Learning Resources®

Create AND CRAFT

ages 7+

Learn About Science

8 at home experiments!

Activity Book

What's That Smell?

Concept: Your sense of smell is one of your five senses.

You will need:

- Various sized cups
- Cotton balls
- Variety of items with a distinct smell such as coffee, cinnamon, flower petals, vanilla, perfume, etc.

What to do:

1. Place one item to smell in each cup. Or, try pouring a bit of liquid, like perfume or vanilla, onto a cotton ball. Drop the cotton ball into a cup.

2. Ask a friend to sniff each cup without looking. Can your friend correctly identify each smell?

Write down their guesses here:

3. Reveal each item and check their predictions!

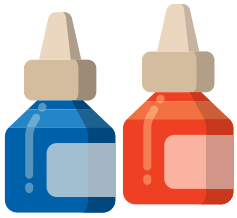
   TIP: Clean the cups well with soap and water before reusing. **Always check with an adult before choosing items to smell!**

Senses allow you to observe and understand the world around you. You have five main senses: sight, touch, smell, taste, and hearing. Your senses send messages through receptor cells to your brain, using your nervous system to deliver that message.

Did you know? You need your sense of smell in order for your sense of taste to work properly. If you hold your nose closed while you eat, the taste won't be as strong. This is why you sometimes can't taste food, or it tastes plain when you have a cold, because your nose is all blocked up!

Colour Changing Celery

Concept: Plants absorb water and the water moves upward through the plants.



You will need:

- Large cup
- Water
- Blue or red food colouring
- Celery stalk with leaves

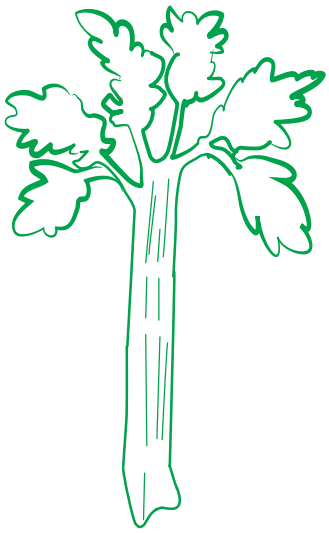
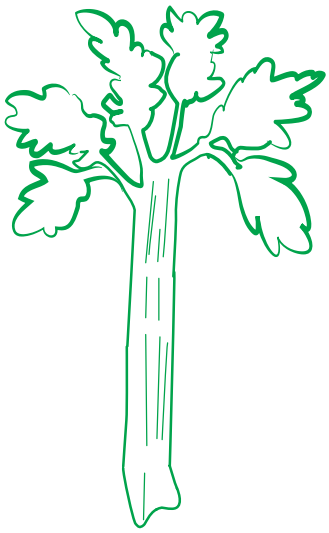
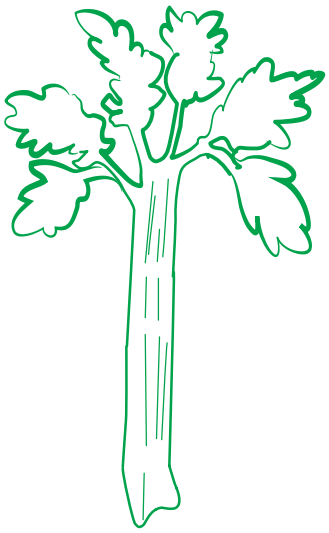
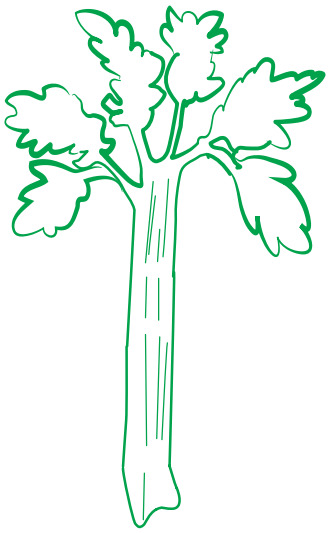
What to do:

1. Trim off the bottom of the celery stalk. Keep celery 10cms taller than the cups.
2. Fill the large cup halfway up with water. Add 10 drops of blue or red food colouring and stir. Place the celery in the cup.
3. What do you predict will happen?

   _____

4. Wait 12 hours. Observe the celery.

Colour in pictures of your results below.

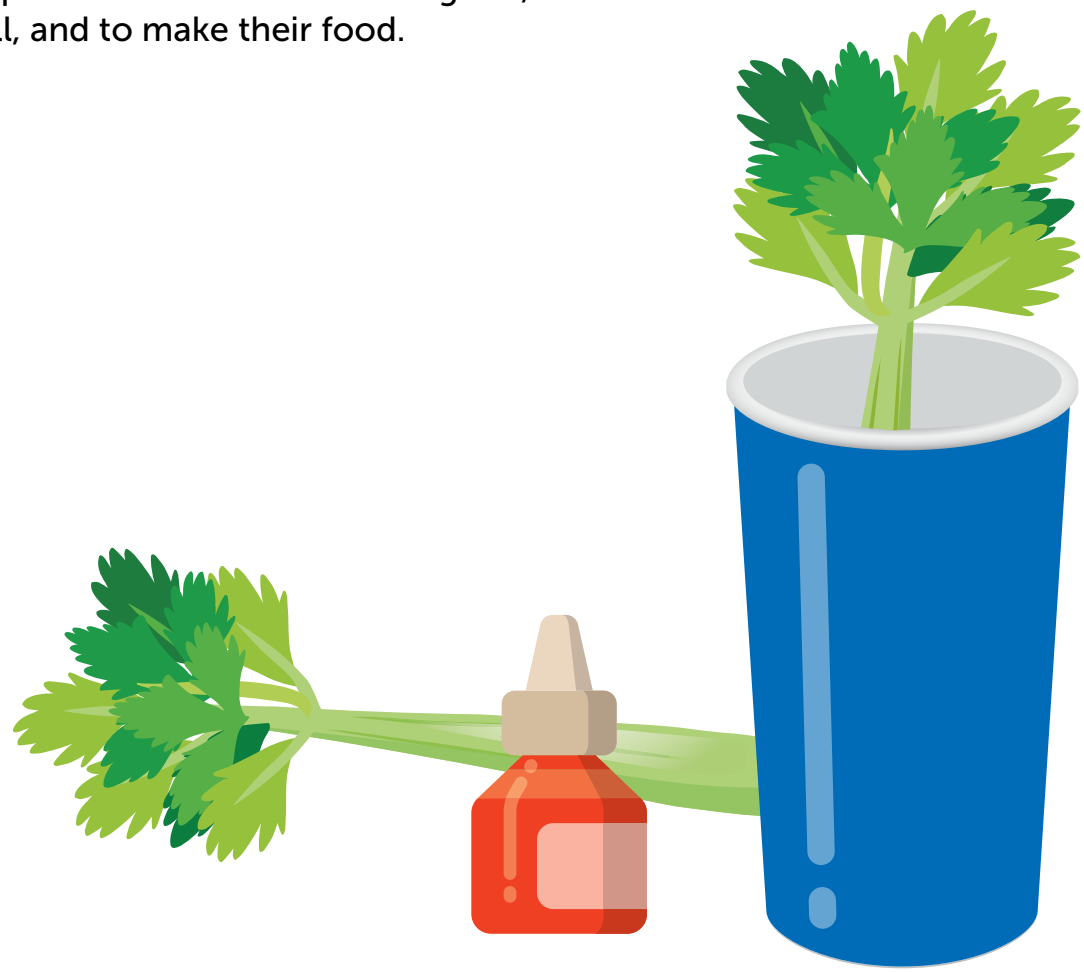
Prediction: first observation	Result: first observation	Prediction: last observation	Result: last observation
			

5. Explore a little more: Remove the stalk from the cup and cut off about 1cm from the bottom of the stalk.

Draw what you see.

Look for small circles at the bottom of the stalk. They should be the same colour as the food coloring you used.

Did you know? These tiny circles are actually tubes called xylem. Xylem are like straws that suck up water and carry it to the plant. Plants need water to grow, stand tall, and to make their food.



Bubbling Volcano

Concept: Acids and bases react to make bubbles of foam called carbon dioxide.

You will need:

- Cups of various sizes (preferably heavier cups–glass, etc.)
- Measuring teaspoon
- Baking soda
- Vinegar
- Paper towels
- Food colouring
- Water

What to do:

1. Place the cups on a layer of paper towels. (Caution: Food colouring can stain, please make sure to protect your work station!) You can also take this outside and make a mound of dirt or sand, and place the cup inside to help avoid the cup tipping over.
2. Fill the largest cup ¾ full with water. Add 1 teaspoon of baking soda to the water. Stir until it is well mixed. Place aside on the paper towels. This will be your volcano!
3. Fill half of the smallest cup with vinegar. Add 5 drops of food colouring. Stir until well mixed.
4. Predict what will happen when you pour the coloured vinegar into the large cup.

5. Pour the coloured vinegar into the large cup. Watch what happens. Did you predict correctly?

Did you know? A chemical reaction between baking soda and vinegar creates a gas called carbon dioxide. This is the same type of gas that is used in sodas to make the carbonation, or the "bubbly" sensation. What would happen if you shook up a soda? The gas tries to spread out, but there isn't enough room in the bottle for it all. So it leaves very quickly, causing an eruption!

Lava Lamp

Concept: Oil and water do not mix.

You will need:

- Empty pop bottle with lid
- Cooking oil
- Water
- Food colouring

What to do:

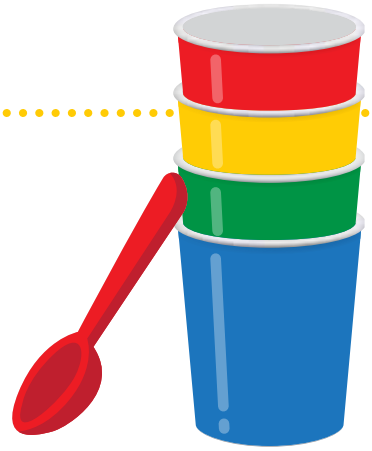
1. Fill the soda bottle halfway with water and add a few drops of food colouring.
2. Put the lid on and shake well.
3. Remove the lid and add cooking oil until the soda bottle is almost full – leaving about 3cms at the top.
4. Put the lid on tightly and turn the bottle sideways. Tilt it back and forth. What does it look like?

Draw how your bottle looks now with the food colouring and oil.

Did you know? Oil floats on top of water, because it is less dense (lighter) than water. Food colouring has the same density as water–so it sinks through the oil and mixes with the water.

Rainbow Ice

Concept: Salt erodes (eats away) ice, leaving behind craters, or holes.



You will need:

- Cups (4 or more)
- Water
- 4 or more different types of food colouring
- Coarse salt
- Tablespoon
- Aluminum Tray (baking sheet)

What to do:

1. With an adult's help, take an ice cube from the freezer and place it on a tray. Or to make your own giant ice block, fill paper cup halfway with water and place in freezer. Peel the paper away from the ice block.
2. Place ½ tablespoon of coarse salt into each cup.
3. Add 3 drops of food coloring to one cup, and 3 drops of different colouring to each of the remaining cups. Stir well to combine.
4. Empty the coloured salt from the cups onto the ice cube to make rainbow ice!
5. What does the salt do to the ice? _____
6. How does the ice look different? _____

Draw what the ice looks like now.

Did you know? Ice melts faster when salt is added. Salt lowers the freezing point of the ice, this is known as **freezing point depression**. The more salt you add, the lower the freezing point. How do people keep outdoor stairs and sidewalks from getting too icy in the winter?

Freeze-Up Fun

Concept: Primary colours mix to make secondary colours

You will need:

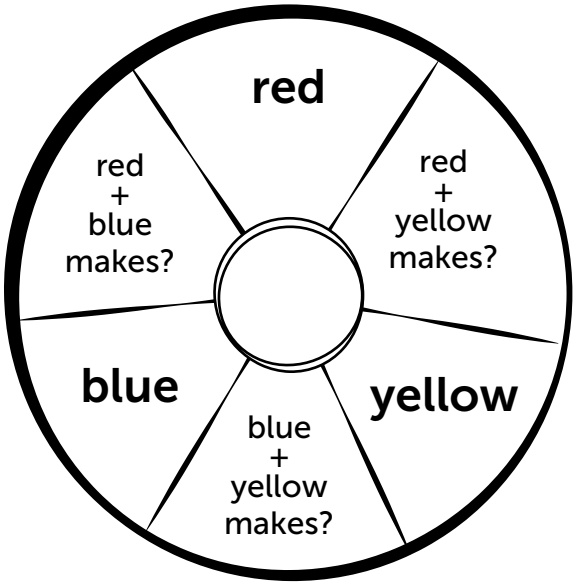
- Clear plastic cups
- Food colouring (at least blue and yellow)
- Water
- Large shallow bowl

What to do:

1. Fill each cup hallway with water.
2. Add 5 drops of blue food colouring to one cup, and 5 drops of yellow food coloring to the other cup.
3. Stir each cup until fully mixed.
4. Carefully put the cups inside the freezer on a flat, stable shelf. Leave the cups inside the freezer overnight.
5. Remove the cups from the freezer – the coloured water inside has frozen!
6. Hold the cups under running water for 15 seconds, or until the ice is loose enough to pour out. Empty the yellow and blue ice into the bowl.

Do you see a new colour when the ice melts? Colour the wheel on the right with the colours you see.

Can you mix other primary colours to create new secondary colours? Try it!



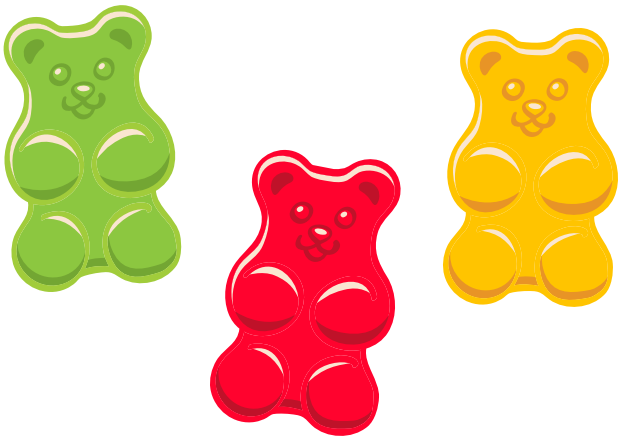
Did you know? The primary colours are used to create all other colours. The three primary colours are red, yellow, and blue. These three colours are unable to be created by mixing any other colours. However, by mixing the primary colours together you are able to create other colours, such as the secondary colours – green, orange, and purple.

Gummy Bear Grow!

The water molecules move from the water into the gummy bear by a process called osmosis.

You will need:

- 2 cups
- Water
- Salt
- Gummy bears
- Tablespoon



What to do:

1. Fill each cup half way full with water.
2. In one of the cups, add 1 tablepoon of salt and stir until mixed thoroughly.
3. Place 1 gummy bear in the cup with the water and salt mixture.
4. Place 1 gummy bear in the cup with just water.
5. Predict what will happen to the gummy bears in each liquid.

6. Let the gummy bears sit for about 3-4 hours, and then remove them from the cups.

7. Was your prediction correct? Is one gummy bear larger? Why do you think so?

Did you know?

Osmosis is the movement of water (or another solvent), but not the particles dissolved in the water. The bear grew, because the water molecules moved into it, swelling it up. Try soaking gummy bears in a few other types of solvents, such as milk, baking soda or vinegar, and predict what will happen.

Tie-Dye Milk

Concept: Surface tension occurs when a liquid resists an object on its surface.

You will need:

- Measuring cup
- Milk
- Liquid dish soap
- Cotton swab
- Food colouring
- Shallow bowl
- Cup
- Water

What to do:

Measure out ½ cup of milk. Pour into the bowl.

2. Add 5 drops of food colouring to the milk.

3. Fill a cup halfway with water. Add one full squirt of dish soap.

4. Dip a cotton swab into the soapy water in the cup. Then, touch the swab to the food coloring in the milk (do not stir!).

5. Draw what you see:

6. Add another colour of food colouring to the milk.
7. Keep touching the food colouring with the swab to see more kaleidoscopic color creations!

Did you know? Milk (and other liquids, like water) have a property known as surface tension. Surface tension is kind of like “skin” on the surface of the milk. It is created by molecules in the milk bonding to each other more than the other things around them. Adding the dish soap broke apart the surface tension. The strong bonds between the molecules were broken, and the milk started to move around – creating a magical swirl of colorful patterns!

Shiny Pennies

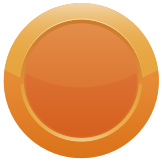
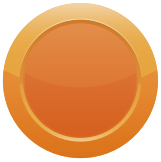
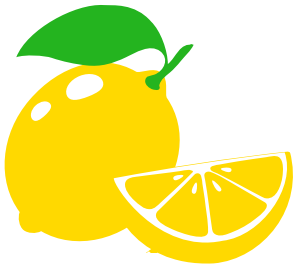
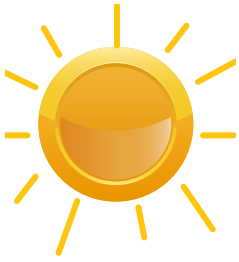
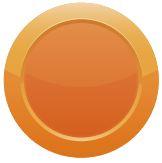
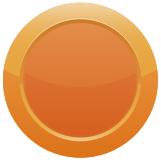
Concept: Lemon juice is an acid. Water is a base.

You will need:

- 2 cups
- Dull pennies
- Water
- Lemon juice
- Paper towels

What to do:

1. Put one penny in the bottom of each cup.
2. In one cup, add enough lemon juice to cover the penny.
3. In the other cup, add enough water to cover the penny.
4. Predict what will happen with each penny. Record your predictions below.
5. Wait 10 minutes, then remove the pennies from the cups and place them on a paper towel to dry.
6. What happened? Did you predict correctly? Record your results below.

	Circle your prediction		Circle your result	
water 	shiny 	dull 	shiny 	dull 
lemon juice 	shiny 	dull 	shiny 	dull 

Did you know? Pennies become dull as the copper on the surface reacts with oxygen and creates copper oxide. Lemon juice is an acid which dissolves the copper oxides, making the penny shiny again!