MIDDLE SCHOOL ING HOW SAILBOATS WORK pdf

1: Teaching jobs, educator jobs, school jobs | SchoolSpring

Twist a tiny whole using the screwdriver into the middle of the top of the balsa wood sheet. The hole should be about a quarter of an inch deep. Inject some hot glue into the hole and then press one end of the wooden dowel into it so that it is standing straight up.

Imagine that the whole class is on the roof of a tall building, looking down at the street below. On the street are the parts for a roller coaster that we want to install on the top of the building. Our problem is that the pieces do not fit into the elevator and the building is much too high for us to simply lift it up to the roof. How can we possibly get these roller coaster parts, which weigh about 1, kilograms each, to the roof in one piece? Are there any simple machines that would help? We could use inclined planes and go back and forth up the side of the building but that would be dangerous and it would take too much time. The best answer is to use pulleys! A pulley is a wheel and axle with a rope over it. A pulley is one type of simple machine. Pulleys enable us to get big items up to the roof without any trouble at all. But, what route do we take using the pulleys? We have so many options What if we tie a rope to the roller coaster part and then put the rope over a pulley placed on the edge of the roof? The free end of the rope can be pulled by all the students on the roof like a tug of war to bring the part up to the roof. It would take a lot of effort, but we could do it assuming we do not fall off the other side of the building first! Falling off the other side of the building might not be so bad after all If we used another pulley on the other side of the building and a longer rope we could pull down on the rope from the ground on the other side of the building. Pulling down would be easier than pulling up. Both of those options require that we use 1, kilograms of force to raise the part. If we attach a kilogram weight to our side of the rope and then pull, we would only have to pull with kilograms of force. In this case, we would be using gravity to our advantage and making our work easier. All of these options are examples of fixed pulleys. There is also a movable pulley option. Attaching the pulley to the roller coaster part, one side of the rope to the top of the building and us pulling on the other side of the rope would enable us to do the same thing as the first two options. We could also create a mechanical advantage by using a fixed pulley and a movable pulley together, as a pulley system. It would take twice as much rope, but only half as much strength. Engineers think of ways to do tasks â€" such as lifting heavy objects or even lifting light objects high above our heads â€" everyday. We see examples all around us, for example, a crane that uses several pulleys lifts heavy objects see Figure 1 on a construction site. Something as simple as the flagpole outside the school uses a pulley to raise a light object, the flag, high above our heads. Do you see how valuable it can be to use a pulley to redirect the direction of a force? Pulleys are not always used for lifting objects. Sometimes the purpose of a pulley is to move object or provide a continuous line. A bicycle chain uses two pulleys and a chain that continues to go around in circles. Engineers make complex machines by combining together several simple machines, so that many difficult tasks may be done more easily. For example, using a large screw at one end of the rope and turning the screw like a crank would enable even easier rising of the roller coaster parts. Today, we are going to look more at fixed pulleys, movable pulleys and pulley systems. Then, we can use what we learn to think about how we could use pulleys to engineer an ancient pyramid. Show the PowerPoint presentation, or print out the slides to use with an overhead projector. The presentation is animated to promote an inquiry-based style; each click reveals a new point about each machine; have students suggest characteristics and examples before you reveal them. An apparatus of pulleys and ropes used for hauling and hoisting heavy objects see Figure 2. A pulley system with the pulley attached to a fixed point and the rope attached to the object. A single fixed pulley gives no increase of power, but serves simply to change the direction of motion. A push or a pull on an object; the capacity to do work. An advantage gained by using simple machines to accomplish work with less effort. Making the task easier which means it requires less force , but may require more time or room to work more distance, rope, etc. For example, applying a smaller force over a longer distance to achieve the same effect as applying a large force over a small distance. The ratio of the output force exerted by a machine to the input force applied to it. A pulley system with the pulley attached to the object itself, and one side of the rope attached to a fixed point. A simple machine that changes

the direction of a force, often to lift a load. Usually consists of a grooved wheel in which a pulled rope or chain runs. To change the direction of a push or pull to gain mechanical advantage over a task. A machine with few or no moving parts that is used to make work easier provides a mechanical advantage. For example, a wedge, wheel and axle, lever, inclined plane, screw, or pulley. Force on an object multiplied by the distance it moves. Using a block and tackle reduces the amount of force needed to raise an object. Many boats have devices like this to enable people to raise extremely heavy objects by hand. Cut 1 meter of string for each group. Set up to use the Pulleys and the Pyramids PowerPoint presentation optional. With the Students Divide the class into teams of two students each. Distribute all materials to the teams 2 pulleys, string, worksheet and 1 object to lift for each group. Make available tape and a spring scale, either for each team or to share among the teams. Activity supplies to make a pulley. Tie one end of the string to the object to lift. Tie a small loop in the other end of the string. Weigh the object by hooking the loop of string to the hook on the spring scale and pulling the object straight up in the air. Record this value on the worksheet. Create a fixed pulley by running the string over the pulley wheel. If using spools, have students create a pulley by placing a pencil, chopstick or straw through the middle of the spool as an axle see Figure 3. Make sure the spool is able to freely rotate around the axle. Have one student hold the pulley still and another pull the string sideways or down, as shown in Figure 4. Record the force needed measurement on the spring scale on the worksheet. Next, create a movable pulley by attaching the pulley to the object see Figure 5. If using pre-fabricated pulleys, attach with tape. If using spools, attach the pulley axle to the object with tape or string, making sure the spool still rotates freely. One student holds the string in place while another student lifts the object by pulling up on the spring scale string, as shown in Figure 5. Observe how much force is required to lift the object spring scale measurement and record it on your worksheet. Last, create a pulley system. Run the string through one pulley the fixed pulley and through the other the movable pulley, which has the object attached to it , as in Figure 6. Have one student hold the free end of the rope and the fixed pulley, while another student raises the object by pulling down on the spring scale. Record on the worksheet the force required to lift the object spring scale measurement with this two-pulley system. Provide time for the student teams to complete the remainder of the worksheet. Conclude by comparing results as a class, and discussing the mechanical advantages seen by using the various pulley configurations.

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2: Science Lesson Plans for Middle School, Grades

The goal of this lesson is to explain how sailboats work by exploring basic physics principles. At the end of this lesson, students will be able to identify the forces acting on a sailboat and explain how the combination of these forces results in the forward motion of a sailboat. Students should be.

Small objects that can serve as weights pebbles, metal washers, etc. Aquarium, kids swimming pool or bathtub String or wire Camera optional Fill up a bathtub, pool or aquarium with water to test your boat shapes in. You will need to know where the hull and the keel of a boat are. For a labeled diagram click here: For ideas on different shapes, see Figure 1. You can also try basic shapes like rectangles, triangles, etc. Experiment with each to see how quickly they can move across the water when given a little push. Write down observations in your notebook. Use a chart like the one below Table 1 to keep track of your observations. Experiment by adding weight to the different hulls. You can use modeling clay or whatever you have collected to serve as weight. Which hull moves best as you increase the weight? Make sure you keep track of what you find out! Once you have completed your exploration of different hull shapes experiment by adding keels. Cut two identical hull shapes. Cut a narrow keel and a wide keel. Glue them to the hulls with a hot glue gun. Be sure to get help from an adult. Test the different keel shapes. Create a chart like the one you used in your hull experiments to keep track of your tests and observations. If you are interested in experimenting even more with your boats you could investigate rudders and tillers. What could you use to make a rudder or tiller? Be sure to continue to write down your observations. What other things could you add to your hulls and keels? You may want to take photographs as you complete your experiments to use for your science fair poster or presentation. Research the different types of boats. Which types are shaped the way your experimental boats were? Do your results make sense?

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3: 4 Ways to Avoid Being Bullied in Middle School - wikiHow

Build boats and float them down the river - Floating homemade boats down the river was a favorite when I was young. We spent hours creating boats that we hoped would make it past the bend and out of sight.

Sticks from a tree or other pieces of wood What other materials am I leaving out? More to Consider What else do you need to construct the boat? String or something to fasten pieces together? Our egg carton boat was simply made by placing a straw into the egg carton and taping on a piece of paper. It floated in the bathtub pretty easily. Would it actually work? Who will the passengers be? What will the boat carry? After building the boat, see how much weight it can hold. Pennies are a good option for older kids to use. Science Sparks shows you how. Design a speedboat and test to see if it will float like Creative Family Fun. Teach Preschool set up two boat building stations with different materials. Planet Smarty Plants tells of their design process. Build boats, test their buoyancy, and predict how many rocks it will take to sink them. Check out their materials and design. What unique materials could you use? The Craft Train made their boats using sponges and duct tape. Craftulate has 5 boat designs. I especially like the way they made the speedboats out of foam. Challenge your child to build a hydrofoil. How much weight can it hold before sinking? Kids Activities Blog has the instructions. Let you child be in charge of investigating different boat designs. Will a shell work for a boat? Fantastic Fun and Learning finds out. What types of paper work best? NurtureStore shows us 3 ways to make a sail boat. Pay attention to the design of the sail. Create a boat from a juice box. Build wax boats like these from Housing a Forest. Race duck tape boats across the water. Mess for Less tells us how. These ice boats made of natural materials from Reading Confetti are simply lovely. Red Ted Art has the tutorial. Make a balloon powered egg boat. Or try this balloon powered boat from Life with Moore Babies. This baking soda powered boat from Science Sparks is sure to be a hit.

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4: How to Make a Mini Sailboat for a School Project | Our Pastimes

Teach students about how sailboats move across the water by designing and making a sailboat of their own. Allow students to create their boat, and then stage a competition to see whose boat reaches the other side of the wading pool faster. Allow students to retest their designs with alterations.

What will happen next? Middle school is a little bit like that. Elementary school is behind you. High school and possibly college still await you. For a kid, going to middle school often is a big change: First, it usually means moving to a new building, which takes some time to adjust to. Second, it may mean taking a different bus, with different students. Third, the friends you made in elementary school may end up going to different middle schools. All of that can make you feel a bit scared on the first day of school. Other things that probably will be different are the teachers and the work. Have you heard rumors that middle school teachers are really mean and the homework is really, really hard? On top of that, middle school will probably offer a variety of new teams, clubs, and activities you can join. Maybe you love lacrosse, ceramics, or jazz music. You might find opportunities to do all three at middle school. Still worried about middle school? Visit more than once. Most middle schools have orientation day for students who will be attending in the fall. Orientation is a day when you tour the school and get a little information about what it will be like to go there. Another great way to get oriented is to attend a concert or sporting event at your new school. And talk to friends who already go there. Ask them about any problems they had and ask if they could help you if you need it when you get there. It also might help if your mom or dad drove you to the school in the summertime. You might see sports teams practicing outside and just get a sense of the place. Is it over near the mall or on the other side of town? Prepare for Day 1. Read any materials you get at orientation or that arrive by mail in the summer. Are there books you need to read or supplies you have to buy? You also might want to find out when your lunch is. Choose something that you like and feel comfortable in. Get to bed on time the night before! Set your alarm, but tell your mom or dad when you need to get up in case you sleep right through it! On the big day, eat breakfast and be brave. On your way out the door, take everything you need and try to remember that this is a big adventure. You might get lost in the halls. Check in with friends you know and try to be brave and say "hi" to other new kids. Try to write down the important stuff â€” like your locker combination and your homeroom number. Then you can look it over when you get home and be prepared for Day 2. On Day 2, repeat. On the second day, do everything you did on Day 1. Hopefully, things are starting to go a little more smoothly. Keep referring to your notes. It might help to look over your class schedule at home so you start to memorize that math follows English and science follows gym, but only on Tuesdays! After 1 week, pat yourself on the back. You probably know your locker combination, where your assigned seat is in all your classes, where the bathrooms are, and how to get to the cafeteria. Do you still get lost on the way to gym? If so, find a buddy who goes to gym at the same time and walk together. You also might have study halls in middle school â€” these free periods are great for talking to a teacher or getting a jump on your homework. When it comes to friends, the switch to a new school can leave you feeling a little dizzy. What if none of your friends even goes to your school? Middle school is a good time to make new connections and new friends. You might meet the first day and then hang out all year long. You might wonder what you can do to feel less lonely and make friends. Try joining a club, sport, or activity. Being in these groups also can help you feel more at home at your school.

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5: Middle School | Success Academy

This summer, Success Academy connected scholars with several experiential programs, setting up camps for students who excel in chess, basketball, and soccer and partnering with the renowned Usdan Center for the Creative and Performing Arts, where four of our middle school scholars indulged their passion for art, creative writing, and choral.

Objectives Understand the concepts of buoyancy and water displacement Design a watercraft that will support a given amount of weight Incorporate the scientific principles of force and motion with engineering design and mathematics Keywords Boat, buoyancy, float, science, experiment, force, motion, math, engineering, STEM Materials Needed Clear aquarium or tub filled with water Aluminum foil Small group boat building kits: Show the students two sheets of aluminum foil that are exactly the same size. Ask them if they think the aluminum foil will sink or float if you place it in the water. Give students an opportunity to explain their guesses. Place one piece of aluminum foil on the top of the water. Ask them if they can think of any way to change the second sheet of aluminum foil so that it sinks rather than floats. Crumple the second piece of aluminum foil into a ball and place it in the water. Ask students why they think the ball of foil sank when the sheet of paper floats. Explain the concept of water displacement and discuss. Boothroyd aloud to students. Take time to reinforce the scientific principles of buoyance, gravity, water displacement and force. Stop periodically to discuss the illustrations and content. It is a great idea to make additional literature resources available in the room for students to explore on their own. Explain to students that they will participate in a boat-building challenge. Distribute the Boat Design Challenge kit to each group and allow enough time for them to brainstorm, design, build and test their models. When students have had time to test and improve their models, host a Classroom Boat Design Competition. Each group should be prepared to explain the rationale for its boat design before testing the weight it will support. Encourage students to record the weight and cost for each model on the data collection form so that all students will be involved in identifying the winner. Lesson Plan Source Cre8time , through partnership with EducationWorld Submitted By Standards The Framework for K Science recommends that children in the elementary grades have opportunities to engage in design challenges that require an application of scientific principles. These "quality time" activities for families and classrooms reinforce the value and rewards of crafting.

6: STEM curriculum for K - TeachEngineering

Middle school often includes sixth, seventh, and eighth grades, but you might go to middle school earlier or later, depending on how it's done in your area. For a kid, going to middle school often is a big change.

7: Teaching First Grade Words with -ING Ending and -ING Suffix Rules

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8: Middle School Grammar and Mechanics Lessonplans, homework, quizzes

Educators who work with middle school students are all too aware that not all children learn to read by the time they leave elementary school. Many students in grades 6, 7, and 8 have reading difficulties.

9: Pulley'ing Your Own Weight - Activity - TeachEngineering

The mission of Lift and Learn is to give DC middle-school boys the opportunity to have fun through fitness, learn how to set goals, and to reflect on how efforts and experiences in the gym can be applied to school and beyond.

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The Voyage of the Cap Pilar Package of Medical Terminology Online (WebCT format and Medical Terminology Simplified The Hindu tradition Facebook equity research report 5. Planning the economy Insects (Learn about) Memories of diplomacy Pictures in patchwork Insulin resistance and hypertension James R. Sowers, W. Thomas, and Joan F. Burns And The Sun Shines Again The Little Mermaid (Walt Disney Classic) You had a bad day sheet music Inheritance of drinking behavior. Ruined cities of Mashonaland. The Beauties of Shakespear: Regularly Selected from Each Play. With a . Jack Creek cowboy Wild meghan obrien Private Commercial All parts of engine The Unseen Queen (Star Wars: Dark Nest, Book 2) The Realm of Shells Advanced engineering mathematics by dennis zill warren wright 11th accounts book in hindi Transforming Americas mental health system. Of men and their making Biographical index and bibliography (p. 279-319) My Secret Life As A Priestess Rss history in tamil Essential labour law 5th edition basson The Mediterranean and the Black Sea. Connecting chords with linear harmony Ancient Greece Health and Disease (Changing Times (Changing Times) The production of space for learning Nick Boreham David armitage civil war a history in ideas Older Workers Survey Working with common gastrointestinal problems Cynthia Ko Bridge at Remagen Prem Advanced corporate finance lecture notes Instilling time management Memoirs of a Lost Soul