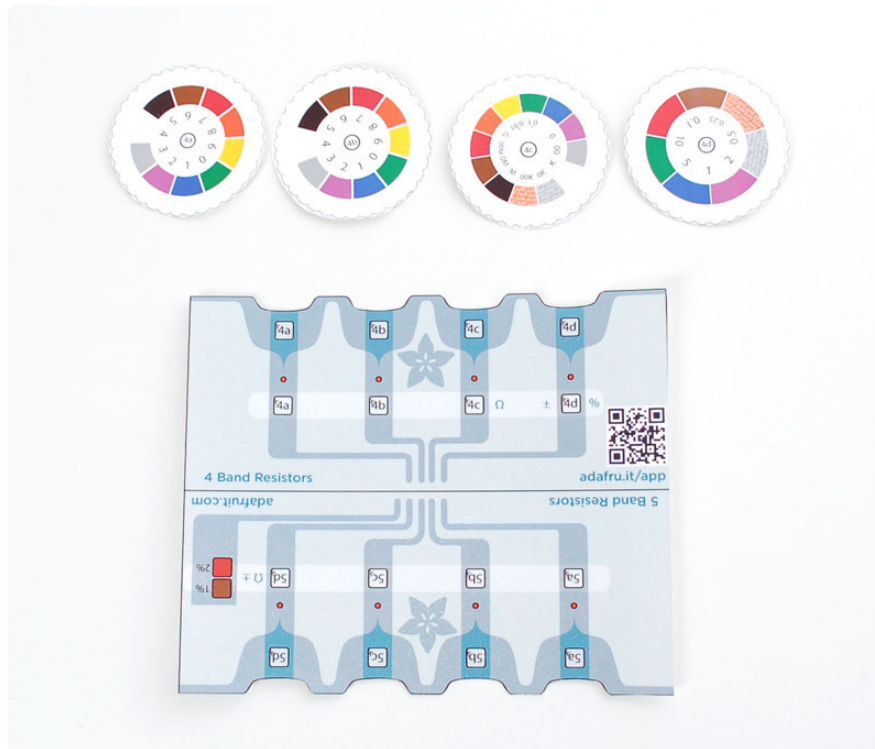
Wheels



Cut out and glue pairs of colored wheels back to back.

Liquid glue can make the paper curl a bit, so we recommend drying the wheels under a heavy book (or warm laptop) for about an hour. Or you can use a glue stick!



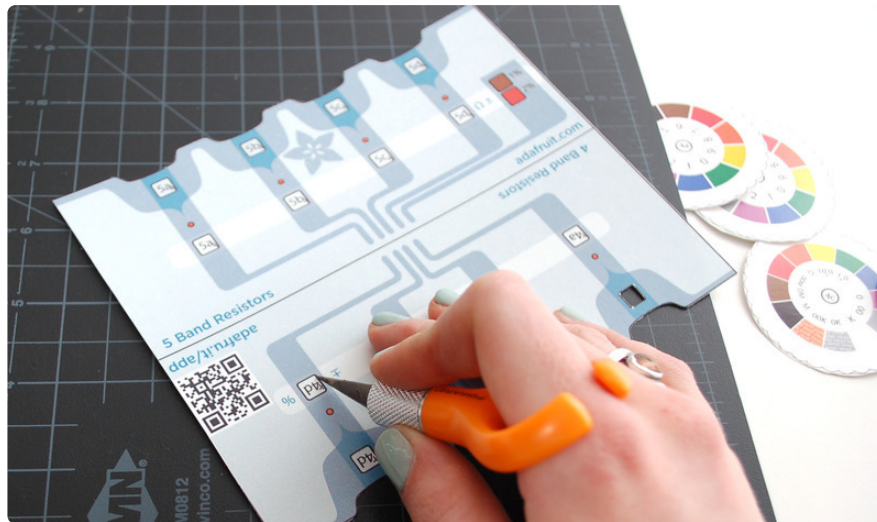


Line up your colored wheels by the letters and numbers – 4a is the first wheel on the 4-band side, for example. Keep track of your pieces because we’re about to cut out the ID numbers!

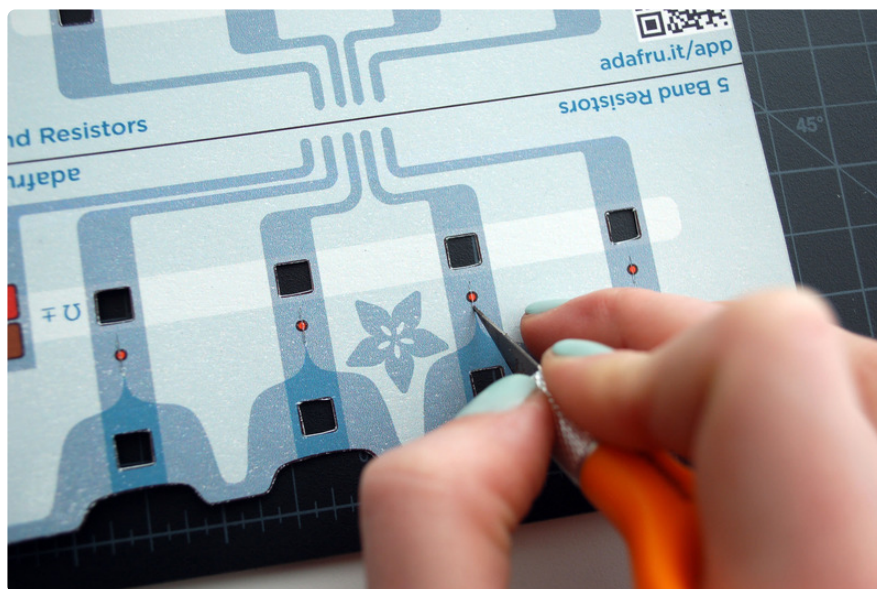


Now carefully cut out the inner circles on your wheels, placing each one back in line before cutting the next one. Of course you can always refer back to this page if you forget which wheel is which!

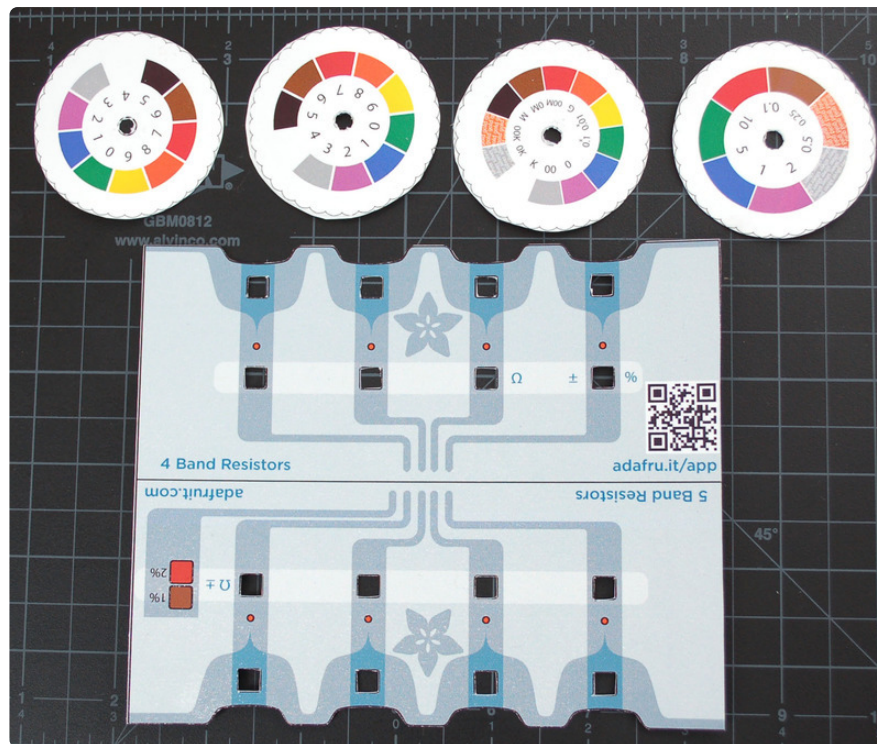
Assembly



Carefully cut out the viewing windows in the holder.



Cut small slits over the red dots on the holder (both sides = 8 cuts). This is where the paper fasteners will anchor each wheel.



Shorten the tabs on four paper fasteners with a pair of clippers. This is optional but we think it looks nicer!

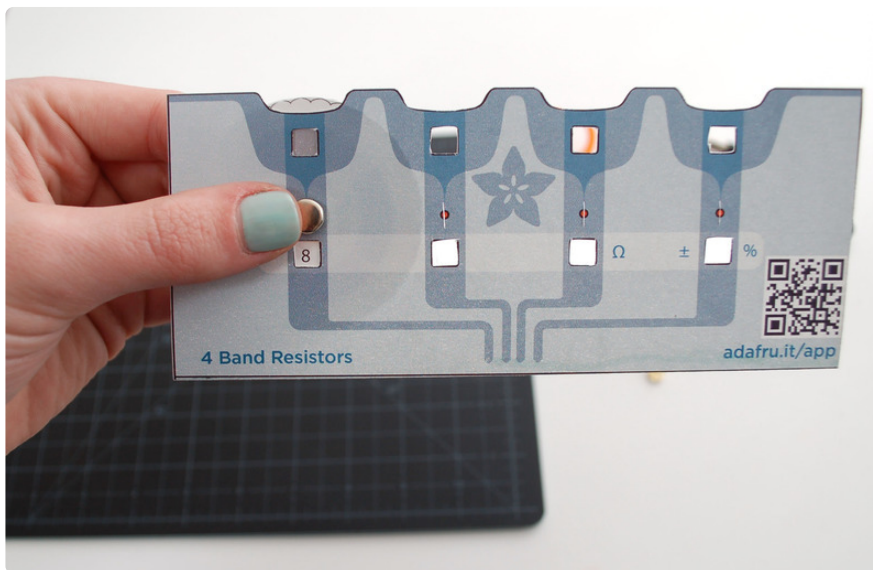




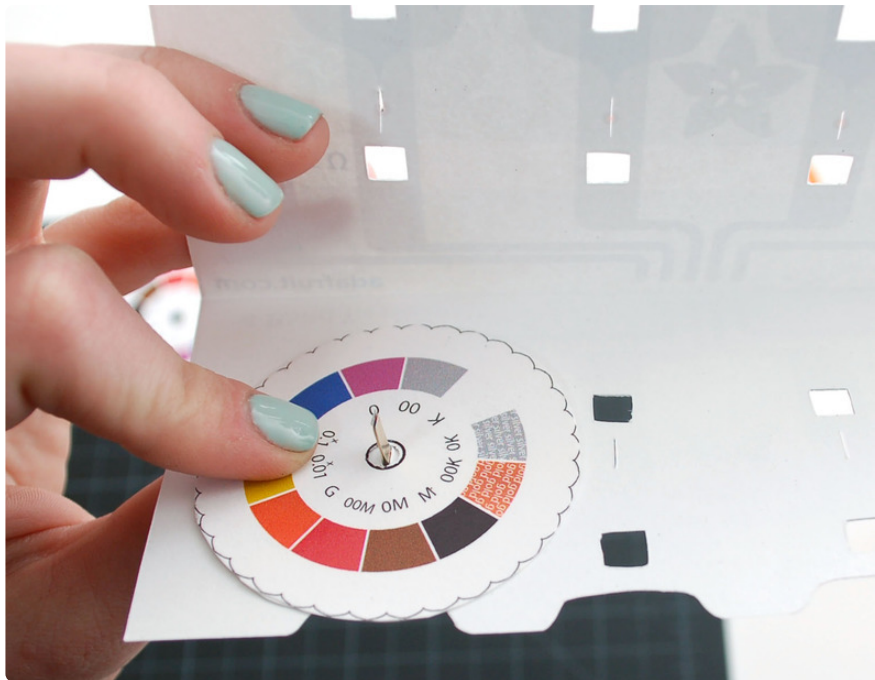
Use a ruler to gently score (but not cut!) the fold line on the holder.



The holder folds easily and neatly after scoring.



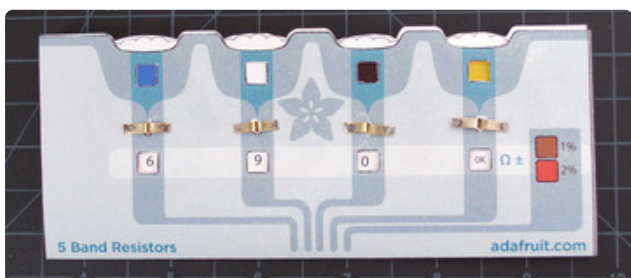
Pierce a paper fastener through a tab on one side of the holder and through a wheel.

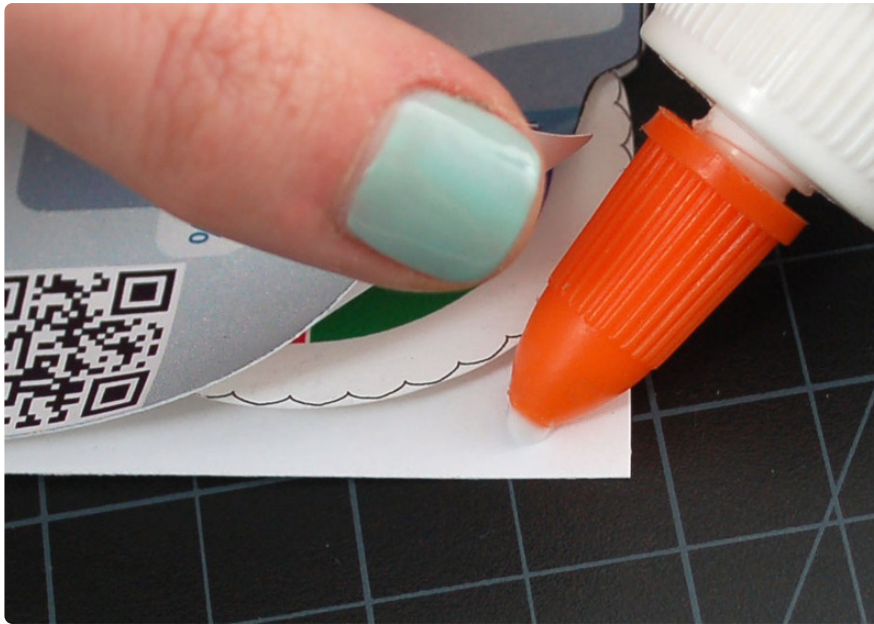


You can assemble the Resistor Helper with either side as the “front,” but we think you’ll use the 4-band side more often.

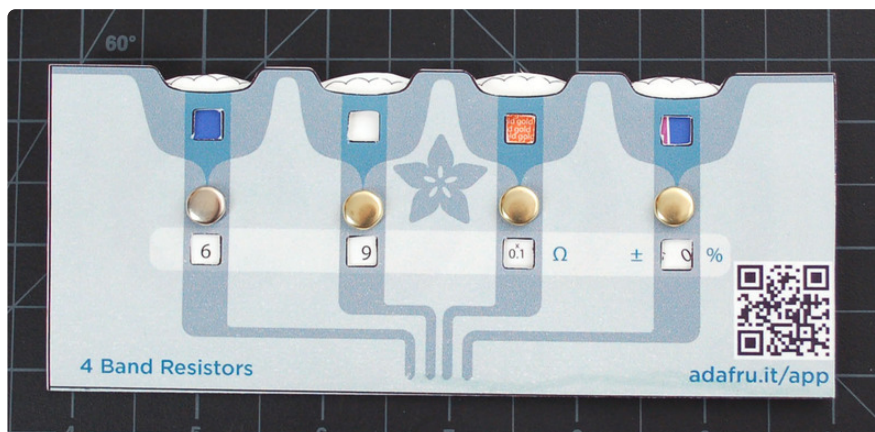


Pierce through the opposite side of the holder and flare out the tabs on the fastener to secure. Repeat with the other three wheels.





Once you've verified you assembled the wheels in the right order, carefully glue together the corners/edges of the holder.



That's it! Use and enjoy!