



Copyright © Texas Education Agency, 2012. The following materials are copyrighted © and trademarked ™ as the property of the Texas Education Agency and may not be reproduced without the express written permission of the Texas Education Agency, except under the following conditions:

- 1) Texas public school districts, charter schools, and Education Service Centers may reproduce and use copies of the Materials and Related Materials for the districts' and schools' educational use without obtaining permission from the Texas Education Agency;
- 2) Residents of the state of Texas may reproduce and use copies of the Materials and Related Materials for individual personal use only without obtaining written permission of the Texas Education Agency;
- 3) Any portion reproduced must be reproduced in its entirety and remain unedited, unaltered, and unchanged in any way;
- 4) No monetary charge can be made for the reproduced materials or any document containing them; however, a reasonable charge to cover only the cost of reproduction and distribution may be charged.

Private entities or persons located in Texas that are not Texas public school districts or Texas charter schools or any entity, whether public or private, educational or non-educational, located outside the state of Texas MUST obtain written approval from the Texas Education Agency and will be required to enter into a license agreement that may involve the payment of a licensing fee or a royalty fee.

For more information, contact: Office of Copyrights, Trademarks, License Agreements, and Royalties. Texas Education Agency. 1701 N. Congress Ave., Austin, TX 78701-1494; phone 512-463-9437; e-mail copyrights@tea.state.tx.us

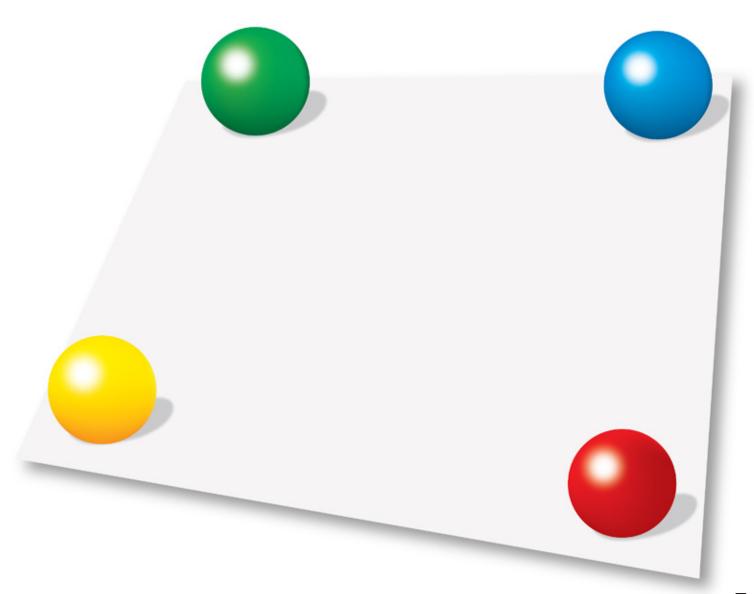
Nicki the Magician is going to do something that magicians should never do. She is going to reveal her magic secrets.



Let's look at her first trick.



Look at these ordinary marbles. Each one is in its own corner.



Ta-da! Look at how these marbles stick together

as they hang!

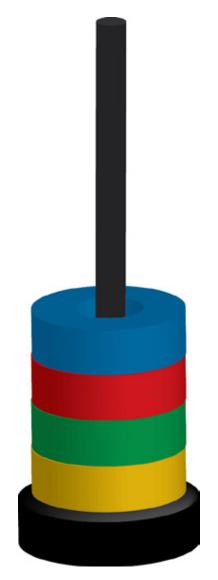


Now for the secret . . . these marbles are actually magnets. Attracting forces pull the marbles toward each other.

Every magnet has two poles—north and south. The north and south poles of the magnets pull together to make this trick work.



Look at these ordinary rings stacked on top of one another. Nothing magical here.



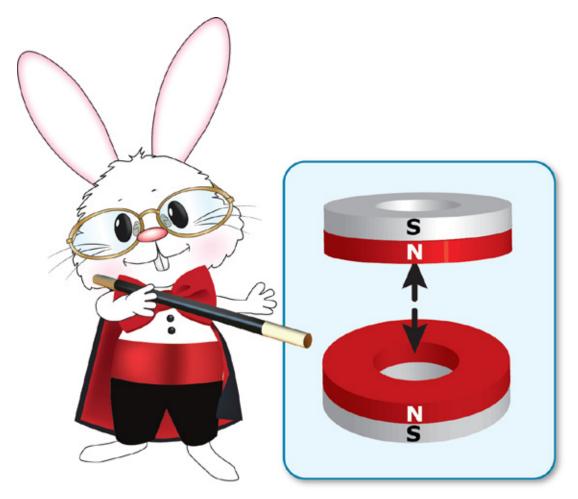
Ta-da! Look at how these rings float.



Is the stand magic? No.

Now for the secret . . . these rings are actually ring magnets. Opposing forces push the rings away from one another.

The poles of the magnets make this trick work. Two north poles push away from each other.

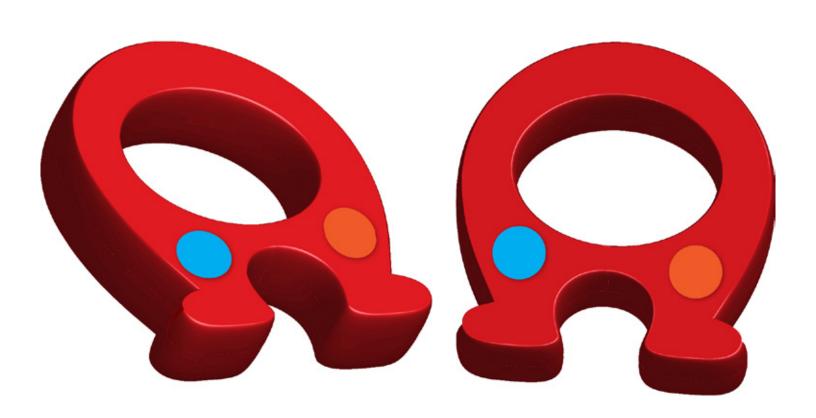


Two south poles do the same thing.

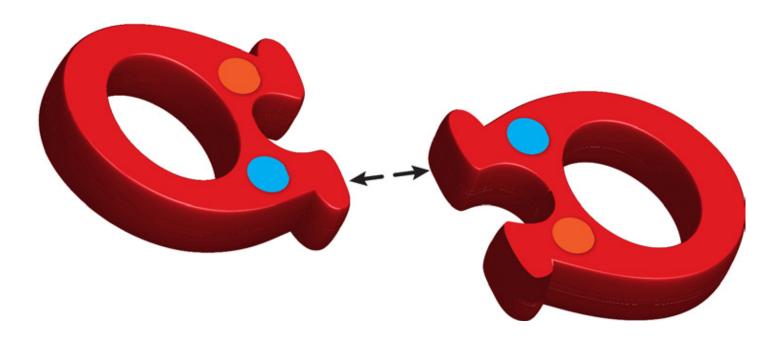
If you want to stack them again, put one north pole and one south pole together.



Look at these ordinary horseshoes. Notice that one side has an orange dot, and the other side has a blue dot. Nothing magical here.

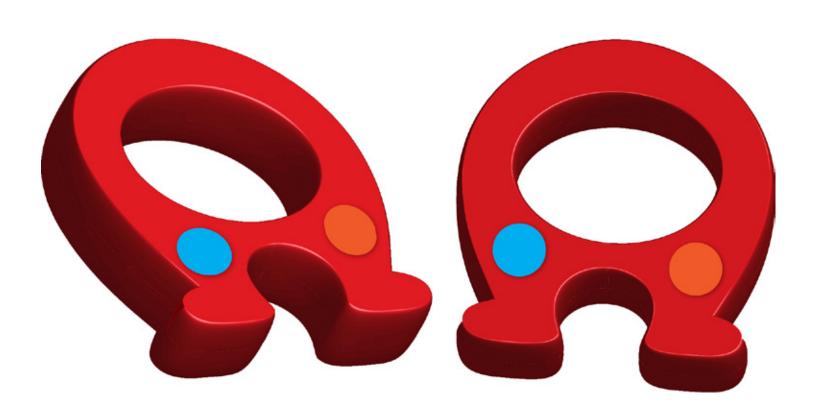


Ta-da! When we match the sides with the blue dots, the horseshoes push away from each other.



Now for the secret . . . these horseshoes are actually horseshoe magnets. Opposing forces push the horseshoes away from each other.

Look at these same horseshoes. Do these look familiar? Nothing magical here.



Ta-da! When we match a blue dot with an orange dot, the horseshoes stick together.



Now for the secret . . . remember, these are actually horseshoe magnets. Attracting forces pull the horseshoes toward each other.

So now you know! Magnets may appear to be magical, but it is really about pulling and pushing forces.

The next time you see these tricks, you will know the real secret behind the magic.

Thanks, Nicki!



