Newton's Law with Marbles

Grade Level: 5

Objectives 	Following this lesson, students will be able to: • Understand the ideas of motion and force • Describe and know Newton's three laws of motion • Test Newton's three laws of motion with marbles
Materials	• Computer with internet access • Marbles • Chalk • Paper • Pencils
Procedure 	1. Introduce the lesson with videos from TwitVid to show examples of Newton's Laws. • http://www.twitvid.com/M1ZEV 2. Discuss what went on in the videos and talk about Newton's three laws. • What are Newton's laws? • What is inertia? • Have them write down the three laws of motion on a piece of paper and have a volunteer write them on the whiteboard. 3. Divide students in groups of 5 and give each group 10 marbles. 4. Take the class outside and have them draw a circle about 2 feet into diameter with chalk and have the students sit around the circle. 5. Have each student choose a marble to be used as a shooter. 6. Have the groups put the rest of the marbles in an "X" shape in the middle of the circle. 7. Have the students take turns and flick their marble into the circle, trying to hit the other marbles out. 8. Whoever gets the most marbles out of the circle at the end wins. 9. Clean up the marbles and go back inside the classroom. 10. Talk about how the game represented the Newton's laws.
Assessment	Give the class a quiz having the students answer: • Name and describe each of the Newton's laws. • Give a real life example of each law. • Define inertia, force, and gravity.
Indiana Standards	**Mid-continent Research for Education and Learning (McREL)** McREL's Content Knowledge: A Compendium of Standards and

	Benchmarks for K-12 Education addresses 14 content areas. To view the standards and benchmarks, visithttp://www.mcrel.org/compendium/browse.asp This lesson plan addresses the following national standards: • Science: Physical Science — Understands forces and motion; Understands the structures and properties of matter • Life Skills: Working With Others — Displays effective interpersonal communication skills; Contributes to the overall effort of a group **National Academy of Sciences** The National Science Education Standards provide guidelines for teaching science as well as a coherent vision of what it means to be scientifically literate for students in grades K-12. To view the standards, visithttp://books.nap.edu/html/nses/html/overview.html#content. This lesson plan addresses the following science standards: • Physical Science: Properties and changes of properties in matter; Motions and forces; Transfer of energy