

May 1 – Land vs. Water

This past week, I have been away enjoying a vacation on the beach, which led me to the experiment that I have this week. Have you ever been on a beach during the day and noticed how hot the sand is, but the water feels cool, or at night when the sand is cool and the water doesn't seem as cold. Is this just your imagination, or is there some science behind it? Well try this experiment to find out.

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

Materials

2 bowls
Water
Soil
2 Thermometers
Sunny windy or a lamp
Piece of paper
Pen
Tape

Procedure:

1. Tape a thermometer to the inside of each bowl, so that you can read them when the bowl is full.
2. Fill one bowl with water, and the other with soil, let the bowls sit for a few minutes and then read the temperature of each and record.
3. Set the bowls in a sunny window or under a lamp. Record the temperature of the soil and the water every 5 minutes for about an hour. Which heated up faster?
4. Now take the bowls out of the window, and continue taking the temperature of the soil and the water every 5 minutes for another hour. Which cooled off faster?

Explanation:

You should have noticed that the soil heated up a lot faster than the water, this is because it takes a lot more energy to heat up the water and raise the temperature than it does the soil. Soil has lots of air pockets in it and is less dense than the water, so it takes less energy to heat it up than the water. When you let the soil and the water cool down, you should have noticed that the soil also cooled a lot faster than the water. Because the soil is less dense the heat can escape a lot faster from it than it can the water.

Have a great week

Erin Greggains
Regional Executive Director
Praxis the Science and Technology Hotline

May 9 - Camouflage

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Materials:

2 sheets of newspaper, with no pictures on them, only print

2 sheets of construction paper – different colors – black and orange work best

Scissors

Ruler

Pencil

Helper (you need them only at the end – keep them out of the room until you are ready)

Procedure:

1. Cut the construction paper sheets in half and then cut two squares the same size as the construction paper out of one sheet of the newspaper
2. Make a stack of the 6 squares of paper and draw a big fish on the top sheet.
3. Cut out the fish shape from all 6 sheets of paper.
4. Lay your uncut piece of newspaper out on the floor, and then scatter the 6 fish cut outs over the paper.
5. Have your helper come into the room with their eyes closed, lead them over to the paper and have them stand over the paper, when you tell them to have them open their eyes and quickly look at the paper to see which of the fish they can see, give them a couple of seconds to count the fish, then have them look away. See how well they did.
6. Try this out with a few more helpers and see how many fish they can see.

Explanation:

Your helper most likely only saw 4 fish, the colored ones. People usually miss the newspaper fish because they are camouflaged. What does it mean exactly to be camouflaged? Well camouflage happens when something blends into its environment, its natural surroundings, this normally happens with color, as we saw in the experiment. Animals camouflage themselves to make it harder for predators who want to eat them see them.

Have a great week.

Erin Greggains

Regional Executive Director

Praxis the Science and Technology Hotline.

May 16 - Bubbles

Have you ever tried to rinse the bubbles out of the sink after washing the dishes and noticed that the temperature of the water affects how fast the bubbles disappear, well this week we are going to look at how heat affects bubbles with our experiment. But first, before you do the experiment try rinsing the suds out of the sink first with hot water and then with cold water, and take note of whether they disappeared faster with the hot or cold water, we will find out why after we try the experiment.

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Materials:

Balloons
Tape
Freezer
Hair Drier

Procedure:

1. Blow up the balloon and tie it off.
2. Carefully wrap a piece of tape all the way around the middle of the balloon.
3. Place the balloon in the freezer for about 5 minutes, then take it out and look at it, notice what has happened to the tape around the middle.
4. Now carefully heat the balloon up by blowing warm air on it with the hair dryer for a few minutes, be careful not to heat the balloon with the hair drier to close or it might pop. Look at what has happened now to the tape around the balloon.

Explanation:

First when you rinsed the sink out you should have noticed that the bubbles disappeared much faster with the cold water, let's find out why.

When you put the balloon in the freezer you should have noticed that the balloon shrunk and the tape was all wrinkled around the middle of it. This is because the air inside the balloon contracted as it cooled down, shrinking the balloon. When you heated up the balloon with the hair drier it should have expanded bulging out around the tape, this is because as the air was heated it started to expand and take up more room. Now how does this affect the bubbles in the sink. When you rinse the bubbles out of the sink, you create new bubbles with the spray, but with the hot water the bubbles are bigger, because the air inside of them has been heated up, with the cold water the bubbles are smaller because of the air contracting and shrinking as it is cooled, therefore the smaller bubbles rinse out of the sink and down the drain a lot faster than the bigger hotter bubbles. So the next time you rinse the sink out use cold water, it takes less water and it will take less energy, the water doesn't need to be heated, which is better for the environment.

I would also like to mention that we are having the **Praxis Annual General Meeting** on Wednesday May 20th at 7pm at Medicine Hat High School; anyone interested in attending is welcome. For more information please call the Praxis office at 403-527-5365.

Have a great May long weekend!

Erin Greggains
Regional Executive Director
Praxis the Science and Technology Hotline

May 23 - Wind

The other night I was sitting at home, listening to the wind howl outside, which got me thinking that I might be able to use the wind as the topic for my next experiment, so I looked around and this is the experiment that I came up with, it shows us just how the wind is formed.

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

Materials

Lamp without its shade

Talcum powder or chalk dust

Procedure

1. Turn the lamp on.
2. Let the bulb get quite hot. Do not touch the bulb as you will burn yourself. Hold your hand a few centimeters away so you can feel the heat.
3. When the bulb is hot, sprinkle a little bit of talcum powder or chalk dust just above the bulb.
4. Observe what happens.

Explanation

When you sprinkled the powder over the light it should have swirled around, like dust does outside in the wind. You let the lamp sit and get hot to warm the air around it. The powder is then carried upwards by a rising current of air that has been warmed by the light, the wind. Real wind starts when the sun heats the earth. As the earth gets warm, it heats the air just above it. This hot air expands, making it lighter. The warm, light air rises, leaving room for heavier,

cooler air to move in and take place. This movement is what we call wind.

This helps explain why last week we got some pretty strong winds, it was warm for a couple of days and then cooled off quickly. Have a great week.

Erin Greggains

Regional Executive Director

Praxis the Science and Technology Hotline

May 30 – Webs

This is the perfect time of year to be out and about checking out everything in your surroundings. One thing that I have really noticed again now that it is spring is the spider webs, so I thought that I should do an activity with them so here it is.

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

Materials:

Black Construction paper (or another dark color)

Scissors

Baby powder

Hairspray

Spider webs

Glue stick

Procedure:

1. Go outside and find a spider web to collect, make sure it is dry and there is no spider on it. The best time to find spider webs are in the morning on a spring or summer day.
2. Spray the web with hairspray, and sprinkle baby powder over it so that there is a coating of powder.
3. Spray one side of the paper with hairspray and push the sticky side against the spider web, then carefully cut the web away from its support. You may want to have someone help you cut away the web so that you can hold onto the paper.
4. Lay the spider web out to dry on the paper on a flat surface.
5. Collect a couple more webs using the same steps, you want to find webs that are not side by side for your best results.
6. Compare your collected webs.

Explanation:

The design of your collected spider webs should vary from web to web. Spiders of the same species will build webs that are the same geometric shape, whereas different species of spiders build webs in different geometric shapes. The size of a spider affects the design of the web, the radials (spokes) of the web are made first. The spider makes them so that the distance between them is small enough that the spider can cross them easily. The spider also uses the distance between its back legs and its spinners to measure the distance between the spirals around the web.

This week will be my last article, as I am changing jobs, the new Praxis Executive Director Jeff will be taking over the experiments next week. I have had a lot of fun coming up with the experiments for this column over the last two years, and I hope everyone has had fun reading them and learning about science and will continue to do so. Have a great week and check out Jeff's first experiment next week.