September 6 – Bernoulli's Principal

I hope that everyone is getting back into the swing of things with school. This week we are going to explore something called Bernoulli's Principle. Bernoulli's Principle deals with air, its movement and air pressure. That seems like a lot to take in but once you look at it, it is pretty easy to understand the basics. So let's give it a whirl.

***Always remember to ask an adult before doing any Science experiment.**

Materials:

2 Empty pop cans
24 Drinking straws
Flat table or counter

Procedure:

1. Lay 23 of the straws out on the table about a centimetre apart all parallel to each other.
2. Stand the two cans up on the straws in the middle of them, about 5 cm apart from each other.
3. Using the last straw blow air between the cans, and watch what happens. Is it what you thought would happen?

Explanation:

Most people will expect the cans to roll apart from each other, but the cans actually roll towards each other. Why is this? Well it is due to the Bernoulli Principle. The Bernoulli Principle states that the pressure of a liquid decreases as its velocity increases. With our experiment here that means that as you blow air between the cans the velocity (in basic terms the movement) of the air between the two cans increases, and the pressure that the air is applying to the inner sides of the cans decreases. That allows the air on the opposing sides of the cans to push the cans towards to the area of lower pressure. We didn't in anyway increase the air pressure on the outside of the cans so the cans were not "sucked" together, rather it was the decrease in pressure between the cans that allowed the cans to roll towards each other, they were pushed together!

Have a great week!

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September 13 – Iron In Cereal

Have you ever look at the nutritional information on the side of a cereal box and seen iron on the side. Iron in our cereal what are they talking about. Iron is a metal are we really eating metal in our cereal. Do this little experiment to find out.

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Materials

Different cereals
Ziploc baggies
Bowl
Water
Magnet
Pencil
Paper towel
Spoon
Tape

Procedure

1. Measure out one cup of the cereal into a Ziploc baggie, and zip closed
2. Crush the cereal
3. Pour the cereal into a bowl
4. Stick a magnet in a see what it collects
5. Now mix the cereal with a cup of water using the spoon, mash it in really good and make a goop, you may want to leave it sitting for a few minutes and then mix it up again to get a good mixture
6. Tape the magnet onto the end of the pencil and put it into a Ziploc baggie to keep it clean.
7. Once you have a good mixture with your cereal and water, take the pencil in the baggie and stir the mixture with the magnet end. You need to stir for quite a while (5 to 10 minutes).
8. Carefully wipe the baggie with a paper towel and examine what you have found
9. Try stirring again for a few more minutes. Examine your findings again.

Explanation

There should in fact be iron in our cereal. Our bodies need iron to work and function properly. The type of iron that we need is not really the metal type of iron, but most cereals have added metallic iron in them as a nutritional supplement. So some types of cereal will have more and some will have less.

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September 20 – Jumping Pennies

Air, it is everywhere around us and takes up space, and how much space it takes up depends on the temperature of the air. As air cools down it takes up less space and as it warms up it takes up more, as we will find out this week with our experiment. You just need a few things that are around the house to see how air expands as it is heated up.

Materials:

Empty pop bottle (glass is best, but plastic will work too)
Coins of different sizes
Water or oil
Fridge
Freezer

Procedure:

1. Find a coin that will cover the opening of the bottle without falling in, or hanging over the edges too much.
2. Put a few drops of water on the lip of the bottle and place the coin on, you need to make a good seal between the coin and the bottle.
3. Wrap your hands around the bottle. Carefully watch the coin and listen. Your coin should begin to tap on the edge of the bottle. If it doesn't seal the coin again with a few more drops of water.
4. Try rubbing your hands together before you put them around the bottle. What happens now?
5. Try putting the bottle into the fridge for a few minutes before you do this experiment, and see what happens. How about if you put it into the freezer?

Explanation

The coin has formed a seal with the bottle, which has air in it, locking the air in the bottle. When you put your hands on the bottle, the heat from your hands is transferred to the bottle, which heats the air in the bottle. As the air warms up it expands, because the air molecules are moving faster, this increases the pressure in the bottle, eventually the air expands so much it has no where to go, so it pushed on the coin, and the coin lifts up a little bit, allowing some air to escape. The coin then falls back into place once the air pressure is decreased enough. This will continue to happen for a bit until you have heated the air as much as possible.

You should have gotten a bigger reaction when you rubbed your hands together before you held the bottle as you made increased the heat in them. Also when you cooled the bottle down you should have gotten bigger reactions.

What gave you the biggest reaction? My guess is if you rub your hands together before holding a bottle out of the freezer. Check and see if I am right, or if you guessed differently if you are right.

Have a great week

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September 27 – Expanding Water

I like to keep a bottle of water on my desk to drink throughout the day at work, and I like cold water much better than warm, so a lot of times I will freeze some water in a bottle overnight so that when I fill it the next day it will keep my water cold all day. Well a few times I have gone to get my bottle out of the freezer in the morning only to find that it is cracked and I can't use it. Do you know why this is; did you know that water expands as it freezes? Try this experiment to see just what I am talking about.

***Always remember to ask an adult before doing any Science experiment.**

Materials:

Plastic Bottle (one that it is okay to wreck)

Plastic bag

Water

Freezer

Procedure:

1. Fill the bottle with water all the way to the top and put the lid on tightly
2. Place the bottle in the plastic bag and seal the bag
3. Set the container in the freezer over night (if you have a larger container it might take longer)
4. Check the jar the next day.
5. Observe what has happened?

Explanation:

When you check on the jar you should see that the jar has cracked and broken, if the bottle wasn't completely full you may not have a cracked bottle but it should be deformed where the water pushed the bottle out, just not enough to break it. As water freezes it expands, and because the lid was on the jar tightly and the jar was filled up to the top the expanding water has no where to go, so it pushes on the sides of the jar until the jar finally cracks and breaks.

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