

PRESCHOOL

Science

activities you can do
at home!



Literacy Develops in Families First

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This booklet was developed by the Centre for Family Literacy.



Experimenting and Exploring

Children are always asking questions! Through play and curiosity, they explore, experiment, and make discoveries about the world around them. With an adult's help, they can build important skills such as:

- Problem solving and critical thinking – figuring out why and how to change something
- Predicting – making guesses about what might happen
- Observing – watching what happens
- Collecting and organizing information – putting it in order, finding what's important
- Communicating – sharing information with others
- Persistence and patience – trying to get something to work and waiting for results



How to support their learning:

- Provide a variety of safe opportunities for your child to explore
- Follow their lead – let them make the decisions and move at their own pace
- Be excited about discovering along with them
- Let your child see you exploring or figuring something out in your daily life

What's happening?

When baking soda and vinegar are mixed, a chemical reaction occurs (like in the Exploding Volcanoes experiment) which makes carbon dioxide gas. The gas forms many little bubbles that cling to the spaghetti and bottom of the glass. The bubbles make the spaghetti float to the top. At the top, the bubbles burst and the spaghetti sinks back to the bottom.

Draw what happens when you add the vinegar:

Diving Spaghetti

How many times has your child asked “why” about something. In this experiment, there are lots of chances to ask this question and to work together to figure out some answers. What’s your guess about why the spaghetti moves up and down?

What you need:

- Uncooked spaghetti (rice or raisins will work too)
- 1 cup water
- 2 teaspoons of baking soda
- 5 teaspoons of vinegar
- Tall clear glass

What to do:

1. Put the water in the glass
2. Add the baking soda to the water and stir until you can’t see it
3. Break spaghetti into small pieces, and put 6 pieces in the glass
4. Add vinegar 1 teaspoon at a time
5. Watch what happens—add more vinegar if the spaghetti stops moving to the top of the glass
5. Do not stir!



Float and Sink

Have you ever thrown something into the water and wondered why it floated or sank? In this experiment, you will guess if an object is going to float or sink and then test it to see if you were right. Don’t worry if you get it wrong – try to figure out why it didn’t do what you guessed! As an added challenge, think about how you can get one of your objects that sank to float. Can you make it a life jacket (something that has lots of air pockets in it)?

What you need:

- Bowl filled about halfway with water
- Different objects from around the house to test (try to find different kinds – big, small, heavy, light)

What to do:

1. Pick an object to test
2. Guess if it will float or sink
3. Test it by putting it in the water



What’s happening?

This is an experiment about buoyancy. When an object is put in the water, it pushes down. At the same time, the water pushes up on it. If the water can push up more than the object pushes down, the object floats. If the object pushes down more, it sinks.

What floated and what sank?

Floated	Sank

Goop

What do you do when something doesn't act the way you think it should? You keep asking questions to see if you can find out what's happening! In this experiment, you will explore a strange material that can be hard (a solid) or soft and goopy (a liquid) at the same time. Discover what happens if you hit it or let your fingers slowly sink into it.

What you need:

- 1 Box of Corn Starch
- Water
- Bowl
- Spoon
- Food colouring (optional)
- Small toys to hide in the goop to be found (optional)



What to do:

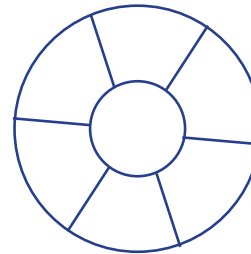
1. Put the corn starch in a bowl
2. Add water in small amounts until the corn starch is wet and moves easily when you push your fingers or a spoon slowly through it

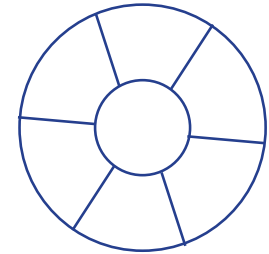


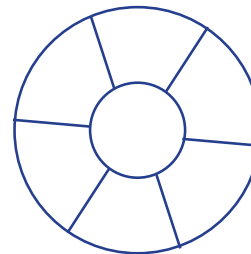
What's happening?

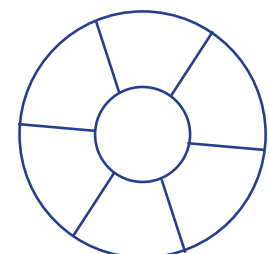
The construction paper has many holes in it. As the flower sits on top, the water starts to fill the holes in the paper and keeps doing so until they are all filled – this is called capillary action. If there is a fold, the water pushes until it gets into those holes too. This causes the paper to unfold. When you water a real plant, the holes (cells) are filled up in the same way which helps it stand up straighter.

Try the experiment a few times. Count how long it takes for each flower to open. Write that number under each picture. Is it the same each time? How can you change it?









Opening Flowers

Predicting (guessing) and observing (watching) are skills that help children learn about

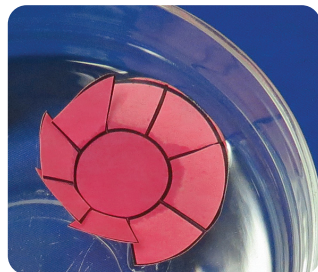
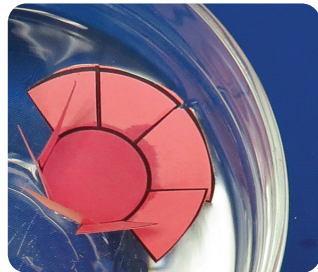
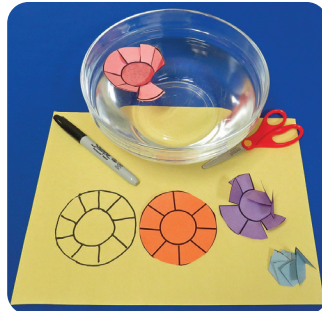
the world around them. In this experiment, try to guess how long it will take the flower to open up. Count together to see if you're right!

What you need:

- Construction Paper
- Pen
- Scissors
- Bowl filled with water

What to do:

1. On the construction paper, draw a flower with a circle in the centre – make sure the petals have lines that go down and touch the circle
2. Cut out the flower then cut the lines for the petals, stopping as you reach the circle
3. Tightly fold the petals toward the centre of the flower
4. Put the flower on top of the water (make sure the side with the folded petals is facing up)
5. Watch the flower open



What's happening?

Everything – chairs, cups, water, air, and even you – is made up of little pieces called atoms joined together into bigger pieces called molecules. In a liquid, like water, the molecules are joined very loosely and can move around easily in many directions. This means they can change shape or be poured.

In a solid, the molecules are joined tightly so they can't move very much. Goop acts like a solid sometimes (when you push hard) or a liquid (if you push slowly). Materials that act like goop are called non-Newtonian fluids.

Warning: Do NOT pour down drains. Let air dry or pour into a container to throw out.

Draw or write what happens in the goop if you move:

Fast	Slow

Exploding Volcanoes

Fizzy, bubbling volcanoes are a perfect way to introduce new words while having fun. Talk about what you are doing and seeing in this experiment as you race to see whose volcano erupts first, or lasts the longest or has the most bubbles.

What you need:

- Baking soda
- Dish Soap
- Vinegar
- Small container (a pill bottle shape works well)
- Food colouring (optional – add it to the vinegar)
- Spoon
- Clay (optional – to shape a volcano around your container)

What to do:

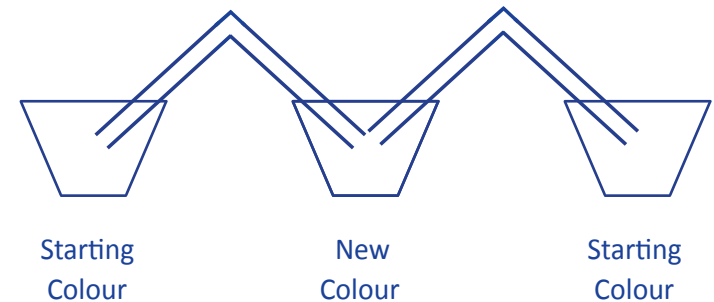
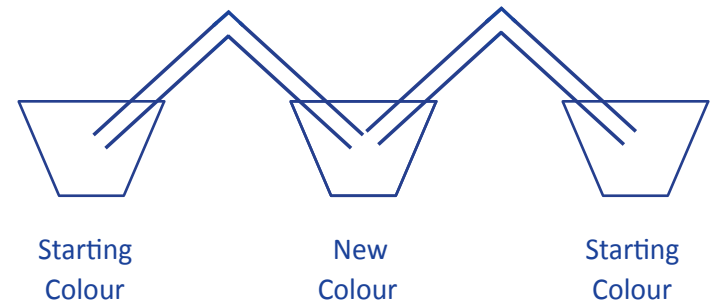
1. Put one spoonful of baking soda in the container
2. Add one or two drops of soap
3. Pour some vinegar in and watch it go!



What's happening?

There are many holes in paper towel. Like the “Opening Flowers” experiment, capillary action pulls the water (and colour) along the paper towel. As it moves, you can see the colours in the paper towel moving. When the colours meet, they mix and change to a different colour. When primary colours (red, yellow and blue) mix, they form secondary colours (green, orange and purple).

Add colours to the pictures below to show what happened:



Walking Water

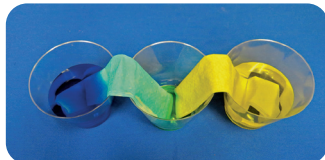
The excitement of setting up an experiment and then having to wait for the results is a good way to practice patience. In this experiment, the results are worth the wait. Try setting up more than one experiment at a time with different colours. What is different between them? Does one start before the other? Are the colour changes different?

What you need:

- 3 clear cups of the same size
- water
- food colouring (blue, red or yellow)
- paper towels

What to do:

1. Fold a paper towel in half, then in half again to make a strip – make 2 of these
2. Put the cups in a row
3. Fill the 2 cups on the ends half-way with water
4. Add blue colouring to one end cup and mix
5. Add yellow to the cup at the other end and mix
6. Leave the cup in the middle empty
7. Take the strip of paper towel you made and put one end in one of the coloured water cups, and the other end in the middle cup. Do this again with the other coloured water cup
8. Keep checking back to see what happens over about two hours
9. Try the experiment again with different colours

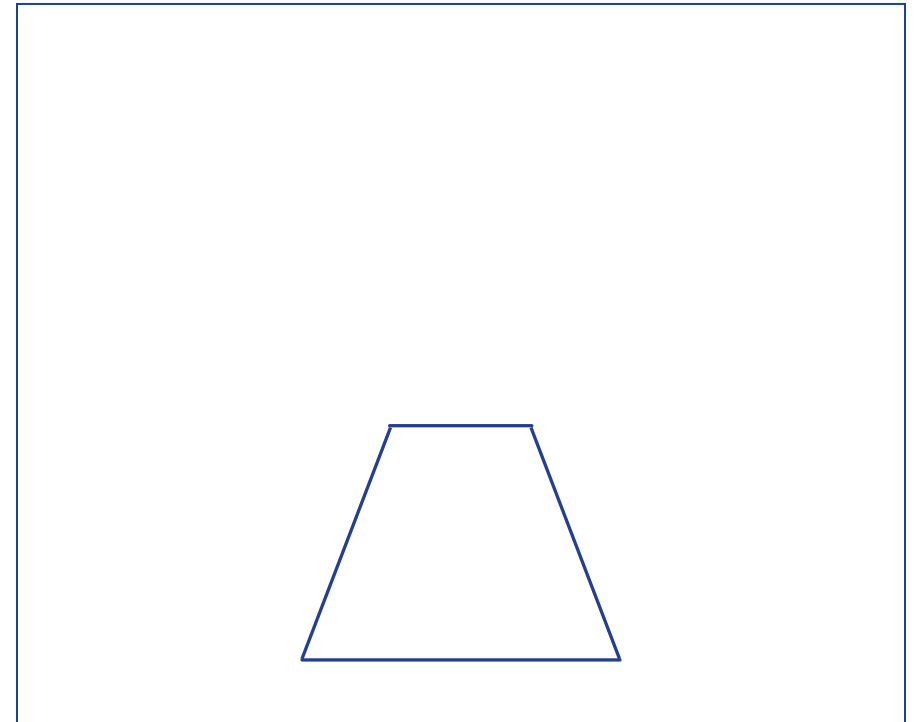


What's happening?

Mixing vinegar and baking soda creates a chemical reaction that changes the baking soda and vinegar into something different – water and carbon dioxide gas that creates bubbles! Carbon dioxide is the air we breathe out of our bodies. The reaction keeps going until the vinegar and baking soda are all used up. The dish soap makes the bubbles bigger and last longer.

Can you change something to make your volcano do something better?

Draw what your volcano looks like after you put everything in the container:



Bean in a Bag

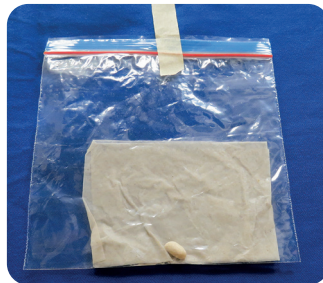
Watching nature helps children learn about living things – how they act and what they need to live and grow. What they observe can help them understand how to take care of the world around them, as well as themselves. In this experiment, your bean seed needs water, warmth and sun to start to grow. Talk with your child about what *they* need to grow.

What you need:

- Clear sandwich bag that can be closed
- Bean Seed
- Paper Towel
- Tape

What to do:

1. Fold the paper towel and get it wet (not dripping)
2. Put the paper towel flat in the sandwich bag
3. Put the bean on the paper towel in the bag
4. Squish the air out of the bag and close it
5. Tape the bag to a sunny window in a warm place, with the bean facing the sun
6. Wet the paper towel as it starts to dry out
7. As the bean gets taller, you may need to open the bag so it can keep growing
8. After a few weeks plant the bean in soil (outside if possible)
9. Watch your bean as it sprouts and grows – you can measure or draw it, talk about what you see happening and guess what's going to come next!



What's happening?

Glue is made of long, sticky chains of molecules (see the Goop experiment for what a molecule is). When the baking soda and contact lens solution is added, they mix to start linking these long chains together. As you play with it, they link more and more chains until the Gak is not sticky and holds together.

Choose the words that describe your gak. Add others if you have them.

Sticky

Wet

Dry

Slimy

Gooey

Elastic

Smooth

Smelly

Pops

Thick

Thin

Cold

Warm

Gak

Children use all their senses – sight, smell, sound, touch and taste - to explore the world around them. In this experiment, watch what happens as you mix the ingredients. Think about how it feels as you play with it – does it change? What words can you use to describe it? Do you notice any sounds or smells as you make the Gak?

What you need:

- ½ cup warm water
- ½ cup Elmer's, LePage or White School glue (not all-purpose glue)
- ½ teaspoon of baking soda
- 1 tbsp of contact lens solution (must have boric acid and sodium borate in it)
- Bowl
- 2 – 3 drops food colouring (optional)
- a spoon

What to do:

1. Mix the glue, water, and food colouring (if wanted) in a bowl
2. Add baking soda and mix
3. Add contact lens solution and stir
4. Keep stirring until it becomes a sticky ball
5. Pour it on to a hard surface and hands to roll and play with it becomes less sticky
6. Shape and play

Note: store in a sealed plastic bag



What's happening?

The paper towel gives the bean seed enough water to sprout (germinate) without soil. With a clear bag, you can watch how a plant grows – from the seedling coming out of its coat to growing roots and leaves!

Record your bean plant as it grows. Draw what it looks like at different stages!



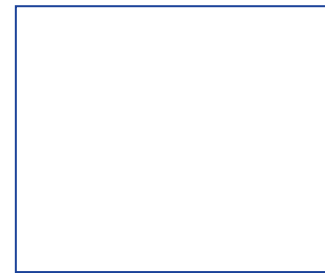
My bean sprouted on

(date) _____



1 Week: my bean is

_____ bean seeds tall



2 Weeks: my bean is

_____ bean seeds tall



3 Weeks: my bean is

_____ bean seeds tall

Cut me
out to
measure
your
plant.



Colourful Butterflies

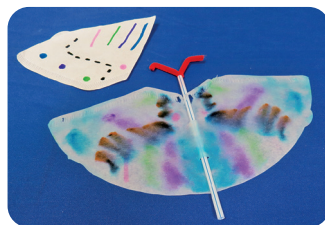
Mixing colours can be a fun way to learn how different colours are made. Sometimes a colour isn't exactly what it seems. In this experiment, you will explore what's in your favourite marker – is there something more than just that colour?

What you need:

- Coffee Filter (folded kind)
- Straw
- Scissors
- Markers (washable)
- Pipe cleaner (optional)
- Water

What to do:

1. Make two small cuts along the folded edge of the filter
2. Lay the filter flat and use markers to draw lines or dots on one side
3. Put a drop or two of water in the middle of each of the coloured lines or dots you made
4. Let the water spread out on the filter.
What happens to the colours?
5. Wet the glued edges of the filter completely and pull those sides apart
6. Put the straw through the cuts you made in the filter so it runs up the middle – this is your butterfly's body
7. Bend the pipe cleaner in half and put the folded end into the top of the straw for the butterfly's antennae



What's happening?

Sometimes many different colours are mixed together to make one colour. In this experiment, we are doing chromatography – separating the colours using water. When the water hits the colours on your filter, it picks them up and carries them along with it.

The colours move at different speeds (some fast, some slow) and start to separate. As this happens, you see colours start to appear on the filter that weren't the ones you started with. These are the colours that were mixed together to make your marker's colour.

What colours were in the colour you started with? Draw them here.

For example:

