

# ClubZOOM Launch

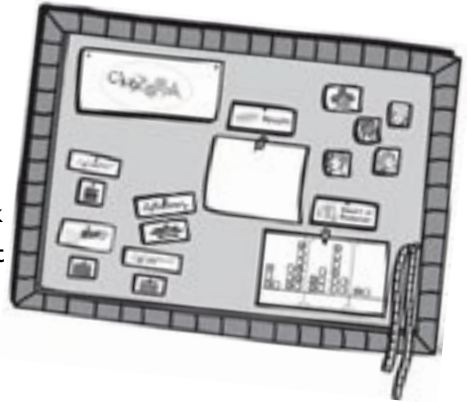
**Welcome to ClubZOOM! It's time to launch your first meeting. Before starting the Thaumatrope activity, be sure to introduce your kids to all of the exciting parts of ClubZOOM.**

- **Give a Sneak Preview.** Show the Welcome Segment on the ZOOMvid or read the Welcome Letter (see end of section) for an official greeting from the ZOOM cast. Then explain that ClubZOOM happens over six or more meetings, during which ClubZOOMers can try out fun science activities that were sent to ZOOM by other kids. Tell them about the final meeting, where they'll have a party to celebrate all they've learned.
- **Make Kids Official ClubZOOMers.** Hand out the ClubZOOM member cards. The kids can sign their names, attach the cards to pieces of yarn or string, and wear them at each meeting. You might want to collect these at the end of each meeting so kids won't lose them. If you need more member cards, photocopy the template (see the Appendix) on heavy cardstock paper.
- **Introduce the ClubZOOM Stickers.** Explain that there is a ClubZOOM sticker to collect for each activity they complete. The stickers can be put on the back of their member cards.
- **Introduce ZOOM.** If some of the kids aren't familiar with the TV show, have other kids who watch it describe what they like best about ZOOM, or show some of the episode that's on the ZOOMvid. (You can also show an entire episode on a different day.)

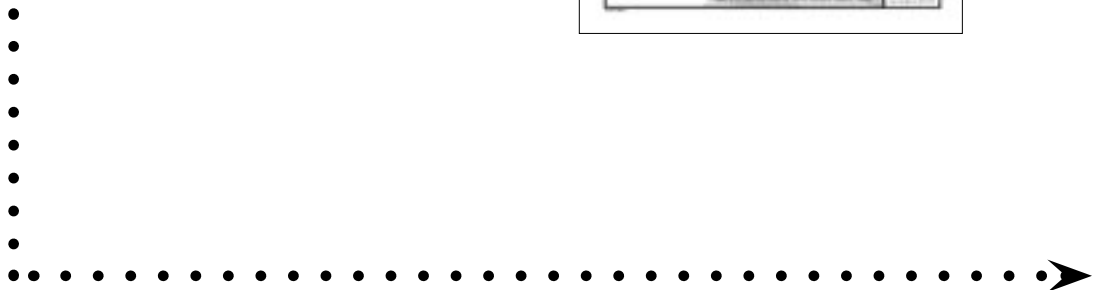




- **Present the ClubZOOM Board.** Explain that the Board is a place where kids can post their ideas and activity results. It's also a place to find other fun ZOOM activities, such as jokes, tricks, and brainteasers. They can post their own jokes, tricks, or brainteasers, too. Point out that the Board changes weekly, so they should check it often. Introduce the Square or Rectangle activity and explain that it will remain on the Board throughout ClubZOOM. They can add data any time and analyze patterns and changes along the way.



- **Do an Activity.** The best way to get to know ClubZOOM is to do an activity. The first activity (**Thaumatrope**) is only about 20 to 30 minutes, giving you plenty of time to introduce ClubZOOM. All of the information you need to run the activity is on the following pages.



# Thaumatrope

## Overview

Science Concept	Try It Out	ZOOMon: Change One Variable	Share Results
<b>Persistence of vision</b>	<b>Build a toy that makes two pictures blend into one.</b>	<ul style="list-style-type: none"> <li>• The speed at which you spin the pictures</li> <li>• The way the pictures are drawn</li> </ul>	<ul style="list-style-type: none"> <li>• How did you find the right speed at which to spin your thaumatrope?</li> <li>• Why could you see two pictures at once?</li> <li>• Why do you think some pictures worked better than others?</li> </ul>

## Science Scoop



A thaumatrope (THO-ma-trope) is an animation toy that moves two pictures faster than your eyes and brain can separate them. As a result, two separate pictures appear to blend into one. For example, if you spin a card that has a drawing of a fish on one side and an empty fish bowl on the other side, you will see an image of the fish *in* the bowl when you rotate the card quickly.

Here's how it works: When you look at an object, your eyes and brain hold on to an image of the object for about one-tenth of a second, even if the object has been removed from view. This is called **persistence of vision**. In the fish-in-a-bowl example, you see the fish first. Your eyes and brain retain an image of the fish when the bowl comes into view. As this second picture is registered by your eyes, your brain blends the two images into one.

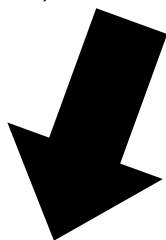


You have to spin the pictures at just the right **speed** to create the optical illusion. If the pictures are spinning too slowly, you will have time to see that separate pictures are moving before your eyes. If the pictures are spinning too quickly, you'll see just a blur.

The **way you draw** the pictures also affects what you see. It's important for the two pictures to align with each other in such a way that they appear to be one picture when they merge. For example, the fish needs to be centered within the empty bowl to look like it's inside the bowl.

## Set Up

- Watch the Thaumatrope video segment, and try the activity yourself before the meeting.
- Make a sample thaumatrope to use for demonstration. Draw your own or use the template (see end of section).
- Post the new ClubZOOM Board activities (see end of section).
- Set up a VCR and monitor to show the Thaumatrope video segment (optional).
- Collect materials for the ClubZOOM Box. For each kid, make copies of the Thaumatrope activity handout and the Stay Tuned message (see end of section).



Materials	
<p><b>For Each ClubZOOMer</b></p> <ul style="list-style-type: none"> <li>• 3" by 5" white, unlined index card</li> <li>• pencil</li> <li>• markers</li> <li>• rigid plastic straw</li> <li>• Thaumatrope handout (see end of section)</li> <li>• Stay Tuned (see end of section)</li> </ul>	<p><b>To Share</b></p> <ul style="list-style-type: none"> <li>• clear tape</li> <li>• ZOOM Challenge (see end of section)</li> <li>• magazines (optional)</li> <li>• glue (optional)</li> </ul> <p><b>Have extra materials available so the kids can test different variables.</b></p>

## Find Out More

### Light and Illusion

Gage, Simon and Michele Claiborne. New York: Dorling Kindersley Publishing, Inc., 1995.

This activity pack includes a guidebook, templates, and other materials to help kids make their own optical illusions.

### Visual Magic

Thomson, David. New York: Dial Books for Young Readers, 1991.

This colorful book of optical illusions includes 3-D glasses and a spinning disk for special effects, as well as simple science explanations.

### Thaumatrope Optical Illusions

[microscopy.fsu.edu/primer/java/scienceoptics/thaumatrope/thaumatrope.html](http://microscopy.fsu.edu/primer/java/scienceoptics/thaumatrope/thaumatrope.html)

Kids can click on these computer-generated thaumatropes to see pictures such as a bird in a cage and a cat wearing sunglasses.

### Flip Sticks

[http://www.exploratorium.edu/science\\_explorer/flipstick.html](http://www.exploratorium.edu/science_explorer/flipstick.html)

This site has printable thaumatrope patterns and an explanation of how they work.



# Run the Meeting

## 1 Kick Off the Meeting (10-15 minutes)

Welcome the kids and introduce what they'll be doing during ClubZOOM. (See the ClubZOOM Launch Tips on page 39.)

Then ask for a volunteer to read the ZOOM Challenge.

## 2 Try It Out (10 minutes)

- ◆ Begin by showing the kids a sample thaumatrope. Point out the two pictures, one on each side of the card, and ask the kids to predict what they will see when you spin the card. Then spin the card and ask them what they observed.
- ◆ Explain briefly how the illusion works and introduce the concept of **persistence of vision**. Then brainstorm with the kids about the different kinds of pictures they can draw. (Some good examples include a bird on one side and an empty cage on the other, an ice cream cone and a scoop of ice cream, or an open and a winking eye.)
- ◆ Distribute the activity materials and assist the kids as they make their own thaumatropes.
- ◆ Ask the kids to exchange their thaumatropes and to compare their results. Remind them to make predictions before they try it out.

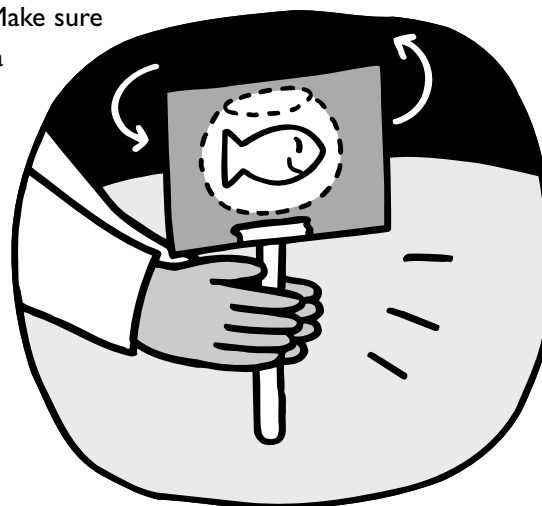
## 3 ZOOMon (5 minutes)

Have the kids think of things they can change about the thaumatrope. For example, what happens if they **spin it slowly**? What happens if they **spin it quickly**? What **kinds of pictures** work best? Make sure they change only one variable at a time. Ask them to make a prediction before they test it out.

### Activity Tips



- To simplify this activity for younger children, make copies of the template (see end of section). The kids can color the template and then test it out.
- Encourage the kids to keep their pictures simple, and suggest that they first use pencils to sketch their drawings.
- Your kids might want to glue pictures of themselves or pictures cut from magazines on one side of the index card and draw sunglasses, hats, or beards on the other.
- To help the kids align their pictures on each side, have them hold up the index card to a ceiling light.
- Kids can make their thaumatropes sturdier by stapling the index cards to the straws.



## 4 Share Results (10 minutes)

Have the kids draw conclusions about how their thaumatropes worked.

- **How did you find the right speed at which to spin your thaumatrope?**
- **Why do you think some pictures worked better than others?**
- **Why could you see two pictures at once?**

Have the kids write or draw their results on the back of their activity handouts. If they have difficulty, use the questions above to guide them. Then have the kids post their results on the ClubZOOM Board.

### Send It to ZOOM!



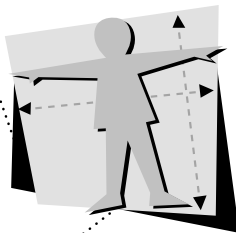
Remind the kids to send their results and ideas about **thaumatropes** to ZOOM. They can do this by mailing their activity handouts to ZOOM. Or they can visit the ZOOM Web site at [pbskids.org/zoom/sendit/do.html](http://pbskids.org/zoom/sendit/do.html)

## 5 Wrap Up (5 minutes)

Hand out the activity stickers and the Stay Tuned coded message for the next meeting.

### Don't Forget Square or Rectangle!

Introduce the Square or Rectangle activity and have the kids start by **measuring themselves**. (See [page 29](#) for directions.)



## ZOOM Links

Visit the Zoom Web site and continue experimenting with **persistence of vision** and **optical illusions**:

### Afterimage

[pbskids.org/zoom/phenom/afterimage.html](http://pbskids.org/zoom/phenom/afterimage.html)

Stare at a picture and see a “ghostly” image.

### Magic Disc

[pbskids.org/zoom/phenom/magicdisc.html](http://pbskids.org/zoom/phenom/magicdisc.html)

Try this optical illusion with spinning plastic cups.

### Phenakistoscope

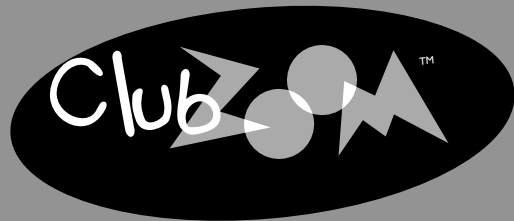
[pbskids.org/zoom/sci/winker.html](http://pbskids.org/zoom/sci/winker.html)

Create more moving pictures with a phenakistoscope.

### Thaumatrope

[pbskids.org/zoom/do/taumatropes.html](http://pbskids.org/zoom/do/taumatropes.html)

Visit the online version of Thaumatrope.



# Welcome

Hey ClubZOOMers,

**Welcome** to ClubZOOM! **Sign** your member card and **join** kids from across the country who have become **official** ClubZOOM members.

In ClubZOOM, you'll learn to **speak** Ubbi Dubbi™, **crack** secret codes, and **try out** lots of the same activities we do on the show.

After you've tried the activities, **send** your **results** and any other **ideas** you have to ZOOM. If you do, we'll send you a copy of ZOOMerang, a newsletter filled with even more activities, games, recipes, and jokes. So send an e-mail to the ZOOM Web site at **pbskids.org/zoom** or send a letter to ZOOM, Box 350, Boston, MA 02134.

And remember, you can **watch ZOOM** on your local PBS station.

**Have fun!**

*Kaleigh*

*Eric*

*Buzz* ⚡

*\* Caroline \**

*King*

*\* Rachel \**

*Frances*



[pbskids.org/zoom](http://pbskids.org/zoom)



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# Challenge

Dear ClubZOOMers,

Kids from the St. Pierre School in Quebec,  
Canada, sent in this challenge for you:

Try to make **two pictures** look like they  
are **one picture**.

Good luck!

[pbskids.org/zoom](http://pbskids.org/zoom)



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# Thaumatrope



## What You Need

- 3" by 5" white, unlined index card
- pencil
- markers
- a plastic straw
- clear tape



## Science Scoop

When you spin the thaumatrope, the pictures move so quickly that your eyes and brain can't see them separately. Your brain holds on to each picture for a fraction of a second. This is called **persistence of vision**. So, while your brain is still holding on to the first picture, the second picture comes into view. As a result, your brain blends the two pictures into one.

**A thauma-what?** Say "THO-ma-trope" and you've got it right. A thaumatrope is an optical illusion toy from the 1800s.

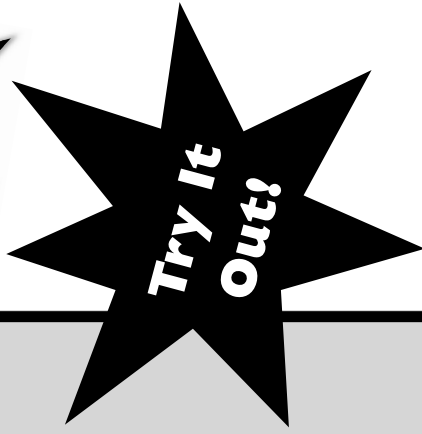
**1 Draw one part** of a picture on one side of an index card. Then **draw the other part** of the picture on the other side. The pictures should be connected (like a fish and a bowl or a flower and a pot).

**2 Tape** the card to a straw.



**3 Spin** the straw between your hands. What do you **see**?

Sent in by kids from the St. Pierre School in Quebec, Canada



Now it's time for you to **experiment**. What happens when you spin the straw more **quickly** or more **slowly**? Try drawing **different pictures**. What kinds of pictures work best? Choose **one thing** to change (that's the variable) and make a **prediction**. Then **test** it out and send your results to ZOOM.

# Send your ideas to ZOOM!

Dear ZOOM,

Here's what happened when I made a thaumatrope:



Write or draw here.



## Send an e-mail:

[pbskids.org/zoom/sendit](mailto:pbskids.org/zoom/sendit)

Then instantly print out a copy of ZOOMerang—a news-letter filled with cast trivia and lots of fun ZOOM activities.



## Or, send a letter:

ZOOM  
Box 350  
Boston, MA 02134

Don't forget to include your name and return address so we can send you a copy of ZOOMerang.

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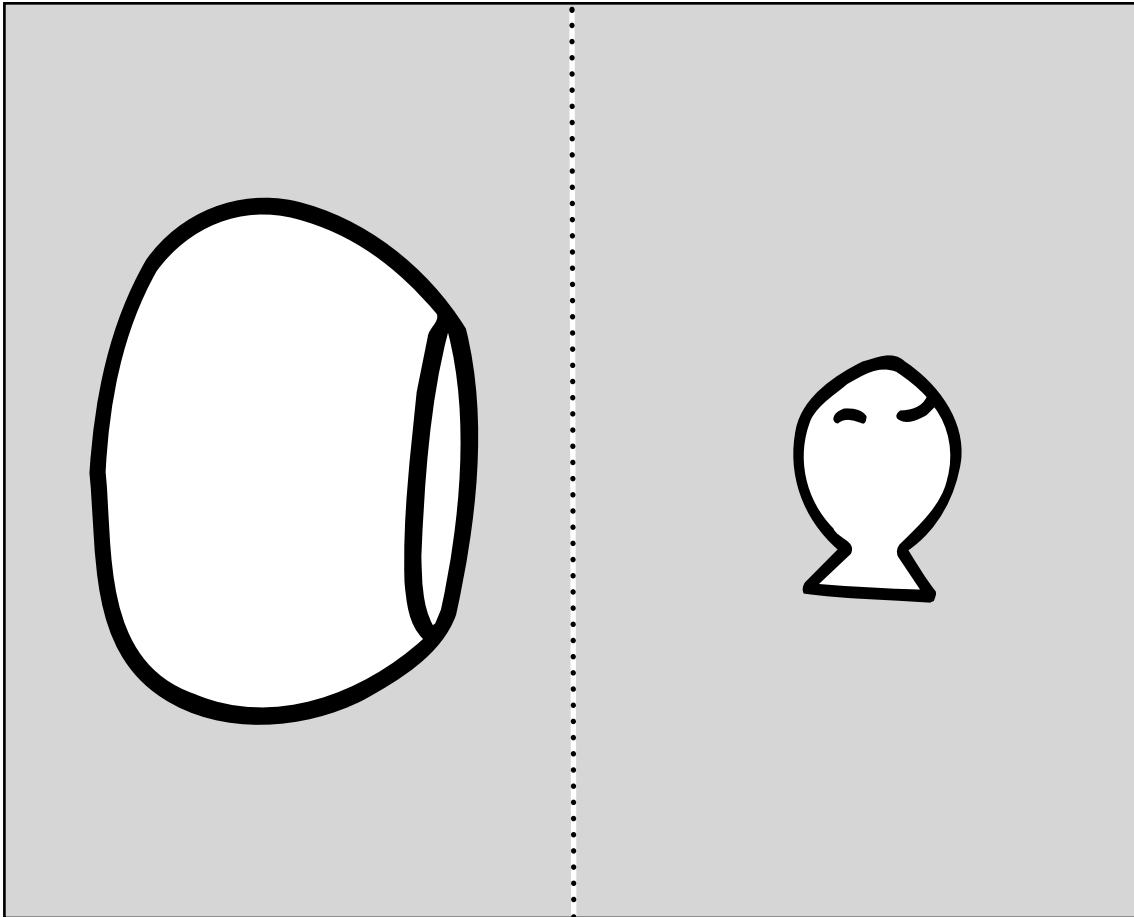
All submissions become the property of ZOOM and will be eligible for inclusion in all ZOOMmedia. This means that we can share your ideas with other ZOOMers on TV, the Web, in print materials, and in other ZOOMways. So, send it to ZOOM. Thanks!



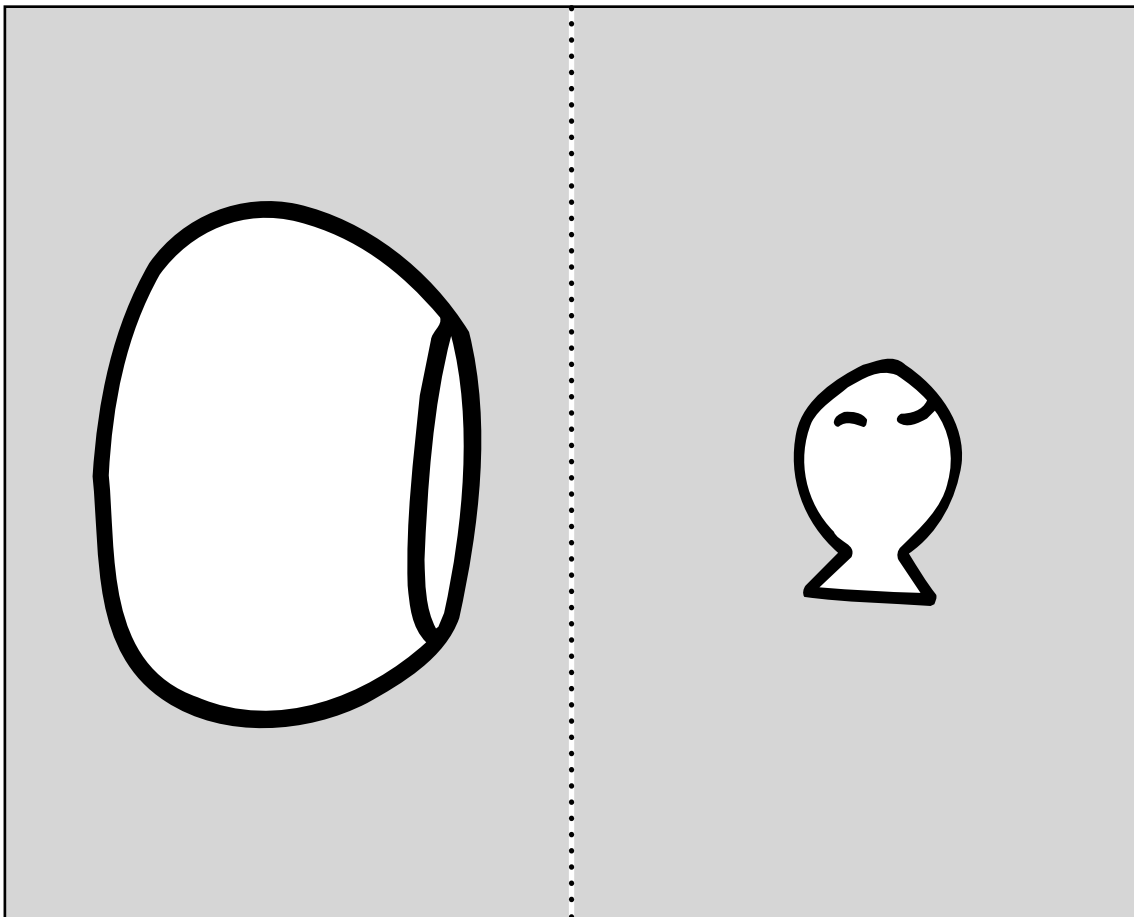
Corporation  
for Public  
Broadcasting

[pbskids.org/zoom](http://pbskids.org/zoom)

**Meeting 1  
Thaumatrope  
Templates**

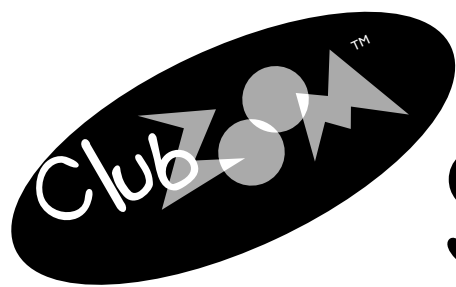


Cut out one of the templates and fold along the dotted line. (The pictures should be on the outside.)  
Then tape the folded template to a straw.



[pbskids.org/zoom](http://pbskids.org/zoom)

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# Stay Tuned

At the next meeting,  
you'll be challenged to:

**Mubake uba rubockubet  
blubast uboff!**



## Crack the Code

Read the message by learning **Ubbi Dubbi™**, the secret language of ZOOM.

Here's how it works:

Just add "**ub**" before each vowel sound. Accent the "**ub**" each time it comes up.

For example, here's how "SEND IT TO ZOOM" looks in Ubbi Dubbi:

Subend ubit tubo ZUBOOM.



**Use the Ubbi Dubbi translator on ZOOM's Web site  
to turn Ubbi Dubbi into English, uband  
UbEnglubish ubintubo Ububbubi Dububbubi.**

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# House Number Trick

Try It Out!

Take your **house number** and multiply it by **2**.

Then add **5** and multiply it by **50**.

Add the **number of kids** in your family. Then add **365**.

Now subtract **615**. What did you get?

(You should get your house number and the number of kids in your family!)

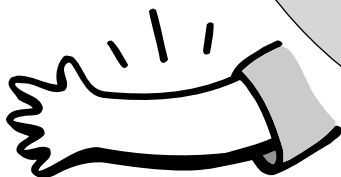


Sent in by Amy M. of Dover-Foxcroft, ME

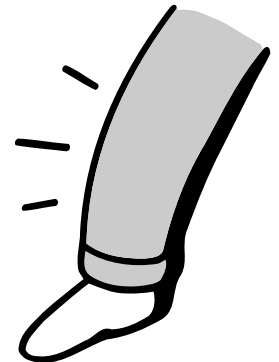
## Ten Body Parts

Try to name **ten body parts** that are spelled with exactly **three letters**.

Try It Out!



Sent in by Fairin of Philadelphia, PA



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Tracy A. of Seattle, Washington, is a member of the ZOOMteam.

She **volunteers at a wildlife center.**

She bathes beavers, feeds baby birds, and plays with skunks. Thanks to

Tracy and other volunteers like her, these young or sick animals will get better and return to the wild.



[pbskids.org/zoom](http://pbskids.org/zoom)



**Join the ZOOMteam!**

Visit the ZOOM Web site for ideas on how you can volunteer. Then tell us what you did, and we'll send you a **free** ZOOM Into Action wristband and iron-on T-shirt decal.

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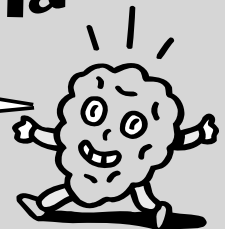
funny™



**What is worse than raining cats and dogs?**

**Ha-Ha-Ha-Ha-Ha!**

Hailing taxicabs!



**Hee-Hee-Hee-Hee**

Sent in by Olivia K. of Leesburg, VA

[pbskids.org/zoom](http://pbskids.org/zoom)



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