Benwick Primary School

High Street, Benwick, March, Cambs. PE15 0XA

Telephone: 01354 677266 **email: office@benwick.cambs.sch.uk**

Headteacher: Mrs. Clare Talbot **www.benwick.cambs.sch.uk**

06-03-20

Dear Parents/Carers,

Next week is British Science Week.

Over the course of the week, your child will be participating in a range of activities linked to STEM (science, technology, engineering and mathematics). On Monday, a competition will be launched and an exciting prize is up for grabs for the lucky winner. During afternoon sessions, children will be focusing on the STEM areas through a range of practical activities. We are hoping to have some guest speakers in over the week to talk to the children about career opportunities within the STEM professions. To conclude science week, each class will be participating in a whole school competition, with even more prizes for the taking.

We are also asking children to complete a 'family' experiment at home. This is a wonderful opportunity for children to set up and observe investigations with their siblings, parents/carers etc. I have attached possible investigations that are easy with little resources needed. All the experiments are viewable at the following website: http://www.sciencefun.org/kidszone/experiments/ . Please send in photos of your family completing the experiment together – we would love to see what you get up!

I am sure the children will have a fantastic week!

Yours Sincerely,

Miss Baker
(Science subject co-ordinator)

Lava Lamp

Materials:

- A clean plastic bottle, try to use one with smooth sides
- water
- Vegetable Oil (or you could use Mineral or Baby Oil instead)
- Fizzing tablets (such as Alka Seltzer)
- Food Coloring

Instructions:

1. Fill the bottle up about 1/4th (1 quarter) with water.
2. Pour the vegetable oil in the bottle until is almost full. You may want to use a measuring cup with a spout or a funnel. You may have to wait a couple of minutes for the oil and water to separate.
3. Add a few drops of your favorite food coloring. Watch as the color sinks through the oil. Did your drops of color mix with the water immediately or float in between for a few minutes?
4. Break your fizzy tablet in half and drop part of it into the bottle. Get ready … here come the bubbly blobs!
5. You can even get a flashlight, turn off the lights and drop in another half tablet. This time shine the flashlight through the lava lamp while the blobs are bubbling!

How it Works:

The oil floats on top of the water because it is less dense or lighter than water. The food coloring has the same density as the water so it sink through the oil and mixes with the water. When you add the tablet it sinks to the bottom then starts to dissolve. As it dissolves it makes gas, carbon dioxide. Gas or air, is lighter than water so it floats to the top. The air bubbles bring some colored water with them to the top. When the air comes out of the colored water blob, the water gets heavy again and sinks. It does this over and over again until the tablet is completely dissolved.

Extra Experiments:

What happens if you put the cap on after dropping the fizzy tablet in?
What if you drop a whole tablet in?
When it stops bubbling, try sprinkling some salt into your lava lamp. What happens?

Storm in a Glass

Materials

- Shaving cream
- A large glass
- water
- Food coloring
- A spoon

Instructions:

1. Fill the glass 1/2 full with water
2. Spray some shaving cream on top of the water to fill the glass to ¾ full.
3. Use your finger or a spoon to spread the shaving cream evenly over the top of the water. The top of the shaving cream should be flat.
4. Mix ½-cup water with 10 drops of food coloring in a separate container. Gently add the colored water, spoonful by spoonful, to the top of the shaving cream. When it gets too heavy, watch it storm!

How does it work?

Clouds in the sky hold onto water. They can hold millions of gallons! The layer of shaving cream is our pretend cloud in this experiment. The shaving cream layer can also hold onto water. Clouds can't keep storing more and more water forever, eventually they get too heavy. When that happens, the water falls out (precipitates) as rain, snow, sleet, or hail.

Further Experiments

- Try more water and less shaving cream, or less water and more shaving cream. Which one looks more like a drizzle, and which one looks like a downpour?

Snow Fluff

Materials:

- 1 cup corn starch
- 1 cup shaving cream
- Food Coloring

Instructions:

1. Pour the cup of corn starch into a large bowl. Use a spoon to scoop the shaving cream on top of it. Put 5-10 drops of food coloring on top. Stir to mix.
2. When the mixture looks like grated cheese, use your hands to squish the mixture even more.
3. Pretty soon the shaving cream and corn starch will form a ball, about the same texture as dough.
4. If your mixture is really wet and sticky after mixing, it needs a little more corn starch. If it won't stick together and falls into pieces, add a little more shaving cream.
5. That's it! Try sculpting snow angels, snowmen, or make a tiny snow fort!

How does it work?

The tiny pieces of corn starch get mixed into the shaving cream and suspended in the mixture. Shaving cream is mad of tiny tiny bubbles, and the surface tension on the surface of the bubbles helps 'float' the corn starch particles when the two mix.

Video of experiment here!

Milk Art

Materials

- A bowl
- ½ cup of milk
- Dish soap
- Cotton swab
- Food Coloring, more than one color
- Pepper (optional)

Instructions:

1. Pour the milk into the bowl. Be careful not to move the bowl, you want the milk as still as possible.
2. Put one drop of each color in different places in the milk.
3. Put just a tiny amount of soap on the end of the cotton swab, then touch it to one of the colors. WOW!
4. Let the experimenting begin!
5. To clean up, just pour the milk down the drain. (Do not drink it)

Click here to watch this video experiment on our youtube page.

How it Works:

Milk has fat in it and the food coloring floats on top of the fat. The fat is all connected with bonds. Think of it like the little pieces of fat all holding hands with each other. Dish soaps are used on greasy or oily dishes because it breaks the bonds in fats allowing them to separate. When you add the dish soap to the milk, the fat separates and moves making your magical milk art!

Extra Experiments:

Does the temperature of the milk have any effect?
Try whole milk and skim milk.
Sprinkle pepper on the milk before you add the soap, what happens to the pepper?

Rainbow in a Glass

Materials

- Water
- A mug
- 5 separate cups
- A Tablespoon
- A clear glass
- A dropper or pipette

Instructions:

1. Separate the Skittles into the cups, in these amounts: 2 red, 4 orange, 6 yellow, 8 green, and 10 purple.
2. Heat a mug of water in the microwave for a minute and a half (or long enough that the water is hot, but not boiling). Be careful removing the water from the microwave–it's hot!
3. Measure and pour two tablespoons of hot water into each cup, on top of the Skittles.
4. Stir each cup carefully so no water splashes out. The cups need to be cool for the next part of the experiment, so leave them somewhere where they won't get knocked over. Stir them every ten minutes or so until the Skittles are dissolved and the water is room temperature.
5. Using the dropper, add the colored water from the five cups to the clear glass. Start with purple, then add green, then yellow, orange, and red last. Go slowly here, we don't want the different layers to mix.
6. Congratulations, you made a rainbow. You didn't even have to go outside!

How does it work?

Skittles are mostly made of sugar. When you add hot water to them, the sugar dissolves and the coloring on the shell of the Skittles turns the water different colors. The cup with only two red Skittles doesn't have as much sugar as the cup with ten purple Skittles, but they both have the same amount of water. The amount of matter packed into a certain amount of space is called the density of the material. The red water is less dense than the purple water, so it will float on top of the purple water.

Further Experiments

- We added our colors in heaviest-to-lightest order. Does the rainbow still form if you add the red water first, then the orange, yellow, green, and purple?
- What happens if you stir your rainbow? What if you leave it sitting there over night?

Jello Lenses

Materials:

- 1 package of gelatin dessert mixture (like Jell-O). Light colors (lemon, lime) work better than really dark ones (grape or blue raspberry)
- 3/4 cup of water in a mug
- Round-bottomed measuring spoons and measuring cups
- A paper towel
- A cutting board or tray

Instructions:

1. Get an adult to help you with this one-we're dealing with near-boiling water! Start by heating the 3/4 cup of water in the microwave for a minute and a half.
2. Pour the gelatin powder into a bowl, then pour the hot water over the powder. Mix them together for two minutes.
3. Let the liquid cool for about ten minutes.
4. Cover a cutting board or a flat tray with a paper towel.
5. Scoop out some liquid with the small measuring spoons, then place them on the paper towel.
6. To fill the larger measuring cups, place the empty cups on the paper towel and carefully pour the gelatin liquid in. Try not to spill, this stuff makes a pretty sticky mess to clean!
7. Carefully move your tray or cutting board to the fridge. Wait 4 hours for it to cool completely.
8. After four hours, you can gently remove your lenses from the spoons and cups. Wash your hands in the sink before your touch them, wet hands mean the gelatin won't stick to your skin while you are pulling them out.
9. Add a little water to the bottom of a glass plate or bowl. Then place a lens inside, flat side down.
10. Move the bowl over different things to see them up close!

How it Works:

Lenses bend light as it moves through them. Your gelatin lenses work just the same way as telescopes, microscopes, binoculars, and eyeglasses!

Extra Experiments:

You made a few different sizes of lenses, how are they different? Is your biggest lens the best one? The lenses in microscopes are pretty small, can a small lens still magnify things?

Invisible Extinguisher

Materials:

- Tall Drinking glass or 16 oz plastic cup
- Short Drinking glass or 9 oz plastic cup
- Tea Light
- Matches or Lighter

Instructions:

1. Place tea lights in the short drinking glass
2. Using a long match or safety lighter, light the tea lights while leaving them in the glass
3. In the tall glass, pour 1/2 cup vinegar
4. Slowly sprinkle 1/2 tsp of baking soda into the tall glass containing the vinegar. You can dump it all in at once, but be ready for a big eruption!
5. Let the reaction slow down until the foam has disappeared.
6. Slowly tilt the tall glass on it's side over the tea light as if you were pouring the air over it.
7. If the flame doesn't go out on your first try, pour another scoop of baking soda into the vinegar and repeat steps 5 & 6

How It Works:

The baking soda/vinegar reaction results in a gas called Carbon Dioxide (CO_2). CO_2 is more dense than normal air, which means that it will sink! Because CO_2 sinks, it stays in the cup instead of floating away like a normal mix of air would. This means you have a cup full of CO_2!

The candle burns thanks to a combustion reaction that requires Oxygen (O_2), something we find in abundance in the air around us. When you pour your cup of CO_2 into the cup containing the candle, the CO_2 sinks to the bottom of the cup and surrounds the candle. This displaces (or pushes up) all the normally mixed air, along with all that O_2 the fire needs to burn. And Voila! Your candle is extinguished invisibly!

Cool Crystals

Materials

- ¼ cup Epsom salt
- ¼ cup hot water
- Food coloring
- A cup
- A plate
- Optional: a small jar

Instructions

1. In the cup, measure out ¼ cup Epsom salt and ¼ hot water from the sink. Stir them together.
2. If all the salt doesn't dissolve, heat the cut in the microwave for 20-30 seconds.
3. When all the salt is dissolved, put a drop or two of food coloring in the cup and stir to mix.
4. Place the cup in the refrigerator. Check on it every half hour or hour. Within 4 hours, crystals should form in the bottom of the cup.
5. Scoop the crystals onto a plate using a fork.
6. If you want the crystals to last longer, put them in a jar with a lid (the small jars that baby food comes in work well).

How does it work?

More salt can dissolve in hot water than cold, so when the hot water cools in the microwave, the Epsom salts create crystals on the side of the cup. The unique shape of Epsom salt molecules makes them form long crystals that almost look like needles. Different crystals have different shapes. If you look at sugar or salt crystals under a magnifying glass, you can see their cool crystal shapes, too!

Further Exploration:

- When crystals form after being dissolved, they will cling onto anything they can. You can drop a bottle cap into your cup of dissolved salt and they will form on it. You can make a sculpture out of pipe cleaners and they will form on that, too.
- Does the experiment work with room temperature water? Cold water?