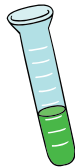


SCIENCE ODYSSEY

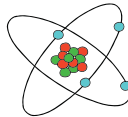
Activities List

Try one of these activities, one of the science experiments on the next pages, or come up with a STEM-related activity yourself to enter the contest!

- ☐ Find an easy recipe and make homemade slime



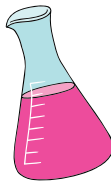
- ☐ Fill a water bottle with vegetable oil, a bit of food colouring and alka seltzer to create your own lava lamp



- ☐ Fill a pie pan with soil to discover what lives inside the dirt

- ☐ Keep a journal to record the different kinds of bugs you see outdoors

- ☐ Try to spell your name using the Periodic Table of Elements and learn what the symbols stand for

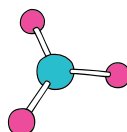


- ☐ Fill a bowl to the top with water, sprinkle cornmeal on top and blow across the water to recreate swirling ocean currents

- ☐ Bird-watch in your backyard or the park.

- ☐ Visit a science or nature centre.

- ☐ Observe insects at home or the park.



- ☐ Take a science experiment

- ☐ Watch a science show on television



- ☐ Draw an astronaut aboard the International Space Station

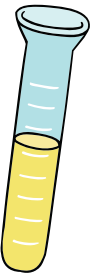
- ☐ Visit a science website

- ☐ Plant some flowers or herbs in a garden or flower box

- ☐ Create a snow globe with oil, water and glitter

- ☐ Do a task you're familiar with while blindfolded

- ☐ Build a structure using items from around the house



- ☐ Create a family tree

- ☐ Pick a famous scientist to research and learn about

- ☐ Start a science journal to keep track of your experiments and observations

- ☐ Create static electricity

- ☐ Do a nature rubbing with tree bark, a rock or a leaf

☐ Keep a weekly record of how much recycling your family goes through



☐ Go on a nature scavenger hunt

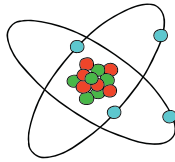
☐ Make a spring collage with items found in nature

☐ Start a community cleanup group

☐ Try a new physical activity

☐ Try geocaching

☐ Set up an outdoor science experiment table

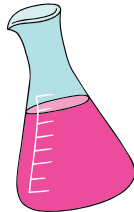


☐ Make your own sensory bins

☐ Keep track of the weather in your area

☐ Go bird watching

☐ Drop items in water to see if they float or sink



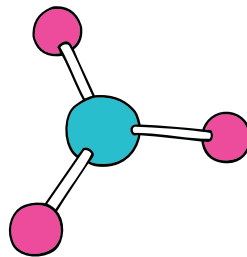
☐ Learn about computer coding

☐ Explore a science centre

☐ Visit a museum

☐ Check out the different plants at a greenhouse

☐ Plant a veggie garden and watch it grow



☐ Research which plants are native to your home and plant some seeds

☐ Start a compost bin

☐ Draw your own optical illusion

☐ Make up a secret code with letter key

☐ Read a science-related article or book



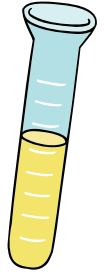
☐ Observe an insect, animal or plant in nature

☐ Help prepare a meal (there is science in cooking!)

☐ Do some stargazing

☐ Conduct a taste test with a friend or family member

☐ Enter a science fair



☐ Come up with a new invention

☐ Visit an aquarium

☐ Go on a nature walk

☐ Start a nature or science club in your neighbourhood



Water Works

SCIENCE
CORNER



Turn dirty water clean with *Chirp* reader Vivienne.

You'll need:

- Plastic bottle with bottom cut off
- Cotton balls
- Sand
- Pebbles
- Jar or glass
- Water with dirt in it

- 1 Place the bottle, spout down, into the jar.
- 2 Add layers of cotton balls, sand, then pebbles to the bottle.
- 3 Pour dirty water into the bottle. Does it look cleaner when it comes out the other side?

Warning: Do not drink the water.

TIP Try using other materials in your filter, like cheesecloth or charcoal.

How it works

As the water flows down through the pebbles, sand and cotton, the dirt sticks to them and the water is cleaned or "filtered." Water from oceans and lakes is filtered before we drink it!

▶ Watch a video of Vivienne doing this experiment at owlkids.com/chirpscience.

Flower Power

Make colourful flowers with Elliot, 6.

You'll need:

- White carnation
- Water
- Food colouring
- Jar or cup
- Scissors

- 1 Cut off the bottom of the flower stem. Remove any leaves.
- 2 Pour water into a jar and add food colouring.
- 3 Place the flower in the jar and leave it in a sunny spot. Check the flower one day later. Does it look different?

TIP: Leave the flower for a week, trimming the stem every few days, and see what happens.

How it works

Plants suck up water through their stems and carry it to the leaves and petals. When the water is dyed, the colour travels up the tubes to the flower!



Cool Crystals

SCIENCE
CORNER



Create icy crystals
with Elyse, 5.

You'll need:

- 250 mL (1 cup) Epsom salts
- Food colouring (optional)
- 250 mL (1 cup) very hot tap water
- Thick glass jar or bowl

How it works

Adding hot water dissolves the salt, but as the mixture cools, little pieces of the salt join together and form crystals.

- 1 Pour the salt into the jar. Stir in a few drops of colour if using.
- 2 Add hot water. Stir for two minutes, or until most of the salt is dissolved.
- 3 Put the jar in the freezer for 10 minutes, then move it to the fridge and leave it overnight.
- 4 Carefully pour out the water to see your crystals.

TIP: The longer the jar is in the fridge, the more crystals will grow!

LAB
Elyse
Scientist

▶ Watch a video of Elyse doing this experiment at owlkids.com/chirpscience.

Ice Fishing

Try an icy experiment with Orzel, 5.

You'll need:

- Ice cube
- Water
- Bowl or cup
- Salt
- String

What to do:

- 1 Fill the bowl with water. Add the ice cube.
- 2 Lay a piece of string across the ice cube. Can you lift the ice with the string?
- 3 Put the string back on the ice cube. Sprinkle salt over it and wait a few seconds. What happens when you lift the string now?

TIP Try it with two ice cubes. Can you pick up both?

How it works

Salt melts ice. But as the salt moves down through the ice cube, the top layer of melted ice refreezes around the string and sticks to it!





Cool Cloud

**Make a miniature
rain cloud with
Chirp reader
Madeleine.**

You'll need:

- Jar or clear cup
- Water
- Shaving cream
- Food colouring

- 1 Fill a jar with water.
- 2 Make a cloud of shaving cream at the top. Let it settle for about one minute.
- 3 Drip food colouring into the cloud and see what happens.

How it works:

The liquid food colouring is too heavy for the cloud to hold, so it falls into the jar below. This is how real clouds work, too! When they get full and heavy with water, it falls out as rain.

PHOTOS: LAURA ARSIE CONSULTANT: PHIL MCCLOREY

▶ Watch a video of Madeleine doing this experiment at owlkids.com/chirpscience.

Magic Potion



**Make a bubbling
potion with Asher!**

You'll need:

- Glass jar
- Baking soda
- Dish soap
- Food colouring
- Large glitter
- Vinegar
- Tray

- 1 Place the jar on the tray.
- 2 Fill the jar about one-third of the way with baking soda.
- 3 Add a few drops of soap and food colouring, then add glitter or sequins.
- 4 Pour in some vinegar and watch what happens.

How it works

When vinegar and baking soda mix, they cause a chemical reaction! The gases created by the reaction make everything bubble up and explode.

Stir the mixture to see if it bubbles even more!

Collect your glitter afterwards and put it in the garbage instead of down the sink.

PHOTO: LAURA ARSIE
CONSULTANT: PHIL MCCLUREY

▶ Watch a video of Asher doing this experiment at owlkids.com/chirpscience.



Amazing Magnets



Explore magnets
with Chirp
reader Owen.

You'll need:

- Magnet of any size and strength
- Non-metal and metal objects

- 1 Place the objects on a flat surface.
- 2 Guess which objects the magnet will pick up.
- 3 Touch the magnet to the objects. Which ones stick? Can the magnet lift any of the objects up in the air?

PHOTO: LAURA ARSIE

Which of these items do you think the magnet would pick up?



How it works

Magnets have metal in them. Their magnetic force attracts other objects with metal in them, like paper clips and coins. The more metal in a magnet, the stronger it is.

▶ Watch a video of Owen doing this experiment at owlkids.com/chirpscience.



Taste Test

See how your tongue and nose work together to help you taste food.

You'll need:

- Small pieces of apple and potato
- An adult

What to do:

- 1 Close your eyes and plug your nose.
- 2 Ask an adult to put a piece of the food on the centre of your tongue. Try to figure out if it's a piece of apple or potato without chewing.
- 3 Open your eyes to see if you were right!



Ooze's Challenge:

Try this taste test with other similar foods like an orange and grapefruit.

Dr. Zed Explains:



Perfect Taste Partners

Your tongue is covered in tiny taste buds that help you taste lots of flavours from salty to sweet to sour. Your nose also helps you taste. Your nose sends a message to your brain about how food smells. Then, your brain blends this message with the one it gets from your tongue to decide how something tastes. If you plug your nose, it can't send the message to your brain, so it's tricky to guess what you're eating.

Art Smarts

Try your hand at this simple optical illusion.



You'll need:

- paper
- coloured markers
- your hand

What to do:

- 1 Lightly trace your hand and a bit of your wrist on a piece of paper.
- 2 Start at one edge of the paper and draw a straight line to the outline of your hand.
- 3 When you get to the outline, draw a curved line from one side of it to the other. Then go back to drawing a straight line to the edge of the paper.
- 4 Repeat this all the way up to the top of the paper. What do you see?



"Eye" love this optical illusion!



Dr. Zed explains:

Does your hand look like it's popping off the page? You've created an optical illusion! Optical illusions use light, patterns and colours to trick your brain into seeing something in a way that doesn't match reality.

Ooze's challenge:

Try drawing other objects to see if you can create the same effect.

Disappearing Shell

Can you make an eggshell disappear? Try this egg-cellent experiment with Dr. Zed!

You'll need:

- raw egg
- white vinegar
- spoon
- drinking glass

ASK
AN ADULT
TO HELP
YOU.

What to do:

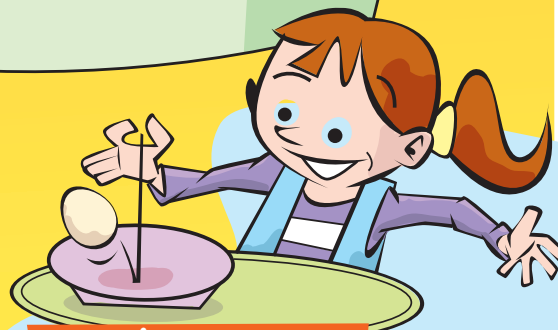
- 1 Use the spoon to carefully place the egg into the glass.
- 2 Pour vinegar into the glass, making sure to cover the egg.
- 3 Wait 24 hours or more. Then carefully pour the vinegar out of the glass.
- 4 Use the spoon to scoop the egg out of the glass. What does it look like? What does it feel like?



Dr. Zed Explains:



The egg should feel rubbery. Eggshells are made out of calcium carbonate. The vinegar is an acid, which reacts with the eggshell. The reaction makes the shell go soft and dissolve in the vinegar. After the shell dissolves, the egg is naked but still held together in an oval shape. Why? The egg is covered by a thin, clear sac called a membrane.



Ooze's challenge:

Gently bounce the egg on a plate. Start from a low height. How far can you drop it before the membrane breaks? (Warning: it will be messy when it breaks!)

Touch 'n' Go!

Find out how touchscreen technology works.

You'll need:

- touchscreen gadget
- sock
- eraser
- carrot
- your finger



How does this work, Dr. Zed?



What to do:

- 1 Cover your finger with the sock and gently try to get the touchscreen to work.
- 2 Try again using the eraser, then the carrot. Now try with your bare finger. Which things worked and which didn't?

Dr. Zed explains:

The glass panel of a touchscreen has a layer that stores an electrical charge. When you touch the screen with your finger, you take some of the charge away. Special circuits in the gadget use this info to figure out where the screen was touched. Bare fingers work best because the charge can move more easily into your body than into other materials.



Ghostly Hand

Make part of your hand disappear with this creepy experiment!

You'll need:

- Empty paper towel roll or rolled-up piece of paper
- Your hands

What to do:

- 1 With your left hand, hold the tube up to your left eye like a telescope.
- 2 Place your right hand against the side of the tube with your palm facing you.
- 3 Keep both eyes open and focus on an object in the distance. Do this for 10 seconds. What happens?

Dr. Zed explains:

Don't worry, there's not really a hole in your hand! This is an illusion, or trick, created by your brain and your eyes. During the experiment, your brain received two different images from your eyes—the view through the tube and the view of your hand. Your brain made sense of the two images by adding them together, which made the "hole" appear in your hand!

Ooze's tip:

Can't see the hole? Close your right eye and focus with your left eye. Then open your right eye again.



Sizzling Sun Art

Use the Sun's rays to create a cool print with Dr. Zed!

Before



After



You'll need:

- a flat object like a leaf, feather or pressed flower
- dark-coloured construction paper
- glue stick
- tape

1 Dab some glue on your object and attach it to a piece of construction paper. Let the glue dry.

2 Tape the paper to a sunny window with the object facing the outside.

3 After the paper has been in the sun for a few days, remove it from the window. Gently peel off the object to reveal your sun art!



What's happening:

The sunlight is so powerful that it changes the colour of the dye in the construction paper. But the covered area doesn't get light because the object protects the paper from the Sun's rays.

OOZE'S CHALLENGE: Try using sunscreen as "paint" to make a picture on construction paper. Tape the paper to a sunny window for a few days and see what happens.

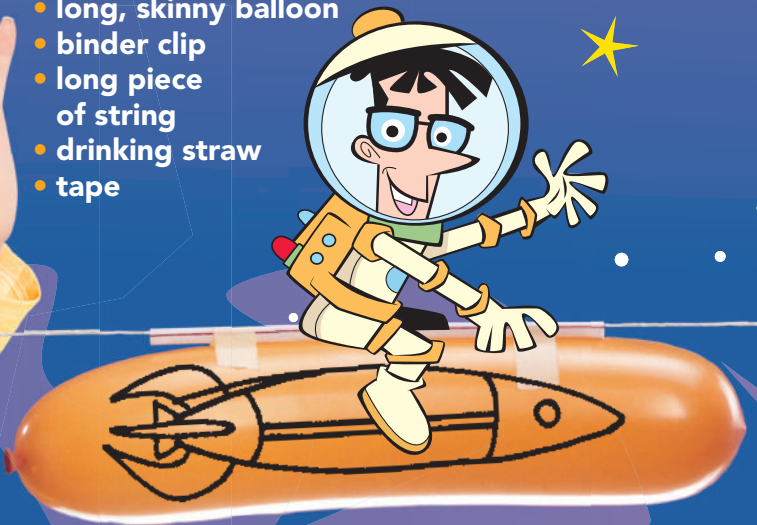


Zippy Rocket!

Make a rocket zip line with Dr. Zed!

You'll need:

- long, skinny balloon
- binder clip
- long piece of string
- drinking straw
- tape



What to do:

- 1 Blow up the balloon. Close the end with the binder clip so no air leaks out.
- 2 Thread the string through the straw.
- 3 Tape the balloon to the straw.
- 4 Attach the ends of the string to two opposite walls.
- 5 Pull the balloon to one end of the string. The clip end should be close to the wall. Undo the clip and watch your rocket launch!

Dr. Zed Explains:



When the balloon is clipped, the air inside it pushes equally on all sides.



When the clip is removed, the air blasts out of the balloon, pushing it forward!



Ooze's challenge:

Try using different balloon shapes. Which go fastest?

Breaking the Ice

Make a colourful ice block to see how salt melts ice.



"Ice" going, Dr. Zed!

Sometimes you'll see salt on icy sidewalks. The salt melts and breaks up the ice so people don't slip.

You'll need:

- plastic container
- water
- table salt
- food colouring

1 Fill the container with cold water and place it in the freezer. Leave it overnight to freeze.

2 Flip the container onto a plate to remove the ice block. Run warm water over the container if you need to loosen the ice first.

3 Sprinkle salt over the block until it's completely covered and let it sit for about 20 minutes.

4 Squirt several drops of food colouring overtop.

What's happening:

Regular water turns into ice at 0°C (32°F). Salty water has to be much colder to freeze. So when you add salt to the ice block, it's no longer cold enough to stay frozen. Ice that touches the salt melts and leaves holes and tunnels in the block. The food colouring you added dribbles through the holes, so you can see where ice has melted.

Ooze's challenge:

Try sprinkling ice with other things, like pepper or sugar. Which melts ice the fastest?

Sticky Spoon



Amaze your friends with this silly spoon trick!

You'll need:

- clean teaspoon
- patience

What to do:

- 1 Breathe onto the inside of the spoon.
- 2 Place the spoon on the tip of your nose.
- 3 Slowly let go of the spoon so it hangs on your nose.
- 4 Don't worry if it doesn't work the first time. It may take a few tries to get the spoon to stay put.

What's happening:

Your warm breath left a very thin layer of moisture (water droplets) on the spoon. The moisture from your breath helps the spoon stick to the skin on your nose!



Ooze's Challenge



Caius (above) kept the spoon on his nose for more than 10 minutes. Can you beat that?

Jump Up!

Add some spring to your jumps.
Dr. Zed will show you how!

You'll need:

- 4 sticky notes
- blank wall

What to do:

- 1 Hold your arm up as high as you can and stick a note on the wall. This note shows how high you can reach while standing still.
- 2 Take another sticky note. Bending your knees as little as possible, jump and stick a note on the wall.

The distance between the two notes is how much higher you can reach when you jump. Want to see if you can jump higher?

- 3 Now bend your knees before you jump, and stick a note on the wall. Did you jump higher?
- 4 Bend your knees and swing your arms before you jump, and stick a note on the wall. Did you jump even higher?

Nice one,
Dr. Zed!

Ooze, this
activity is a
slam dunk!



Bend your knees



Swing your arms



Professional basketball player Stephen Curry can jump 90 cm (35.5 in.)—about as high as the average kitchen counter!

Dr. Zed Explains:



Force is a push or pull that can make something move.

You jumped higher each time because you added force. When you bent your knees, you used the big muscles in your legs to push off the ground. That force made you jump higher.

When you swung your arms in the air, your feet pushed harder into the ground. The extra force made your third jump even higher!

Bubble Fun!

Try this
shape-shifting
experiment with
Dr. Zed.



Ooze's challenge:

Can you make other
3-D bubble shapes?



Selma made a
square bubble!



You'll need:

- 7 pipe cleaners
- 2 L (8 cups) of water
- 125 mL (½ cup) liquid dish soap
- large bowl
- scissors

What to do:

- 1 Cut six pipe cleaners in half to make 12 in total.
- 2 Twist four pipe cleaners together to make a square. Repeat to make another square.

- 3 Take four more pieces of pipe cleaner to attach the two squares together to make a cube. Attach a small piece of pipe cleaner to the side of the cube to make a "handle."

- 4 Fill a large bowl with the water and dish soap. Stir it with your hand.

- 5 Dip your cube into the large bowl, and take it out carefully. What do you see?

Tip

If you don't see the square right away, gently blow into the middle of the cube.



Dr. Zed Explains:

You made a square bubble inside the cube! It's unusual because bubbles naturally want to be in a sphere shape. That's because a sphere uses the least amount of surface area to trap air inside. But when you dip your cube into the bubble solution, the soap stretches and clings to its sides, pulling the bubble in the centre into a square. Cool! Go to owlkids.com/cube to watch how the cube is made.

Songs on

Whistle away on this amazing pan flute!

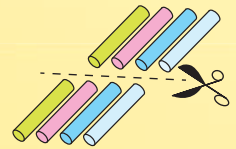
You'll need:

- jumbo straws
- scissors
- tape

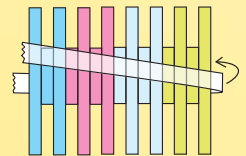
What to do:

ASK
AN ADULT
TO HELP
YOU.

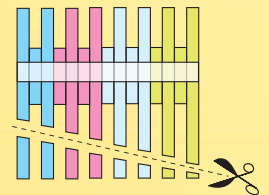
1 Cut some straws to make several short pieces. The pieces should all be the same length.



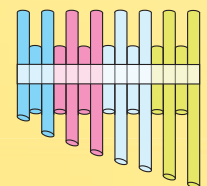
2 Take eight uncut straws and alternate them with seven short pieces. Tape them together. Make sure the ends of the long straws are even.



3 Cut the straws on an angle so the shortest is roughly half the length of the longest.



4 To make music, blow across the tops of the straws. Which straws make high notes? Which ones sound low?



Straws

Dr. Zed explains:



The air inside the straws vibrates (moves back and forth really quickly) when you blow across the tops. These vibrations move through the air, and our ears hear them as sounds.

In a long straw, the air vibrates slowly and makes a low sound. Air vibrates more quickly in shorter straws, which make high sounds. Instruments like flutes and trumpets make music thanks to vibrating air.

This experiment blows me away!



Ooze's challenge:

Put your finger over the bottom of a straw while you blow. What happens to the sound?



Indoor

Can a bunch
of balloons hold
your weight?

Way to go,
Evan!

Wheweee!



Toboggan!

You'll need:

- 7 or 8 balloons
- a foam sled or board
- an area of flat ground

What to do:

- 1 Blow up the balloons.
- 2 Put the balloons on the floor and place the board on top of them.
- 3 With the help of a grown-up or friend, gently sit down on the board. Do you feel balanced? Try leaning to the left and to the right. What happens?

ASK
AN ADULT
TO HELP
YOU.



Ooze's Challenge:

With help, try carefully standing up!

Dr. Zed explains:



Even with all of your weight pressing down on the balloons, they probably didn't pop. That's because the balloons are stretchy, which helps them bend and not break when sharing the job of holding up your weight!

Colo

Create a colourful
rainbow with
climbing water!

You'll need:

- 7 clear glasses or jam jars
- water
- food colouring
- 6 paper towels



ur Climb



What to do:

ASK
AN ADULT
TO HELP
YOU.

- 1 Line up the glasses in a row and fill every other glass almost to the top with water.
- 2 Add food colouring to the glasses with water in them: red goes in the first one, yellow in the second, blue in the third and red again in the last glass.
- 3 Twist the paper towels into strips. Place one end of the first towel into the first glass and the other end into the empty glass beside it. Keep going with the paper towels until every glass has two ends in it.
- 4 Wait a few hours. What happened?

Dr. Zed explains:

Water is made of teeny particles, called molecules (say: MALL-i-kyools), that stick to each other. Paper towel is made of cellulose (say: SELL-u-lowse), the stuff that plants are made of. Water molecules are attracted to cellulose more than to each other. They stick to the paper towel and climb up and over into the empty glass. In this experiment, the different coloured waters climbed into the empty glasses to make a rainbow!



Water we
waiting for? Let's
try it!



Ooze's Tip:

This experiment also works with five or three glasses and fewer colours.

Excellent Experiments

Super Static

YOU'LL NEED:

- Balloon
- Your hair

1. Rub a balloon all over your hair.
2. Now hold the balloon just above or beside your head.

What happens to your hair?

WHY?

Rubbing the balloon on your hair creates static electricity. Your hair is attracted to the electricity, so it rises up to meet the balloon.

BONUS: Rub a balloon on a wool sweater and then let go of it. Does the balloon stick to the sweater?

CHIRP LAB
Dr. Ellie
scientist *

Sink or Float?

YOU'LL NEED:

- Glass jar
 - Syrup
 - Water
 - Food colouring (optional)
 - Oil
1. Fill the bottom of the jar with syrup.
 2. Add a layer of water and a drop of food colouring. Does the water sink and mix with the syrup?
 3. Now add a layer of oil.

What happens?

BONUS: Try adding objects like dice, dry pasta, berries, Legos and small toys.

Which objects sink and which float?

WHY?

WHY?

Syrup weighs more than water, so it stays on the bottom. Water weighs more than oil, so oil floats on top.



The berries are heavier than oil but lighter than water, so they sit in the middle of the jar. The toy car and die are heavier than syrup, so they sink to the bottom.



Rainbow Milk

YOU'LL NEED:

- Large bowl or tray
- Whole milk
- Food colouring
- Dish soap
- Q-tip

1. Fill the bowl with milk.
2. Add a few drops of food colouring.
3. Use a Q-tip to add a drop of soap right in the centre of the colour.

Watch what happens.



WHY?

Milk is made of water and fat. The dish soap reacts with the milk and separates the water parts from the fatty parts (this is how soap washes dishes!) and they move around.



BONUS: Dip a piece of paper into the tray to make colourful art!



Keep Trying

Sometimes experiments don't work the first time you try them. Part of being a scientist is figuring out what went wrong and trying again. Have fun experimenting!

Putty Time

YOU'LL NEED:

- 45 mL (3 tbsp.) all-purpose white glue
- Food colouring (optional)
- 45 mL (3 tbsp.) Tide liquid detergent

1. Put the glue in a bowl. Add a drop of food colouring and mix together.

2. Add the detergent. Mix with your hands until it forms a putty that you can pick up.

Is the putty sticky?
Can you stretch it and
form it into a ball?

When you drop the
ball, does it bounce?

WHY?

When you mix glue and detergent together they turn into something new. The new mixture can stretch and bounce, and it won't stick to your hands!

