

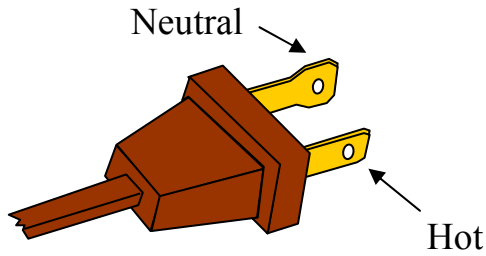
# Plugs & Batteries

Plugs and batteries can go one of two ways. It's easy to get them backwards.

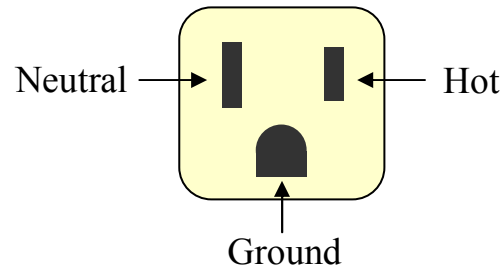
## Which Way Does the Plug Fit?

When it's hard to see a 3-prong receptacle, say when it's behind a sofa, is there a way to know which side has the larger slot that will accept a 2-prong plug's larger neutral prong?

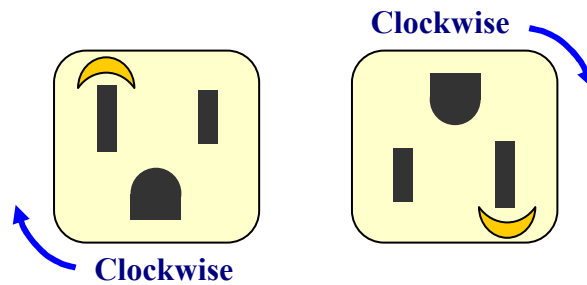
### 2-Prong Polarized Plug



### 3-Prong Receptacle



Imagine the 3-prong receptacle as a tiny face looking out at you. Whether the face is right side up or upside down, start at its open "mouth" and move *clockwise* to its larger "eye." Rotate the plug so the neutral prong fits into the larger eye.



## Why are there 2-prong and 3-prong plugs?

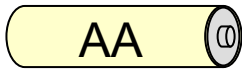
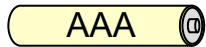
Household electricity flows from the "hot" side of wiring to the "neutral" side. To prevent electricity from a defective appliance flowing through you, the neutral side is also wired to the ground at the main electrical panel, typically via a rod or pipe embedded in the earth. The ground is a great conductor of electricity (think lightning).

Most plastic appliances use a 2-prong polarized plug with a larger neutral prong to make sure you plug it in the correct way. Other appliances (metal-cased; used near or with water; containing sensitive electronics) use a 3-prong plug that has an extra semi-round "ground" prong for further protection.

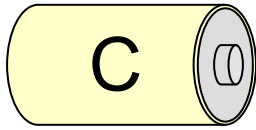
In contrast to the neutral wire, which is the return path for electricity, the ground wire has no electricity flowing through it unless an appliance becomes defective, say through a frayed wire that makes contact with the outer casing and energizes it. This protects you from receiving a potentially fatal shock.

# Battery Polarity

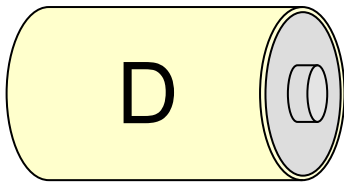
## 1.5 Volt Battery Family



Twice as much current as AAA.



Seven times AAA.



Sixteen times AAA.

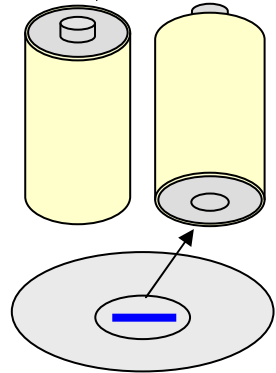
## Which End Is Which?



Imagine a Positive Plus sign fitting inside the Pole on top of the battery.



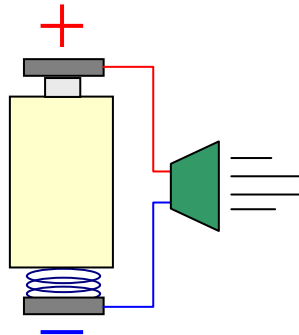
You can feel a battery's positive pole and negative bottom in the dark.



Imagine a flat negative sign painted on the flat bottom of the battery.

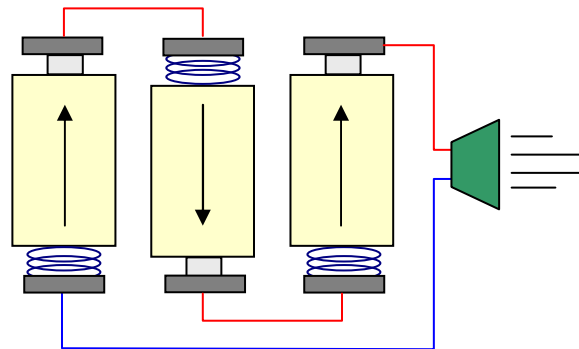
## Which End Goes Where?

The Positive Pole *pokes* the solid contact of a device's battery receptacle.



The flat bottom typically rests on a tension spring or a flexible contact.

In devices that take more than one battery, each battery will typically face the opposite way.



## Your Turn!

*True or False*

- \_\_\_\_\_ The larger slot in a 3-prong receptacle is clockwise from the ground hole.
- \_\_\_\_\_ Metal-cased appliances typically have a 3-prong plug for extra safety.
- \_\_\_\_\_ The protruding pole on a 1.5 volt battery is positive.

Answers: True, True, True