



MIGHTY MATH



Heads Will Roll

Is this coin haunted?
Or is your brain playing tricks?

Set two coins face-up side by side. Now, ask a friend to predict: If you roll one coin around the top of the other so it sits on the other side, like this:



Will the head be right-side-up?
Or upside-down?

Most people will say it will be upside-down. After all, it's only gone halfway around.

Now you can pretend to be magic. Say you can bend space—and you'll prove it! Say the magic word . . . *Abacadabra!* Now roll the coin around the top. What do you know, it's right-side-up!

What?!?!?? How did that happen?
It's all down to geometry.

To understand how the coin turns, first imagine gluing a coin to a bent line, like this.



Now flatten out the line.



Now unstick the coin and roll it halfway around.



And . . . lift up the line again into the curve of the coin shape.

When you roll a coin halfway around another coin, it's doing both of these things at once: the coin is rolling around halfway AND the path is curving. That adds up to a full turn of the coin.