

## EXPERIMENT: WHICH MATERIALS CONDUCT ELECTRICITY?

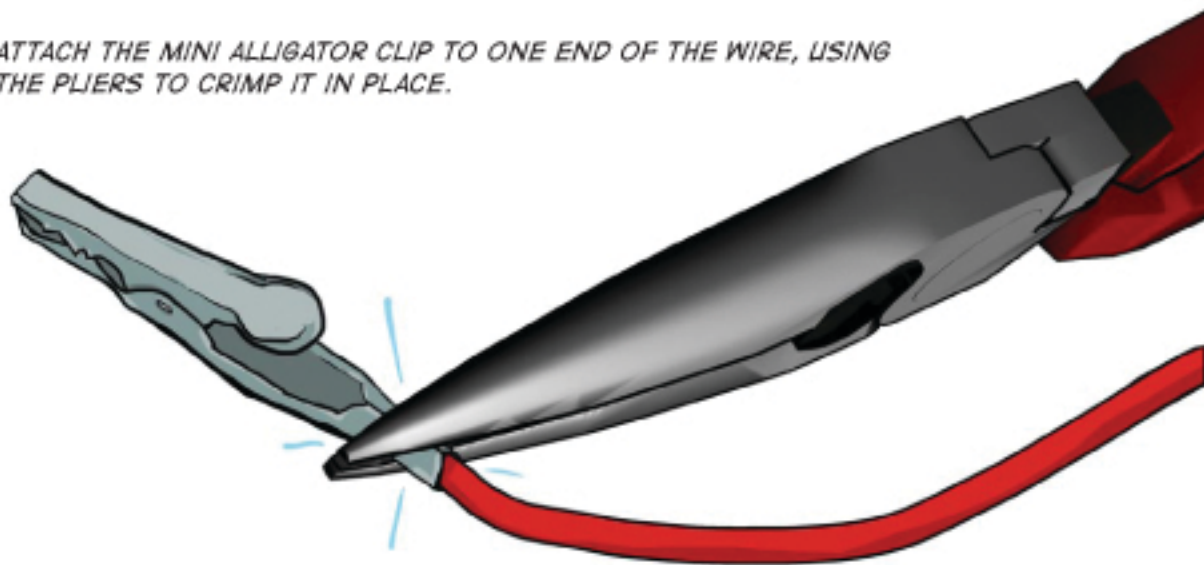
YOU CAN BUILD A SPECIAL BLINKYBUG THAT CAN SENSE WHETHER OR NOT SOMETHING CONDUCTS ELECTRICITY. YOU'LL NEED SOME EXTRA PARTS, WHICH YOU CAN FIND AT A HARDWARE STORE OR HOBBY SHOP (OR ONLINE). YOU'LL NEED:

- ONE SMALL SPOOL OF 22-GAUGE STRANDED WIRE
- ONE MINI ALLIGATOR CLIP
- WIRE CUTTERS AND STRIPPERS
- NEEDLE-NOSE PLIERS



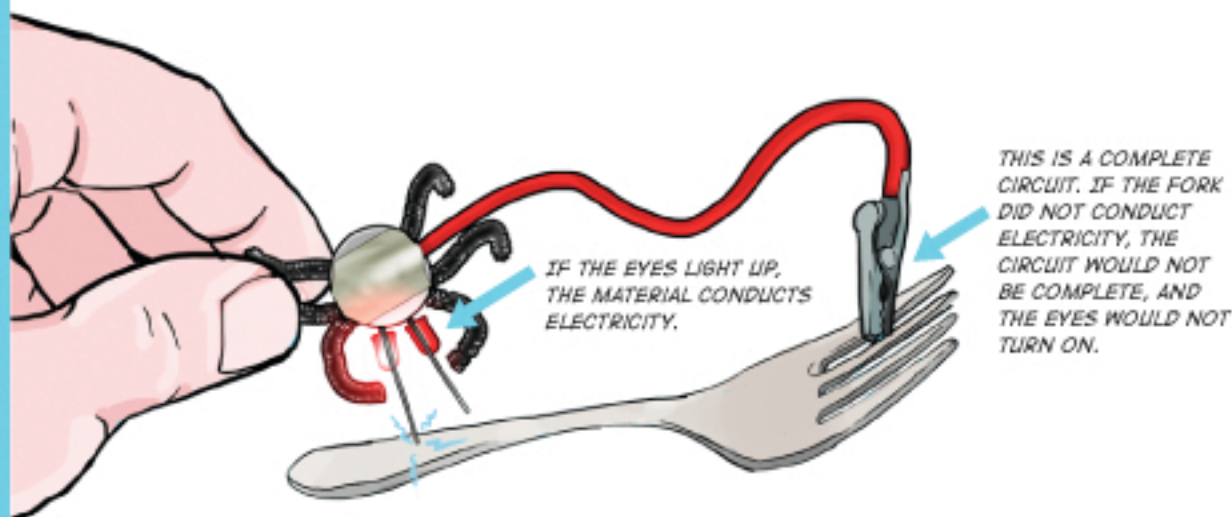
THIS PROCEDURE  
MAY REQUIRE SOME  
ADULT HELP.

1. BUILD YOUR BLINKYBUG AS DIRECTED, BUT LEAVE OFF THE ANTENNAE.
2. CUT AN 8-INCH (20-CM) PIECE OF WIRE, AND STRIP ABOUT  $\frac{1}{2}$  INCH (1 CM) OFF THE ENDS.
3. ATTACH THE MINI ALLIGATOR CLIP TO ONE END OF THE WIRE, USING THE PLIERS TO CRIMP IT IN PLACE.



4. ATTACH THE OTHER END OF THE WIRE TO THE POSITIVE SIDE OF THE BATTERY WITH A PIECE OF ADHESIVE FOIL, JUST AS IF YOU WERE ATTACHING THE ANTENNAE.
5. BEND THE POSITIVE LEADS OF THE LEDS FORWARD. THESE WILL BE YOUR BUG'S SENSORS.

6. TO TEST WHETHER A MATERIAL CONDUCTS ELECTRICITY, ATTACH THE CLIP TO IT, THEN TOUCH THE MATERIAL WITH THE LED LEADS. SEE IF YOUR BlinkyBUG'S EYES LIGHT UP.



7. TEST ALL OF THESE MATERIALS. WHICH ONES DO YOU PREDICT WILL CONDUCT ELECTRICITY?

- SILVER UTENSIL
- STAINLESS STEEL UTENSIL
- PLASTIC UTENSIL
- GOLD JEWELRY
- BRASS FAUCET HANDLE
- PAPER CLIP
- GLASS
- CLAY POT
- COPPER POT OR DISH
- SPONGE
- COIN
- ALUMINUM FOIL
- COMPACT DISC
- PAPER OR WOOD
- WAX CANDLE
- LEAF
- IRON SKILLET

**CAUTION:** IT IS SAFE TO USE YOUR BlinkyBUG IN THE WAY DESCRIBED HERE, BUT NEVER CONNECT IT TO ANYTHING THAT USES ELECTRICITY, OR IS PLUGGED INTO AN ELECTRICAL OUTLET. THIS CAN BE EXTREMELY DANGEROUS. ELECTRICITY THAT COMES FROM AN ELECTRICAL OUTLET CAN SERIOUSLY HURT OR KILL A PERSON.



### WHAT'S GOING ON HERE?

WHAT DECIDES WHETHER A MATERIAL CONDUCTS ELECTRICITY? IT HAS TO DO WITH ITS ELECTRONS, AND HOW THEY ARE ARRANGED AROUND THE NUCLEI OF ITS ATOMS. HINT: METALS TEND TO HAVE THE RIGHT ARRANGEMENT! TO FIND OUT MORE, RESEARCH "ELECTRICAL CONDUCTIVITY."