DOWNLOAD PDF STATION SOAP AND WATER INTERMEDIATE SCIENCE TEST

Chapter 1 : Science Fair Projects on Hand Sanitizers or Liquid Soap for Killing Bacteria | Sciencing

In this free science fair project idea, kids will conduct an easy electrolysis of water experiment to test solutions of salt, baking soda, tap water, and more. Science Science project.

All materials can be found in your home, at local stores, or on ebay. The earliest form of soap was derived from various types of plants known to have cleansing properties, usually when mixed with water. Research Questions What are the active ingredients in soap? What determines the quality of soap? What are some of the best selling brands of soap? How is soap manufactured? Terms and Concepts to Start Background Research Density Soap Plants Research related materials see bibliography below and search terms listed above Remove each bar of soap from its packaging, and photograph each bar next to its packaging. Weigh each bar of soap, and record all ingredients listed on packaging. Fill 2 bowls with water. Place all the bars of soap in one bowl, and notice which ones float and which ones sink. Try to determine why. Stick your finger in the pepper-water and see if anything happens to the pepper. Coat another of your fingers with soap, and place the soapy finger in the water. Notice how the pepper reacts. Break each bar of soap in half, and examine the inside of each bar. Note any differences in appearance and texture. Place each type of soap, one type at a time, on a paper towel, and put the pieces in the microwave on HIGH for about 2 minutes. Observe each soap sample for the whole time, and record all observations. Take a survey to find out which soap brands are most popular and why. If desired, create your own brand of soap, and test it against existing brands optional. Analyze the data from all of the above procedures. Interpret your results in a detailed report. Illustrate your findings using colorful graphs and charts. Include soap samples in your science fair display. Show interesting photos taken throughout the course of the project.

Chapter 2 : Testing Water Hardness | Science project | calendrierdelascience.com

Every science fair project needs variables to test. In this case, you'd want to clean your hands with hand sanitizer or liquid soap. You could further the experiment by testing different brands of sanitizer and soap.

Other powders - Any powders used other than talcum powder, such as lycopodium powder or carbon powder, should be subject to a risk assessment. Lycopodium powder is a potential allergen. Liquid detergent - Any washing-up liquid or multipurpose detergent will suffice. Lux soap flakes are ideal for making liquid soap if you can source them. They do not form a stable emulsion and precipitate out overnight. Note that most liquid hand washes are based on the same detergents as washing-up liquids and do not contain soap. Do not dilute with water. Hard water - A supply of hard water can be made by stirring solid calcium sulfate into a large volume of tap water, allowing to stand for some time then, after the undissolved solid has settled out, decanting the clear solution into a container suitable for students to collect their samples as required. Does the talcum powder stay on the surface, or does it sink? Compare what happens to what happened in the previous experiment. Are the results different from those obtained with purified water? If so, in what ways? If you do test any of these, what differences do you find? Once you have a needle floating, add a small drop of detergent to the water, but away from the needle. Teaching notes This series of brief experiments on the surface tension of water, and the effects of detergents and soaps on this, can serve as an introduction to the phenomenon of surface tension, with a discussion of results leading into simple theory. Alternatively, it could be used to illustrate prior teaching of the topic, leading to discussion of what is happening when detergents and soaps are added, including the differences found with hard water. There is a net force of attraction between the molecules of water or any other liquid holding the molecules together. For a molecule in the middle of the liquid, these forces, acting equally in all directions, more or less balancing out. For a molecule in the surface layer of the liquid, the forces do not balance out, and all the molecules in the surface layer are pulled towards each other and towards the bulk of the liquid. This brings these molecules closer to their neighbours until increasing forces of repulsion create a new balance, and gives rise to the phenomenon of surface tension. When an object falls onto the surface, it has to push the water molecules apart. If the effect of the weight of the object is insufficient to match the attractive forces between molecules in the surface layer, the object will not enter the surface. Careful observation of the floating needle will show that the water surface is bent down under the weight of the needle, the surface tension causing it to behave as if the needle was supported by a flexible skin. Molecules of most detergents and soaps are long chain hydrocarbon molecules with an ionic group at one end, usually carrying a negative charge, thus making it an anion. The effect of these molecules on the water surface is to considerably weaken the forces between water molecules there, thus lowering the surface tension. When the drop of detergent is added to the powdered surface, the initial effect is to draw the powder back to the edges very rapidly as the detergent molecules form their own surface layer with a lower surface tension than the water. As the detergent gradually mixes with the water, the powder begins to sink, and a needle will now pass through the surface with ease under its own weight. However, if lycopodium powder is used, which is less dense than water, it remains at the edges. Other powders may clump into nodules if they are not wetted by the detergent solution. These cations form an insoluble compound with soap anions, so instead of forming a surface layer, they are precipitated out, leaving the surface tension largely unchanged. Many go into the mathematical treatment in great depth, but a few manage to treat the topics at a level suited to this series of experiments. The following sites give a deeper treatment of these topics, but the lack of illustrative diagrams of intermolecular forces limits their helpfulness:

Chapter 3 : Soil Pollution Science Fair Projects and Experiments

8 grade 8the university of the state of new york intermediate-level science test written test june 2, student name_____.

These seven activities can be set up as independent works on a shelf, or incorporated into other areas of the preschool classroom. They teach life skills while also developing those fine motor skills. They can serve multiple functions. Water work is great as a sensory experience. Activities can teach children how to control water for real life experiences. They can also be used to exercise those finger muscles, to enhance fine motor skills. When setting up these activities always include a sponge for clean-up, and keep extra towels on hand. Insist the children wear plastic aprons to protect their clothing from being soaked. Also, make sure each child has extra clothes on hand for those "water fun" accidents. Provide an area that is protected by a non-slip bathmat and teach children how to clean up their spills. Demonstrate proper handling of the materials, and then allow the children to experiment with them. Squeezing a sponge - Have a bowl of water with a small sponge in it. Show the child how to simply pick up the sponge with both hands, and squeeze out all of the water. Drop it back in, and repeat. This serves as a great sensory experience, as well as teaching how to squeeze out a sponge to avoid drips. Transferring water with a sponge - Use a sponge to transfer water from one bowl to another. Show the child how to pick up the sponge and let most of the water drip back into the bowl before moving to the other bowl. Squeeze the sponge into the second bowl, and then repeat the process until all of the water has been transferred. Then transfer the water from the second bowl back into the original. Further extensions of this activity include adding bowls or using a garlic press to squeeze out smaller pieces of sponge. Transferring water with a baster - Use a turkey baster to transfer water from one container to another. Children can be introduced to this by simply practicing picking up and squeezing out water into one bowl, similar to the first sponge squeezing activity. For more precise control, try it with an eyedropper. Then use the eyedropper to place individual drops of water onto a soap dish one with suction cups. Pouring water - Set up water pouring on a tray for independent practice. Start with pouring water from one vessel to another. Each vessel should have handles and be identical in size. Eventually use smaller vessels that have no handles or pour into multiple smaller ones. Put a funnel into a smaller necked container for even more precise pouring. Make it a practical experience by having a pitcher of drinking water available for the children to use to fill their own cups or water bottles when thirsty. Using a strainer - Add objects to the water, such as plastic ice cubes, sequins, or beads. Place a strainer over the cup when pouring to catch the items. Return them to the water when pouring back into the original. Put these items into a bowl and use a slotted spoon to scoop them out. Cleaning - Teach children how to use a sponge or scrubber brush to clean tables and chairs. Have them independently pour one pitcher of water into a tub or bowl with a drop of dish soap to create soapy water for cleaning. When finished cleaning, empty the water into the sink or a waste water bucket. Other fun cleaning activities can be washing a doll, scrubbing a small pumpkin or gourd, or other toys. Two great ways of doing this also provide great practical life skills. Allow the child to use an eyedropper to put dish soap into a large bowl, then add one pitcher of water. Using a whisk, mix until bubbles climb high! Try out different styles of whisks. Also try using a rotary beater. Have the children grate bars of a light soap, such as Ivory. Use a plastic grater bowl with a lid, such as made by Tupperware, as metal graters can hurt little fingers. Then add a spoonful to the water. A rotary beater works the best for mixing the soap into bubbles. Water activities are a great way to enhance fine motor skills, while also providing sensory and practical life experiences. When set up correctly, and properly monitored, they allow for great exploration and learning.

Chapter 4 : Dougherty, Mr. | Science / BIOLOGY: Properties of Water Lab

Grade 8 Science â€" June '16 [3] [OVER] Part I DIRECTIONS There are 45 questions on Part I of the test. Each question is followed by three or four choices, numbered 1 through 4.

Clear glasses or test tubes How to do the extraction Before you begin, make sure you have chilled your alcohol in the freezer. This is a very important first step. Room temperature alcohol will not work nearly as well as cold alcohol. Pop the whole container in the freezer to chill it. The alcohol will not actually freeze! The first thing you will need is a sample. You probably already have something like this in your kitchen. The DNA is contained inside the nucleus of the cell. To release it, we need to break down the plant matter, then break open the cell and finally break in to the nucleus of the cell. Your first step is to break apart the plant matter. That means squish up the fruit. Now we need something to break open the cell walls. It turns out that cell walls are make up of things called lipids, or fats. If you had greasy or fat coated dishes in the kitchen, you would use a detergent to clean it up. We are going to do the same thing to break open those cell and nuclei walls to release the DNA. Gently mix this solution without making bubbles until the salt dissolves. The salt will latter help the DNA stick together. Add this solution to your ziplock bag of squished up fruit. Add enough so that you have a nice mixture that you cannot see through. Flatten out your baggie to remove most of the air and then seal it up. Gently squish the liquid around. If you have the time, let this mixture sit for minutes to give the detergent time to release a lot of DNA. Filtering out the plant matter is the next step. Place a coffee filter on top of a glass and carefully pour your fruit mixture into the filter. This is the solution that contains the DNA. Since the DNA is soluble in water we need something else to sort of pull it out of the solution. For this we will use rubbing alcohol ethyl alcohol will work as well. The higher the concentration of alcohol the better it will work to make the DNA come out of the water solution. Very carefully pour the alcohol down the side of the glass. You are trying to create a layer of alcohol that floats on the top of the water solution. The DNA will come out of solution at the boundary layer between the water and alcohol. You should see some white string almost cotton like strands begin to appear in the glass. That is the DNA! Let the solution sit for a few minutes and you should see more DNA come out of the solution. You can collect the DNA using a toothpick, chopstick or paperclip. You have extracted DNA at home! If you want to save your DNA you can store it in a small container filled with the rubbing alcohol.

DOWNLOAD PDF STATION SOAP AND WATER INTERMEDIATE SCIENCE TEST

Chapter 5 : Detergents, soaps and surface tension- Learn Chemistry

performance test, one Sorting Chart template for Station 1, and one Ball and Ramp Place Mat template for Station 2. The materials for each station are illustrated in the Station Diagrams.

Your first cup will get no saltâ€”this is the control. The last cup will get four teaspoons of salt. Skipping the first cup, fill your cups with 1, 2, 3 and 4 teaspoons of salt, respectively. Be sure to label correctly. Stir each cup until all the salt is dissolved. Put a small amount of hand soap on your hands and wet them with one of thewater samples. Record your observations on how easy it is to produce bubbles. Which water samples are the hardest based on this test? Use the strips in the hardness testing kit to rank the water samples from hardest to softest. Does this match up with your bubble test? Results The water with the highest amount of dissolved salts will be the hardest. Epsom salt is a common name for magnesium sulfate. The more salt you put in the water, the higher its dissolved magnesium concentration will be, causing the water to be harder. The harder the water, the harder it will be to produce bubbles. Cup number 5 will be the most difficult to turn into a later on your hands, and may even leave your hands feeling sticky and dirty from the soap scum. Going Further Compare your results to water samples from your house tap water or filtered water. Disclaimer and Safety Precautions Education. In addition, your access to Education. Warning is hereby given that not all Project Ideas are appropriate for all individuals or in all circumstances. Implementation of any Science Project Idea should be undertaken only in appropriate settings and with appropriate parental or other supervision. Reading and following the safety precautions of all materials used in a project is the sole responsibility of each individual. Related learning resources Science project The Mohs Test:

Chapter 6 : Elephant Toothpaste

Science Laboratory Safety Test. safety general. STUDY. A. left at your lab station for the next class. B. wash your hands thoroughly with soap and water.

Water, H2O, is a polar molecule. The oxygen atom shares the pair of electrons with hydrogen in an unequal manner. Since oxygen is more electronegative than hydrogen, it has the tendency to pull the electrons towards itself more than hydrogen does. Consequently, a partial charge results at each end of the water molecule. Oxygen will have a negative partial charge and hydrogen will be slightly positive. These partial charges result in the ability of water to exhibit what is called in chemistry as an intermolecular force, specifically a Hydrogen bond, a weak yet important attraction between the hydrogen of one molecule and the oxygen of a neighbor water molecule. H-bonds are important because they allow water molecules to: Remember also the definition of the states of matter: A common misconception among students is that a water molecule breaks up into its components -H and 0- when it becomes a gas. What actually happens is that the H-bonds between water molecules break allowing the water molecules to detach from each other as they change from a liquid to a gas. If individual H2O molecules dissociated when in gaseous state, we would not call them "water vapor". Solutions are homogeneous mixtures comprised of a solute the dissolved substances mixed in a solvent what it is dissolved in. In living systems water is considered the universal solvent. Solutions are physical combinations, not chemical combinations. As we discussed in class, there are two types of covalent bonds, polar and non-polar. Molecules joined by polar covalent bonds are not "sharing" the electrons evenly and will have resulting areas of partial charge around different areas of the molecule. Molecules joined by nonpolar covalent bonds are "sharing" the electrons evenly and will not have areas of partial charge around the molecule. Ions are single atoms or groups of atoms that have gained or lost electrons and now have a resulting charge. This lab explores the interaction of various solvents and solutes related to the specific characteristics of their bonds. We will be looking at two different types of crystal solids and two types of liquid solvents. While we are investigating physical "mixtures", the chemical nature of the solvent and solute will impact the resulting solution. There are many ways that this is relevant to life. Water is a very polar molecule. The oxygen has a partial negative charge and the hydrogens have a partial positive charge. Salts are comprised of positive ions and negative ions. The negative end of water is attracted to and surround the positive ions and the positive end of water are attracted to and surround the negative ions. Most biologically important small molecules in our body are either polar or salts. Water is the ideal solvent to dissolve them all. We can apply the same argument to oceans and rivers. They also dissolve important nutrients for all the life forms that call these bodies of water home. Oils and detergents also have important properties with water. Oil is not soluble in water. We observe this when we observe that water and oil do not mix. Water is polar and oil is very non-polar. They avoid each other. Since oil is lighter than water it floats, and if you look at the top of the water, most of the oil will accumulate in one glob, minimizing its surface with the water. When you shake it and force the oil to go into solution, it forms little balls, because the spherical shape has the smallest surface area with water for any given volume. When the balls of water get very small, they can stay suspended in the water for longer, but will eventually float to the surface again and reform the glob. Detergents are molecules which have polar ends, usually charged, which love water and non-polar ends, which love grease. When we shake the water, oil and detergent, the non-polar end of the detergent becomes embedded in the grease ball like dissolves like leaving all the polar ends of the detergent facing the water. Thus the small droplets of oil have become surrounded by the detergent. The surface of this new "fuzzy" grease ball is the polar ends of the detergent, which have an affinity for water and can stay suspended in it longer, and do not stick to the side of the bottle to avoid water, like the grease alone did. Water organizes detergent into soap bubbles. In the soap bubble, the detergent forms a water sandwich, with detergent as an outer and inner layer and water in the middle. Of course the polar ends of the detergent face the inner water layer and the non-polar ends of the detergent are on the outside. Alcohol is not polar enough to do this very well. This uneven distribution of charge is called polarity. Since opposite electrical charges attract, water molecules tend to attract each other, making water kind of "sticky. This property of water is known as cohesion. All these water molecules attracting each other mean they tend to clump together. This is why water drops are, in fact, drops! Water is called the "universal solvent" because it dissolves more substances than any other liquid. This means that wherever water goes, either through the ground or through our bodies, it takes along valuable chemicals, minerals, and nutrients. Water, the liquid commonly used for cleaning, has a property called surface tension. In the body of the water, each molecule is surrounded and attracted by other water molecules. However, at the surface, those molecules are surrounded by other water molecules only on the water side. A tension is created as the water molecules at the surface are pulled into the body of the water. This tension causes water to bead up on surfaces glass, fabric , which slows wetting of the surface and inhibits the cleaning process. You can see surface tension at work by placing a drop of water onto a counter top. The drop will hold its shape and will not spread. In the cleaning process, surface tension must be reduced so water can spread and wet surfaces. Chemicals that are able to do this effectively are called surface active agents, or surfactants. They are said to make water "wetter. Surfactants can also provide alkalinity, which is useful in removing acidic soils Investigating the Properties of Water P art A. How many drops of water do you think will fit on the head of a penny? Make your hypothesis here. Using a dropper slowly drop water onto a penny counting each drop. How many drops of water did fit on the head of a penny? On your data sheet, draw what the penny looks like, as viewed from the side, before it overflowed. Place several drops of water on a piece of wax paper. You may use food coloring to color the water if you wish. What happens to the water droplets as you roll them around on the wax paper? Give the scientific term used to describe the property of water you discovered in parts A and B. Explain this property in molecular terms. Place one drop of water on your piece of wax paper. Draw a diagram of the water droplet from the side perspective. Place a toothpick in soap and dip it into the water droplet. Draw a diagram of the result. What effect does soap have on water? Use scientific language you learned in parts A and B in your answer. Explain this effect in molecular terms. Fill a beaker or cup till it is just about to overflow Balance a paper clip on the surface of water,. Balance the paper clip again. Add one drop of detergent to the water and record what happens. What does this tell you about the properties of water? Record what happens on your data sheet. Clean the beaker so there is no detergent remaining.

Chapter 7 : 7 Activities for Preschool Children Using Water

Intermediate-Level Science Test is designed to measure the content and skills contained in the Intermediate-Level Science Core Curriculum, Grades The core curriculum is based on the New.

Prevents infectious causes of diarrhea. A study showed that improved hand washing practices may lead lead to small improvements in the length growth in children under five years of age [5] In developing countries, childhood mortality rates related to respiratory and diarrheal diseases can be reduced by introducing simple behavioral changes , such as hand washing with soap. This simple action can reduce the rate of mortality from these diseases by almost 50 percent. Pneumonia , a major ARI, is the number one cause of mortality among children under five years old, taking the life of an estimated 1. Diarrhea and pneumonia together account for almost 3. Hand washing is usually integrated together with other sanitation interventions as part of water, sanitation and hygiene WASH programmes. Hand washing also protects against impetigo which is transmitted through direct physical contact. A possible small detrimental effect of hand washing is that frequent hand washing can lead to skin damage due to drying of the skin. Five critical times during the day[edit] There are five critical times during the day where washing hands with soap is important to reduce fecal-oral transmission of disease: A study of hand washing in 54 countries in found that on average, It has also been successfully implemented in Indonesia. Substances used[edit] Soap and detergents[edit] Removal of microorganisms from skin is enhanced by the addition of soaps or detergents to water. Water is an inefficient skin cleanser because fats and proteins, which are components of organic soil, are not readily dissolved in water. Cleansing is, however, aided by a reasonable flow of water. To date, there is no evidence that using recommended antiseptics or disinfectants selects for antibiotic-resistant organisms in nature. A comprehensive analysis from the University of Oregon School of Public Health indicated that plain soaps are as effective as consumer-grade anti-bacterial soaps containing triclosan in preventing illness and removing bacteria from the hands. Bacteria grow much faster at body temperature 37 C. However, warm, soapy water is more effective than cold, soapy water at removing natural oils which hold soils and bacteria. Contrary to popular belief however, scientific studies have shown that using warm water has no effect on reducing the microbial load on hands. In the late s and early part of the 21st century, alcohol rub non-water-based hand hygiene agents also known as alcohol-based hand rubs, antiseptic hand rubs, or hand sanitizers began to gain popularity. Most are based on isopropyl alcohol or ethanol formulated together with a thickening agent such as Carbomer into a gel, or a humectant such as glycerin into a liquid, or foam for ease of use and to decrease the drying effect of the alcohol. Alcohol-based hand sanitizers are almost entirely ineffective against norovirus or Norwalk type viruses, the most common cause of contagious gastroenteritis. The front and back of both hands and between and the ends of all fingers are rubbed for approximately 30 seconds until the liquid, foam or gel is dry. As well as finger tips must be washed well too rubbing them in both palms alternatively. The Center for Disease Control and Prevention in the USA recommends hand washing over hand sanitizer rubs, particularly when hands are visibly dirty. In clinical trials, alcohol-based hand sanitizers containing emollients caused substantially less skin irritation and dryness than soaps or antimicrobial detergents. Allergic contact dermatitis , contact urticaria syndrome or hypersensitivity to alcohol or additives present in alcohol hand rubs rarely occur. Despite their effectiveness, non-water agents do not cleanse the hands of organic material, but simply disinfect them. It is for this reason that hand sanitizers are not as effective as soap and water at preventing the spread of many pathogens, since the pathogens still remain on the hands. Alcohol-free hand sanitizer efficacy is heavily dependent on the ingredients and formulation, and historically has significantly under-performed alcohol and alcohol rubs. More recently, formulations that use benzalkonium chloride have been shown to have persistent and cumulative antimicrobial activity after application, [30] unlike alcohol, which has been shown to decrease in efficacy after repeated use, probably due to progressive adverse skin reactions. Ash or soil may be more effective than water alone, but may be less effective than soap. Evidence quality is poor.

One concern is that if the soil or ash is contaminated with microorganisms it may increase the spread of disease rather than decrease it. Soap and water[edit] One must use soap and warm running water if possible and wash all the skin and nails thoroughly. However, ash can substitute for soap see substances above and cold water can also be used. First one should rinse hands with warm water, keeping hands below wrists and forearms, to prevent contaminated water from moving from the hands to the wrists and arms. The warm water helps to open pores, which helps with the removal of microorganisms, without removing skin oils. Artificial nails and chipped nail polish harbor microorganisms. Dry hands and arms with a clean towel, disposable or not, and use a paper towel to open the door. Moisturizing lotion is often recommended to keep the hands from drying out; Dry skin can lead to skin damage which can increase the risk for the transmission of infection. A growing volume of research suggests paper towels are much more hygienic than the electric hand dryers found in many washrooms. In , a study was conducted by the University of Westminster, London, and sponsored by the paper-towel industry the European Tissue Symposium, to compare the levels of hygiene offered by paper towels, warm-air hand dryers and the more modern jet-air hand dryers. The scientists also carried out tests to establish whether there was the potential for cross contamination of other washroom users and the washroom environment as a result of each type of drying method. Use of a warm-air hand dryer spread micro-organisms up to 0. Paper towels showed no significant spread of micro-organisms.

Chapter 8 : Quiz 4th Grade Science Test - Quiz Science, Test

The Science of Water Lab Activities: Student Directions Lab Station A: Surface Tension Lab Purpose The purpose of this lab is to investigate the property of the surface tension of water.

Chapter 9 : Soap Science | Science project | calendrierdelascience.com

The purpose of the Grade 4 Elementary -Level Science Test is to measure achievement of the NYS Learning Standards for Math, Science, and Technology detailed in New York State 's Elementary - Level Science Core Curriculum Grades K