mystery science

Grades K-5
Mini-Lesson + Activity: “How do magicians trick people?”

VIDEO TRANSCRIPT

MINI-LESSON VIDEO 1

[Video Call]

- Hi, Doug!

- Hi, Devyn!

- I have a question for you. How do magicians trick people?

- That's a great question.

The best kind of magic tricks are the ones that make you go, "What? How did this person change a penny to a quarter, and then back to a penny again?" Watch that again. Or here's one of my favorites—this person seems to float or levitate off the floor. How are they doing that? Now, lots of magic tricks like this are things anyone can do. But how do magic tricks work? Well, it probably won't surprise you that in every great magic trick, you are actually being tricked. In other words, what you think is happening, isn't really happening. So then how exactly does a great magic trick, trick us? What's the secret? One of the most common ways magicians trick us is by using, what we call, the art of distraction. In other words, saying something or showing you something that takes your attention away from what they're really doing. Take this simple example—a ketchup packet in a water bottle. It seems like this person can make the ketchup in the bottle go up or down in the bottle using some kind of invisible force from this hand. But now

watch this clip again. This time, keeping in mind that it's a trick and the person performing the trick is distracting you. How are they distracting you? What are they doing? See if you can figure it out. And if you've already figured this one out, have a look at the levitating trick again and see if you can figure it out.

MINI-LESSON VIDEO 2

The ketchup in a bottle trick is actually a great example of distraction. This person is drawing your attention to this hand making you think it's this hand that's somehow magically moving the ketchup packet up and down. But meanwhile, that means you're not as likely to notice what's going on with this hand. Watch again. You see that right there? You can notice the person is squeezing this hand ever so slightly on the bottle, pushing water up or down in the bottle as they squeeze, which is really what's causing the ketchup packet to go up and down. A similar thing is going on with the levitation trick, only instead of distracting you with their hands, this person is distracting you with their feet. They really are lifting their right foot entirely off the ground, but notice how you can't actually see what they're doing over there on their left foot. They've turned their body so that you can't see what's going on with their left foot. If you could, you'd find out that their left foot never fully leaves the ground. Instead, they only lift up their left heel. From your perspective, from where you're looking, this tricks you and makes you think that both feet are somehow magically off the ground. Since so many magic tricks involve distraction, the secret to figuring out how almost any trick works is to observe carefully. Try to notice everything you can. Don't get distracted. It's actually a lot like what a scientist does when they're trying to figure out a tough challenge. That's all for this week's question. Thanks, Devyn, for asking it. Don't forget to check out the special activity my friends and I here at Mystery Science have put together.

ACTIVITY INTRODUCTION VIDEO

Today's activity involves a magic trick we're calling The Great Gold Finder. By the end of the activity, you'll be able to do this trick too. It goes a little something like this. Today, I met this leprechaun who gave me an arrow and told me, "It would lead to his pot of gold.” All I had to do, he said, "was walk in the direction of the arrow and turn it each time I took a step." But I must have got too close to his pot of gold, because he snatched the arrow out of my hand and when I went to snatch it back, now, the arrow seems to turn in the opposite direction each time I take a step. Now, I'll never find the gold. What happened to the arrow? Is it really magic? Well, in today's activity, you'll build your very own Gold Finder and see if you can figure out how this magic trick works. I'll show you how to get started, step by step.

ACTIVITY STEP 1

Find a partner. If you're working alone, that's okay too. When you're done with this step, click the arrow on the right.

ACTIVITY STEP 2

Get your supplies. You'll get more supplies later.

ACTIVITY STEP 3

One person in each pair will cut along the thick black line in the center of the Gold Finder template so that you'll have two Gold Finders. After you cut them apart, keep one for yourself and give the other one to your partner.

ACTIVITY STEP 4

Now fold your Gold Finder along the thin gray line in the middle of the page, like this. Line up the corners of the paper. Then, fold it using your fingernail to make a really good crease.

ACTIVITY STEP 5

Now, it's time to glue. Open your Gold Finder back up and add glue to one of the blank sides. Coat that side with a good amount of glue, but try to keep away from the edges of the paper, so that it doesn't get on your desk. Now, carefully fold the two halves of the paper back together. Gently press down, starting at the fold, like this, so that you don't get any air bubbles.

ACTIVITY STEP 6

Cut along the dotted line on your Gold Finder so that the white border will be the same on all sides, like this. You can try to cut off any dotted line that's left behind, but it's okay if you don't.

ACTIVITY STEP 7

Before I reveal how to do this trick, we're going to give you a chance to watch it again and try to figure out how it works. Now, remember when I did the trick, at first every time I flipped it, the arrow always pointed in the same direction, like this. But by the end of the trick, the arrow pointed in different directions like this. How does this happen? Discuss with a partner. See if you can figure out how it works.

ACTIVITY STEP 8

All right, get your final supply, your Magician's Secret Story. This sheet has pictures that will remind you of the story that goes with the trick.

ACTIVITY STEP 9

You might have noticed these tiny Xs and Os on the side of your paper. Those are really important for you to know about so that you can do this trick. Here, I made one for myself with bigger Xs and Os so that you can see them more easily on the screen. All right, I'll show you how to do this trick. To get started, turn the paper so that the Xs are on the sides and so that the arrow points up, like this. Then, pick it up so that your fingers are on the Xs like this. Once you're holding it like this, go ahead and go to the next step.

ACTIVITY STEP 10

Continue holding the Gold Finder on the Xs and flip it over. The arrow should point in the same direction. Keep flipping it over and tell the first part of the magician's story. I'll read the story one more time to remind you. Just listen, and you'll practice in a minute. Okay, it goes like this. “Today, I met a leprechaun. He gave me this arrow and told me it would lead me to his pot of gold. All I had to do was turn it over every time I took a step, and the direction of the arrow would tell me where to go.” Okay, that's the first part of the story. Take turns with your partner, practicing this part. If it's helpful, I'll put a timer on screen. Okay, time's up. Go to the next step, if you're ready.

ACTIVITY STEP 11

Now you'll pretend to be the leprechaun. After one of the flips, grab the gold arrow from the top like this where there's an O. Now, you can be dramatic and really pull it out of your other hand. When you do this, tell the second part of the magician's story. You can say something like this. "I think I got too close to the gold because the leprechaun snatched the arrow out of my hand." Okay, go ahead and practice this with a partner. I'll set a timer again in case that's helpful. Okay, it's been one minute. Go to the next step, if you're ready.

ACTIVITY STEP 12

Okay, keep holding the top of the sign. And now with your other hand, grab the sign and pull it down a little, like this. You'll now be holding the top and bottom of the sign, marked with the O's. When you do this, tell the third part of the magician's story. You can say something like this. “I quickly grabbed the arrow back.” Okay, it's practice time. Give it a few tries with your partner again. I'll set a timer in case that's helpful. Okay, times up. Go to the next step, if you're ready.

ACTIVITY STEP 13

Now that you're holding the O's, start turning the Gold Finder again, like this. You'll notice the arrows point in the complete opposite direction after each turn. When you do this, you'll tell the final part of the magician's story. You can say something like this. "I grabbed the arrow back, but the leprechaun must have changed the arrow because now every time I take a step, it tells me to go in the opposite direction. Now I'll never find the gold." Okay, that's the last part of the trick. I'll set a timer one last time so that you can practice. Okay, time's up. Go to the next step, if you're ready.

ACTIVITY STEP 14

So now you know how to do the trick. Notice how all we did is change our hands from being on the sides of the sign at the beginning to beginning at the top and bottom of the sign at the end. The key to this trick is when you grab the sign, like this. That's the distraction so that people don't notice that you've changed the way you're holding it. Now that you know this, go to the next step to finish practicing.

ACTIVITY STEP 15

So now you know how to do our magic trick. On the worksheet are pictures reminding you what to do, so that you can practice on your own. Don't worry if you don't get it perfect right away. The best magicians sometimes spend hours practicing, but when you're ready, you can use this trick to fool your friends. Have fun and stay curious!