

Sixth Grade Science Curriculum Map
School Year 2008-2009
Ms. Sokol

| Organizing Concepts | Measurement 5th Grade Review | VARIABLES | VARIABLES | VARIABLES | MODELS AND DESIGN | MODELS AND DESIGN | LEVERS | PULLEYS | FORCE AND MOTION | FORCE AND MOTION |
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| Month | September | October | November | December | January | February | March | April | May | June |
| Essential Questions | <p>Measurement Techniques What instruments are used to measure certain liquids and masses?</p> <p>What is the proper way to convert units?</p> <p>What is the difference between the Metric system and English system?</p> | <p>SWINGERS Exploring Swingers What is a pendulum? What variables might affect the number of cycles the pendulum makes in 15 seconds? Testing Variables Does changing the</p> | <p>PLANE SENSE Exploring Flight What are the parts of a model plane system? Investigating Variables What variables affect the distance a FOSS plane can fly?</p> | <p>FLIPPERS Flip-Stick Construction How can a flipper system be constructed? Flip Out How can the flipper system be set up to propel an object the highest and the longest distances?</p> | <p>BLACK BOXES Black-Box Investigations What evidence can you acquire that will help you explain what a black box looks like inside? Building Black Boxes Can you build a physical model of a</p> | <p>GO- CARTS Free-Rolling Go-Carts Can you design a go-cart that can roll down a ramp and across the floor a short distance? Self-Propelled Go-Carts Can you modify your go-carts so that it will</p> | <p>LEVERS Introduction to Levers How can a lever make work easier? Lever Experiment A What happens to the effort needed to lift a load as the position where the effort is applied changes?</p> | <p>PULLEYS One-Pulley Systems How much effort is needed to lift a load in a one-pulley system? Two-Pulley Systems How many ways can two pulleys be assembled? Can two pulleys give more</p> | <p>HERE TO THERE Fly Air Trolleys How do we explain motion without using the word move? How do you measure change in position? Air-Trolley Graphs What is the</p> | <p>SPEED Who Got There First? How do we determine which vehicle, the car or the truck, got the end position first? How do you calculate the speed equation? Time Travel How do you calculate speed when</p> |

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| | <p>What are the steps to the Scientific Method?</p> | <p>mass, length, or release position of a pendulum change how quickly it swings?</p> <p>What can graphs tell us about results?</p> <p>Predicting Swings How can graphs be used to predict results?</p> <p>LIFEBOATS Exploring Boats What can be changed in a paper-cup boat that could affect the number of passengers it can hold?</p> | <p>Flights of Fancy How do other variables affect the flight of a FOSS plane?</p> <p>Graphing the Results What can graphs tell us about the results of a controlled experiment?</p> | <p>Controlled Experiments How do other variables affect the flight of an object?</p> <p>Choosing Your Own Investigation What else can I find out from conducting controlled experiments?</p> | <p>black box that behaves the same way?</p> <p>The Drought Stopper Can you draw a model that explains how a drought stopper works?</p> <p>HUM DINGERS Exploring hum dingers Can you make a model that hums when you pull the string and dings when you let go?</p> <p>Model Hum Dingers Can you improve your</p> | <p>travel 2 m on level ground without an external push or pull?</p> <p>The Two-Meter Run What factors go into the design of a self-powered go-cart that can travel 2 m?</p> | <p>Lever Experiment B What happens to the effort needed to lift a load as the position of the load changes?</p> <p>Related Literature-Simple Machines Class-1 Levers The Wheel and Axle</p> <p>MORE LEVERAGE</p> <p>Lever Classes How many ways can you arrange the fulcrum, load, and effort in a lever system?</p> | <p>advantage than one pulley?</p> <p>Pulley Game How many pulley systems can you set up?</p> <p>PULLEYS AT WORK</p> <p>Effort in Pulley Systems How can we predict the effort needed to lift the load in a pulley system?</p> <p>Measuring Distance What is the relationship between the mechanical advantage</p> | <p>relationship between the Number of winds on the rubber band and the distance traveled by an air trolley?</p> <p>How does a two-coordinate graph display a relationship between distance and number of winds?</p> <p>Road Races How do we describe an object's motion in terms of change of position? How do we use a reference</p> | <p>time interval and distance are known? How do you calculate speed when time and distance are known?</p> <p>Measuring Time and Distance How do we determine average speed? How do we investigate the speed of a Dotcar with a ramp and stopwatch? How do we graph speed when distance and time interval data is found during a lab? What is the</p> |
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| | | <p>Lifeboat Inspection What is the relationship between the capacity of a lifeboat and the number of passengers it can hold?</p> <p>Inspecting Other Boats Using the graph of the first experiment, can you predict the number of passengers a new fleet of boats can hold?</p> | | | <p>model?</p> <p>Reveal and Replicate How was the original hum dinger constructed?</p> | | <p>Lever Diagrams What conventions can be used so we can communicate in the same language and have an efficient way to record the lever systems we build?</p> <p>Real-World Levers What classes of levers can we find in the real world? How do people use levers to make work easier?</p> <p>Lever Pictures What other</p> | <p>and the distance the load and effort move in a pulley-system?</p> <p>Choosing Your Own Investigation What other lever and pulley systems can you design?</p> | <p>point to determine the distance moved by an object? How do you calculate the distance equation?</p> | <p>relationship between speed and the slope of a distance versus time graph?</p> <p>COMPARING SPEEDS</p> <p>Walk/Run Race How do we explain average speed in terms of distance and time? How do we find the average speed of a runner and walker over a known distance and time? How do we use the slopes of graphs to determine head starts for</p> |
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| | | | | | | | levers do we find around us? | | | photo-finish races? Boat Races How does the slope of a line on a distance versus time graph indicate speed? How do we graph multiple speeds for comparison on a single grid? How do we use a graph to determine an object's speed? Iditarod How does the Iditarod dog-sled race determine average speeds for the winning team? How does the internet |
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| | | | | | | | | | | provide us with historic Iditarod information? |
| Related Literature | Science World Magazine | What Scientists Do Swinging through History Related Literature- Sink or Swim? Science in the bathtub | Airplane Basics Experimental Design Great Names in Aviation History Build Your Own Paper Airplane | Flingers Prove It! | Simulations The Path to Invention Everyday Mysteries Scientists and Models Life on Earth 150 Million Years Ago | Early Autos Henry Ford and His Model T On the Line | Simple Machines Class-1 Levers The Wheel and Axle Related Literature- Class-2 Levers Class-3 Levers The Inclined Plane | Pulleys Dear Boss The Wedge The Work of Pulleys The Screw | Motion, Forces, and Energy Textbook | Time: The Infinite Line First in Flight How Fast Do Things Go? Iditarod: The Last Great Race on Earth Sled Dogs: An Alaskan Epic |
| Skills /Projects | Smile Metric Style Lab Let's Grow Metric! Predictions- How Long is it? How Heavy is it? Volume and Temperature Lab | Boat Building Measuring Lifeboat Capacity Lifeboat Inspection | Foss Plan Construction Flight Log 2-Coordinate graphs Design an experiment- Plane Sense | Flipping Aluminum Balls Design an experiment- Flippers | Draw a conceptual model of a black box Build a black box Draw a conceptual model of a drought stopper | Build a go-cart that can move freely down a ramp | Lever Experiment A Lever Experiment B Levers at Work Identifying Load, Effort, Fulcrum in Everyday Household | Pulley Diagrams One and two pulley systems Measuring Distance Simple Machine Postcard | Build air trolleys Distance equation Simulate an object's motion | Speed Equation Races to determine speed when distance and time are known Measuring time and distance using |

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| | Scientific Method Lab | | | | | | Items Lever MadLib Writing to guess the type of Lever | | | a Dotcar |
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