

Planning Guide for *Invisible Forces*

Teaching Plans	Specific Curriculum Outcomes	Components	Materials	Literacy Place Connections
Exploring Invisible Forces Students investigate the effects of forces when materials are touching and when materials are not touching.	Skills [GCO 2] • 1.0 • 2.0	<i>The Golden Goose</i> (Read Aloud, digital version) - Student Magazine, pages 2–3 - IWB Activity 1 - Anchor Video: <i>Invisible Forces</i>	- magic trick materials including an inflated balloon, a Ping-Pong ball, magnets, two magnetic coins - materials for the Curiosity Centre such as balloons, felt, foam plates, fur, silk, wool, plastic combs and rulers, electrostatic dusters and cloths, variety of magnets, magnetic and non-magnetic objects - students' Science Journals	
Creating Static Electricity Students explore the force of static electricity and identify static electricity and its effects in their everyday lives.	Skills [GCO 2] • 34.0 STSE/K [GCO 1/3] • 37.0 • 38.0	- Student Magazine, pages 4–7 - IWB Activity 2 - BLM <i>How Long Did It Stick?</i> - IWB Activity 3 - IWB Activity 4	- inflated balloons - fur or wool - polyester or plastic wrap - paper plates, salt, pepper - students' Science Journals - plastic comb and materials such as tissue paper, aluminum foil, paper - variety of objects such as inflated balloons, plastic combs, Ping-Pong balls, plastic rulers, foam plates, paper, string, fabric such as felt, cotton, polar fleece, silk, wool, and fur - students' Science Folders	<i>Felicity Discovers Electricity</i> (Guided Reading, Level M) <i>Make Electrostatic Slime</i> (Guided Reading, Level L)
What Conditions Affect Static Electricity? Students explore how varying conditions affect static electric charges.	Skills [GCO 2] • 2.0 • 10.0 STSE/K [GCO 1/3] • 39.0	<i>Ada Twist, Scientist</i> (Read Aloud) - Student Magazine, pages 8–11 <i>What Is the Inquiry Process?</i> poster	- variety of objects such as inflated balloons, plastic combs, Ping-Pong balls, plastic rulers, foam plates - fabric such as felt, cotton, polar fleece, silk, wool, and fur - humidifier or spray bottles - students' Science Journals - digital camera (optional)	

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What Materials Are Attracted to Magnets? Students test a variety of materials to discover which materials are magnetic.	Skills [GCO 2] • 8.0 • 16.0 STSE/K [GCO 1/3] • 40.0 • 41.0	- Student Magazine, pages 12–15 - IWB Activity 5 - BLM <i>My Predictions</i> - IWB Activity 6	- box with a variety of objects such as paper clips, straws, tacks, rubber bands, pieces of paper - objects including cork, foil packet, staples, nuts and bolts, eraser, nails, binder clips, plastic comb, wooden blocks, washers, coated paper clips, aluminum can - variety of objects such as a pencil, spoon, key, marble, wooden block, aluminum foil, coins, cardboard, tissue, balloon, buttons, plastic ruler; also include some objects made of copper, brass, and aluminum - magnets - students' Science Folders - iron-fortified cereal (i.e., Total or Vector), zippered plastic bags - modelling clay, paint, and small magnets	
Make Your Own Magnet Students explore how to magnetize materials and follow a procedure to make their own temporary magnets.	Skills [GCO 2] • 21.0 STSE/K [GCO 1/3] • 42.0	Student Magazine, pages 16–17	- magnet and paper clips - bar magnets (one per pair of students), a key, scissors, coins, a spoon, brass paper fasteners, aluminum foil, metal jar lid, iron nails, paper clips, washers, bolts, loose staples - variety of magnets of different types and sizes (e.g., bar, horseshoe, donut, ring) - students' Science Journals	
What Affects the Strength of Magnets? Students explore the strength of various magnets and design an investigation to test how different conditions affect the force of magnets.	Skills [GCO 2] • 14.0 STSE/K [GCO 1/3] • 43.0	- Student Magazine, pages 18–19 - BLM <i>Measuring the Strength of Magnets</i> <i>What Is the Inquiry Process?</i> poster	- magnet, paper clip, glass of water - magnets of different shapes and sizes (e.g., bar, horseshoe, donut, ring) - variety of magnetic objects - various materials to act as barriers such as cardboard, paper, wood - various mediums such as sand or yogurt - humidifier or spray bottles - various craft materials to build magnetic racetracks and large pieces of cardboard (e.g., a pizza box)	<i>Magnetic Racetrack</i> (Shared Reading—Sequencing Strategy Unit)

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Planning Guide for *Invisible Forces* (continued)

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What Happens When Two Magnets Meet? Students will discover that magnets have a north pole and a south pole, and that opposite poles attract each other while like poles repel. Students will also use iron filings to explore magnetic fields, and discover how a compass helps them find directions.	Skills [GCO 2] • 2.0 STSE/K [GCO 1/3] • 44.0	• IWB Activity 7 • Student Magazine, pages 20–25 • IWB Activity 8	• variety of magnets of different shapes and sizes (e.g., bar, horseshoe, donut, ring) • pieces of cardboard or paper plates • iron filings in a shaker • protective goggles • students' Science Journals • blunt sewing needles or unbent paper clips • containers of water • paper and wax crayons	
Design Challenge: What Can You Make That Uses Invisible Forces? Students demonstrate their understanding of invisible forces by designing and constructing a toy or game that makes use of attraction and/or repulsion.	Skills [GCO 2] • 28.0 • 29.0 • 30.0	• Student Magazine, pages 26–29 • IWB Activity 9 • <i>What Is the Design Process?</i> poster	• buttons or coins to use as game pieces, dice • variety of games and toys using invisible forces for the Curiosity Centre • students' Science Journals • variety of materials such as balloons, plastic rods, plastic wrap, various fabrics • magnets of different shapes, sizes, and strengths • magnetic materials such as paper clips, magnetic tape, washers, screws, tin cans • various craft supplies • tools such as scissors, staplers, and tape	
Evaluating Personally Constructed Objects Students evaluate their created toys or games and consider other useful items they could make that use invisible forces.	Skills [GCO 2] • 17.0 • 35.0	• Student Magazine, pages 30–31 • BLM <i>Two Stars and a Wish</i>	• students' Science Journals	