mystery science

Grades K-5
Mini-Lesson + Activity: "How do flowers bloom in the spring?"

VIDEO TRANSCRIPT

MINI-LESSON VIDEO 1

Hi, it's Doug! Flowers are known for being pretty, but when I think about them, I also like to think about the extremes. Like, what are the biggest flowers in the world? Well, one of them is this. It's called the Rafflesia flower, and it's found in southeast Asia. You can see it's absolutely huge. Someone named Yahya has another question about flowers. Let's give him a call now.

[Video Call]

- Hi, Doug!

- Hi, Yahya!

- I have a question for you. How do flowers bloom in the spring?

- That's a great question.

In early springtime, you might have noticed green leaves or stems start growing, little by little, each day. But the amazing thing about flowers is that it's like one day, poof! Almost like magic, it's not just leaves and a stem anymore, but a flower pops open on top. And notice, it's not just small plants either. Many trees have flowers that bloom in springtime too. How do plants do this? I think one thing that makes this question especially interesting is that plants aren't exactly famous for moving or doing anything exciting that catches our attention, the way animals do. Animals have muscles, and muscles are what enable animals to move around all over the

place. In fact, we even use part of the word animal in words like animate or animation, words that involve movement. But plants really do move, as you can see when you watch them in a sped-up video. They not only open up their flower petals, they twist and reach for the Sun. Some plants even capture bugs, like this Venus flytrap, and yet, unlike animals, plants have no muscles. If plants don't have muscles, then how do they move? How do plants do things like make flowers pop open in springtime?

MINI-LESSON VIDEO 2

One important clue is to notice what else is happening in springtime when most flowers bloom. Springtime might make you think of sunlight and warmth, and plants do need sunlight. But there's something else that happens with the weather in spring, and that's this—lots of rain. It's usually after springtime rains that we see so many flowers start blooming. You probably know that plants soak up water from their roots. Like all living things, plants need that water to live and grow, but could it be that plants also use water in order to move? It's maybe a little weird to think of water as something that can cause movement, but forget plants for a minute. Think of a familiar situation like this. When this paper towel gets dipped into a cup of water, notice how the water moves up the paper towel. Or in this video, someone has put food coloring in water, and just by dipping a paper towel in each cup, the water slowly moves from cup to cup. Water has some surprising properties. It can move up surfaces like a paper towel. Or, as you might have seen if you've ever played with little toy sponge capsules like these, water even has the power to make certain things expand or swell. One way to see for yourself the power of water in plants is to notice what happens when you water a plant that's been really dry. In this sped-up video, you can see how the plant stems were drooping down, but after the plant gets watered, the stems stand up straight again. So even though plants don't have muscles, plants can soak up

water from the ground. Then use some of these surprising properties of water to make some of their parts move. That's all for this week's question. Thanks, Yahya, for asking me it. Now after this video's done playing, my friends and I here at Mystery Science have created a step by step activity where you can explore one of these surprising properties of water and really see for yourself how this works. I hope you'll try it. Have fun and stay curious!

ACTIVITY INTRODUCTION VIDEO

In today's activity, you're going to create a paper flower that you'll decorate, then place inside a card. This card makes a great surprise for any special person in your life, but the paper flower also has a surprise waiting for you. Check this out. When you place them in water, they bloom. I'll show you how to make one, step by step.

ACTIVITY STEP 1

Get these supplies. You'll get more supplies later. When you're done with this step, click the arrow on the right.

ACTIVITY STEP 2

Let's start with folding your card. Now, older grades: your card looks a bit different than this, but you're going to fold it the same way as the younger grades. First, we're going to fold along this thick black line right here. And here's how I suggest you do that, flip your paper over so that it's face down on your desk like this. And then, line up the corners of the paper, like this, and fold it in half. Once you do that, use your fingernail to make a good crease. Now, we're going to fold it in half again along this line. And, again, line up the edges before folding it, just like this here.

And once you do that, remember to use your fingernail to make another good crease, just like that. Okay, when you're done with this step your cards will look like this.

ACTIVITY STEP 3

Before you make your flower, decide who you'll give your card to. Write their name at the top of your card, and remember to sign your name at the bottom. You'll put your flower here later. For now, color in the leaves and stem. I'll set a timer in case that's helpful. Okay, time's up. If you're ready, go to the next slide.

ACTIVITY STEP 4

Okay, your card is ready for a flower, so put your card aside for a moment, and get your Flower Power printout. Everyone will make just one flower for right now, so you'll cut out just one square. Get your scissors and cut along the thick dotted lines of one of the squares, like this. Now older grades, again, your sheet looks a little different, but do the same thing. All right, when you're done with this step, you should have one square with a flower in the middle just like this.

ACTIVITY STEP 5

Okay, now's the time to color your flower. Flowers come in all sorts of colors and patterns, so feel free to get creative. Oh, and it's totally okay if you color outside the lines because you'll be cutting off the gray parts later. Now, you don't need to spend too long on this step, so I'll set a timer on the screen in case that's helpful. Take a few moments now to think about what colors you want to use, and then I'll start the timer while you color. Okay, the timer's done. If you're ready, go to the next step.

ACTIVITY STEP 6

Now, you're going to fold your flower in half, along the thick black line. Here's how I suggest you do that. Place your flower face down on your desk, like this. Then line up the corners, like this, and press down in the middle to fold it. Now, when you do that, use your fingernail to make a good crease.

ACTIVITY STEP 7

Okay, we're going to fold your flower a few more times, and this will make cutting easier later on. The next two steps are a little tricky so I suggest, watch what to do first and then follow along. Okay, first you'll find the Sun in the corner of your paper. And you'll bring that corner up until it meets the edge of the dark gray box, like this. Okay, once you do that, then you'll press the paper down to fold it. And as usual, I suggest using your fingernail to make a really good crease, just like this.

ACTIVITY STEP 8

Okay, now for the other tricky part. Again, I suggest watching this first, then trying it on your own. Bring the top dark gray corner down, like this, until it meets this line. Then, press down to fold it. And remember to run your fingernail along the fold to make a really good crease, like that. Okay, your flower should now look like this.

ACTIVITY STEP 9

Okay, your flower is almost ready. You're going to pick it up and you're going to cut on the two dotted lines, just like this. Now you'll be cutting through a lot of pieces of paper. It's easiest if you

can cut this line first and then you can turn it so it's easier to cut this second dotted line. Okay, after you cut it, carefully unfold your paper to reveal your flower.

ACTIVITY STEP 10

Okay, now get ready for your flower to bloom. Make sure the colored side of the flower is facing you, and bring the point of each petal to the middle circle, and fold it down, just like you see here. You'll repeat this for each petal. When you're all done, your flower should look like this.

ACTIVITY STEP 11

Now it's time to put your flower in the card. Get a sticker. This is your final supply. Fold the sticker in half so that both sides are sticky on the outside, like this. Then press one of the sticky sides on the back of your flower, right here in the middle. It should look something like this. Then you'll take that and press that onto your card in the gray circle. Make sure it doesn't fall out. Now, your card is done.

ACTIVITY STEP 12

When you deliver your card, you'll get to see your own flower bloom, but for right now, your teacher may have some water and an extra flower set up so that you can watch what happens when a paper flower is placed in the water. If you don't have this setup, that's okay. We have a video that shows what happens on the next slide.

ACTIVITY STEP 13a

Discuss this question. Older students: write your answer on the back of your card.

ACTIVITY STEP 13b

So here's an idea we had. We noticed that the middle of the paper flower gets wet first, and then that water travels upwards towards the petals, just like how water can travel upwards in a paper towel. As the water is doing all this, it's probably causing the paper to swell up a bit. So when it gets to the folds of the petals, it might be that the swelling expands the folds, causing the petals to open up.

ACTIVITY STEP 14

If you have time, you can make a few more flowers. You can cut out the other flowers on your sheet, or you can make your own. Carefully observe to see which flowers bloom the fastest, and which flowers bloom the slowest. If you don't have time, you can take the rest of your flower blooms home and experiment later. But keep one flower in your card for later, so that you and the special person you made your card for can watch it bloom together. Have fun and stay curious!