Stem fair ideas baseball

For a student who loves sport and is interested in baseball, a fair science project can be created that explores the laws of physics of sport. Such projects can help students understand complicated lessons in a pleasant way. Some science fair projects can be dynamic set-ups at a fair; others will need creative ways to demonstrate how the material was obtained and explained. Students should use balls of different weight and size - such as baseballs, tennis balls, golf balls and basketballs - and chart how big each can be thrown. They will have to determine the circumference of each ball, as well as the weight and then measure how large they can throw. Students should use something like a gym school and place a paper with measurements marked off or use a timer to determine how big each one went. This project also encourages students to work in teams. The presentation may involve a scaled down version of the set-up with miniature balls used to mark the ups. Creating a baseball pendulum helps students learn about different spins. This project can be created using a baseball with a rubber band wrapped around it and a string tied to the rubber band, creating a pendulum. Students should use a different number of twists per string and record the number of spins each attempt generates. For advanced or older students, they can use a timer to time how long a small oscillation lasts compared to a larger one. Students can find out why a bat with a stopper creates an unfair advantage by designing a science fair project using different types of bats and hitting balls. Students will have to use aluminum, wood and wooden bats with stoppers of different weights and lengths. With a dough hitting a designated number of baseballs, the distance each travel is measured. The distance between the blows is average. After completing this project, students will have a better understanding of how materials can generate energy on a baseball. The presentation of this project could use cross sections along with a grid showing where the balls landed when hit be each bat. About the author With more than 15 years of professional writing experience, Kimberlee finds it fun to take the technical mumbo-jumbo and make it fun! Her first career was in financial services and insurance. Find out the sweet dot correlates with movement and vibration. 2' long wooden plank (a 2 x4 plank works well) U screw Drill smooth rod along which the U screw can slip (eg, shower curtain rod) rubber hammer Tape measure baseball bat a hole through one end of the 2 x4 plank large enough to insert the U screw. Use the screw to hang 2x4 from the curtain rod. Mark a place exactly halfway along the length of the wood. Hit it with the hammer in the direction parallel to the curtain rod. is the wood moving in response? Note how far along the curtain rod moves. Hits Hits from the most remote 2x4 from the U screw with the hammer. Is the movement different from last time? Where's he moving? How far? Note how far along the rod is moving now (taking note of direction as well). Starting at the far end, hit the wood at different distances from the end, moving towards the center each time. Keep track of how far you are from the edge of the wood and how much the wood moves along the rod after each blow. Is there a place where wood barely moves along the rod? Grab the baseball bat in one hand (holding it roughly where you would normally hold it if you were up to the bat) and let it hang toward the ground. Ask a friend to use the hammer to hit the bat at different distances from the far end of the bat. Take note of the way the bat moves in your hand, taking note especially of any feeling of vibration. does the sensation change while hitting the bat in different places? Is there a place where vibration is minimal? It can help close your eyes and focus on the vibrations you feel. When the wood is hit at the center, it moves sideways along the curtain rod, but does not rotate. When hit at the far end, the center does not move, but the wood pivots around it, sending the U screw moving in the opposite direction to the direction of the blow. At some point along the wood, about 2/3 of the way down from the top, there will be a place where the wood does not pivot, but does not move along the curtain rod. Also, at the bat there will be a place where the vibrations are the smallest, probably around 17 cm from the end. Each object has a center of mass, a point where you could perfectly balance the object. For a plank of uniform density wood, that point is right in the middle. When you apply a force to the center of mass of an object, it will move – not too surprisingly – in the direction of the force. Go ahead and try it with a pencil (or something similar) on a table. When you push a point away from the center of the table, the object will begin to rotate (this type of force, applied to a point away from the center of the table, is also called a couple). Pushing to one end or another will only rotate the object; will not move sideways. Pushing anywhere between the end of the object and its center of mass makes things a little more complicated: the object moves sideways (physicists call this translational movement) and rotates (rotational motion). When you hit the middle of the wood, you applied a force to its center of the table. The wood responded by moving in the same direction as the force. When it hit the wood at its far end, it tried to rotate around its center of mass, and U-bolt moved in the opposite direction. There is a third point along called the percussion center, located about 2/3 of the way down. When you hit this point, the resulting translationaland rotations to u bolt cancel. The U screw tries to move forward and rotate back at the same time, but the two speeds are the same. If you were holding that end when, say, a baseball hit right at that moment, you would feel minimal kick in the bat. You must have noticed that when you tried the bat and hammer experiment. You might feel the bat getting jerked either forward or back in hand, but when the strike took place near the center of percussion, the bat barely moved at all. Holding the bat also reveals something else: vibrations in the bat. When the bat is hit, the standing waves travel along its length. These waves are stationary and make the bat bend so easily. You can make waves standing with a Slinky or rope through holding both ends (better yet, get someone else to hold one end while holding the other). Wiggle one end at just the right frequency, and the middle of the rope will not move at all while the two halves move up and down in opposite directions to each other. Something similar is happening in the bat. If you hit it in the right place, your hand will be at one of the points along the wave that does not move (called a knot). Getting a baseball to hit right on the sweet spot minimizes vibrations, takes some of the sting out of your hands, and sends the ball that flies off at full speed. Author: Christopher Crockett Disclaimer and safety measures Education.com provide science fair project ideas for informational purposes only. Education.com makes no warranty or representation regarding the Science Fair Ideas Project and is not responsible or liable for any loss or damage, directly or indirectly, caused by your use of this information. By accessing the Science Fair's Project Ideas, discard and waive any claims against the Education.com that arise. In addition, your access to the Science Fair's Education.com website and project ideas is covered by the Education.com Privacy Policy and the Site's Terms of Use, which include limitations on Education.com liability. Warning is hereby granted that not all project ideas are appropriate for all individuals or in all circumstances. The implementation of any scientific project idea should be carried out only under appropriate conditions and with adequate parental supervision or other supervisory measures. Reading and complying with the safety measures of all materials used in a project is the sole responsibility of each individual. For more information, see the State Science Safety Manual. Scientific project if I asked you to throw both a baseball and a bowling alley, which that you could throw it away? Obviously, you'd throw the ball away. Heavy stuff just slams into the ground! But does that necessarily mean that the lighter the object, the further we can throw it away? Let's put this theory to the test. We can really throw lighter objects further than Objects? Baseball BB gun pelts Bowling Ball Marble measuring Flat Tape and clear area Notebook Pen Hold Baseball, BB gun pelets, marble and bowling in your hands, noting the weight of each item. Order them from the lightest to the heaviest in your notebook. Which one do you think you're going to throw away the next? Use this time to write your guess, also called a hypothesis, in your notebook. Find a lawn or field so that the objects you throw don't break when they hit the ground. Throw BB gun pelets as hard as you can. Measure and record the distance in your notebook. Throw the marble as hard as you can. Measure and record the distance in your notebook. Throw the ball as hard as you can. Measure and record the distance in your notebook. Throw the bowling ball as hard as you can, making sure you don't get hurt. Measure and record the distance in your notebook. Look at your data. Did the results match your hypothesis? The bowling ball went through the shortest distance. BB pistol pelts covered the second shortest distance, closely followed by marble. Baseball should have gone across the street. When you throw an object, physics is at work calculating how far it goes. The distance an object is thrown is based on the force placed in it. Force is the mass of an object multiplied by how fast it accelerates that object. When you throw an object very easily, you may be able to accelerate it very efficiently, but because it weighs so little, the force applied to it will be small. This explains the short distance travelled by marble and BB gun pelets. When thrown, a heavy object can have a lot of mass, but will accelerate very badly because the thrown arm is just so strong! Only a small force ends up being applied to it, which explains the extremely short throwing distance travelled by the bowling ball. So what's the key to throwing things long distance? A balance between mass and acceleration, which is why baseball travels the farthest. What if you used different shapes of objects? Or did you use something to launch your items apart from your arm? This experiment can be modified in a variety of ways to demonstrate physics in action. Disclaimer and safety measures Education.com offer Science Fair Project Ideas for informational purposes only. Education.com makes no warranty or representation regarding the Science Fair Ideas Project and is not responsible or liable for any loss or damage, directly or indirectly, caused by your use of this information. By accessing the Science Fair's Project Ideas, discard and waive any claims against the Education.com that arise. In addition, your access to the website and the Science Fair's project ideas is covered by the Education.com Privacy Policy and the Site's Terms of Use, which include limitations on Education.com liability. 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