

# Materials Included with the Program

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## **Aeronautics**

- 1.1 25 straws
- 1.2 Lump of clay, straw
- 1.3 Balloon
- 1.4 Two balloons, tack
- 1.5 Tack
- 1.6 Index card
- 1.7 12" flexible tubing, two clear plastic cups
- 1.8 Ping pong ball, funnel
- 1.9 Garbage bag
- 1.10 Index card
- 1.11 None provided
- 1.12 Sheet of paper
- 1.13 Same as previous
- 1.14 Same as previous
- 1.15 Same as previous
- 1.16 Same as previous
- 1.17 Same as previous
- 1.18 Rigid Flyer
- 1.19 Index card, straw
- 1.20 Small paper clips, paper
- 1.21 Two paper cups, 5-7 rubber bands

## **Kites**

- 2.1. 11x17" paper, 10' string, 4 reinforcement stickers, straw
- 2.2. Six straws, sheet of tissue paper, 20' string, 5' crepe paper streamer
- 2.3. Two balloon sticks, 20' string, 2 garbage bags, straw, 10' string
- 2.4. Two balloon sticks, garbage bag, 5' crepe paper streamer, 10' string
- 2.5. Two balloon sticks, 4 reinforcement tabs, two garbage bags, 10' string

- 2.6. Two straws, 20' string, two 4" foam plates, 1 6x4" meat tray

## **Rocketry**

- 3.1. Straws (two different sizes) , 2 sheets of paper, 2 index cards
- 3.2. Car tire valve
- 3.3. Four effervescent tablets, plastic canister with lid
- 3.4. 6" foam tube, foam sheet, paper clip, 5 rubber bands, plastic film canister

## **Electricity**

- 4.1. Two balloons, neon lamp
- 4.2. Four AA batteries, two AA battery case/holders, 10 alligator clip leads, LEDs (regular, tri-state, and bi-polar)
- 4.3. Two brass fasteners, index card, large paper clip
- 4.4. Six brass fasteners, index card, two large paper clips, DC motor
- 4.5. Clothespin, two tacks, buzzer, index card, steel wire
- 4.6. Electrically conductive foam, steel wire
- 4.7. D-cell battery, rubber bands, magnet, two trumpet-paperclips, sandpaper, 26g magnet wire
- 4.8. Plastic vial, 28g magnet wire, steel strip, galvanized nail, two brass fasteners, large paper clip, sandpaper, 6-piece foam block

## Robotics

- 5.1. 6-piece foam block, propeller, DC motor
- 5.2. 2-piece foam block, clothespin, small skewers, black gear-pulley
- 5.3. Four tongue-depressor-size popsicle sticks, two straws, one 12" wood dowel, four wheels, two DC motors
- 5.4. None required

## Physical Motion

- 6.1. 50' Rope
- 6.2. 50' Rope
- 6.3. 50' Rope, 6 pulleys
- 6.4. 50' Rope, 6 pulleys
- 6.5. One tongue-depressor-size popsicle stick, thick rubber band, two index cards, 3' string
- 6.6. Two tongue-depressor-size popsicle sticks, one thick rubber band, two thin rubber bands, two thin strips of paper
- 6.7. One balloon, plastic vial, straw
- 6.8. 9 tongue-depressor-size popsicle sticks, three thick rubber bands, plastic spoon, wadded ball of foil
- 6.9. 4 marbles, aluminum foil
- 6.10. Plastic cup, 20 tongue-depressor-size popsicle sticks, 6 plastic needleless syringes, 6 brass fasteners, 5' of flexible tubing, four wheels, 4 rubber bands, two straws, 12" wooden dowel
- 6.11. 2 marbles

## Physics of Light

- 7.1. Color filters
- 7.2. Tracing or tissue paper

- 7.3. CD, index card
- 7.4. Two magnifiers, penny
- 7.5. Feather
- 7.6. Four index cards
- 7.7. Three square mirrors
- 7.8. Square mirror
- 7.9. Benham's disk

## Lasers

- 8.1. Laser, CD
- 8.2. Three square mirrors, three large paperclips, three index cards, three brass fasteners
- 8.3. One AA battery case, two AA batteries, two alligator clip wires, motor, gear, round mirror
- 8.4. One AA battery case, two AA batteries, alligator clip wires, potentiometers with knobs, nuts, bolts, washers, three conduit hangers, two DC motors, two gears, two round mirrors, two DPDT switches
- 8.5. Uses previous materials
- 8.6. Uses previous materials
- 8.7. Uses previous materials
- 8.8. Uses previous materials
- 8.9. Uses previous materials

## Astronomy

- 9.1. Marble, sheet of paper
- 9.2. Paper, magnifying lens
- 9.3. 3' string

## Hovercraft

2 propellers, 2 DC motors, foam tray, foam sheet, hinged foam container, 9V battery clip, 9V battery holder, wires, SPST switch, popsicle stick, graph paper

# Additional Items Needed for the Experiments... “Not Included”:

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## Aeronautics

- 1.1 Two empty soda cans
- 1.2 Empty 2-liter soda can
- 1.3 Clean, empty glass pickle or may jar, matches, and scrap of paper towel
- 1.4 Two empty water bottles
- 1.5 Empty water bottle
- 1.6 Drinking glass
- 1.7 Bathtub
- 1.8 None
- 1.9 Hair dryer, scissors and masking (or duct) tape
- 1.10 Two drinking glasses, food coloring
- 1.11 Empty soda can, stove, pan, bowl
- 1.12 Pencil, hair dryer
- 1.13 Scissors, tape
- 1.14 None
- 1.15 Scissors, tape
- 1.16 Scissors
- 1.17 Tape

## Kites

- 2.1 Stapler
- 2.2 Scissors, tape, glue stick (optional)
- 2.3 Scissors, tape
- 2.4 Scissors, tape
- 2.5 Scissors, tape
- 2.6 Scissors, hot glue gun, duct tape (optional)

## Rocketry

- 3.1 Scissors, tape, hot glue gun
- 3.2 Empty 2-L soda bottle, razor blade, bike pump, vice, drill, ½” spade bit, and water
- 3.3 Water
- 3.4 Hot glue gun, scissors

## Electricity

- 4.1 Carpet, socks, sink
- 4.2 None
- 4.3 None
- 4.4 None

- 4.5. None
- 4.6. Scissors, tape
- 4.7. None
- 4.8. Scissors, hot glue gun

## Robotics

- 5.1. Hot glue gun
- 5.2. Hot glue gun
- 5.3. Hot glue gun
- 5.4. None

## Physics of Motion & Sound

- 6.1. Fence
- 6.2. Broom handle, chain-link fence, three people
- 6.3. Tree, basket
- 6.4. Chain-link fence, broom handle, three people
- 6.5. Hot glue gun or tape
- 6.6. Tape, scissors
- 6.7. Scissors
- 6.8. Hot glue gun
- 6.9. Gift wrap tube, toilet paper tubes, paper towel tubes, OR clear plastic fluorescent bulb tubes
- 6.10. Hot glue gun
- 6.11. Masking tape, ¾” pipe insulation

## Physics of Light

- 8.1. Three flashlights or light sources, dark room
- 8.2. Cardboard box or shoe box, scissors, tape
- 8.3. Razor, tape, paper towel tube
- 8.4. None
- 8.5. None
- 8.6. Crayons
- 8.7. Tape
- 8.8. Shallow cup, water, sunlight
- 8.9. None (If you don’t have the Electricity Pack, use a drill or electric screwdriver to spin the disk.)

**Lasers**

- 8.10. Window
- 8.11. Tape
- 8.12. Epoxy or other strong glue
- 8.13. Tupperware container (clear or frosted works fine)

**Astronomy**

- 9.1. Tape
- 9.2. None
- 9.3. Small rocks, dark night sky

**Hovercraft**

- 9V battery, hot glue gun, razor