Science of Electricity

02 Feb 17:30
Duty six :

Start	Time	Activity	Requirements	Instructions	Scouter
02 Feb 17:30	10	**Activities :** Opening	Register, beans, flag, totem and skin	Grand Howl Flag Break Register Inspection - belts and shoes	Akela
02 Feb 17:40	5	**Game :** Conductors and Insulators		Divide the pack into 2 teams. One team is conductors and one team is insulators. All the Cubs run about and try to join with their own kind. However, the insulators must try to join together and surround the conductors before they reach the power source (large tyre or chosen base).	Akela
02 Feb 17:45	15	**Activities :** Make a Quiz Game	• *Energizer*® Power Pack • Two 12” pieces and eight 16” pieces of No. 22 insulated copper wire with approximately 1” of insulation stripped off all ends • Bulb holder • 8” x 12” cardboard • 16 paper clips • Two large nails • Ruler • Electrical tape	Looking for a fun and easy way to learn math, history, countries, capitals, etc.? Use your knowledge of electricity to make this game for you, your family, and friends. You can also adapt it to the Jungle book specifically for Cubs... • 1. Draw 7 lines across the cardboard and 1 down. Develop your own questions and answers about a subject that interests you. Write the questions on the left side and the answers on the right side. Make sure to mix up the questions and answers so they are not on the same lines. Another option would be to type up the questions and answers as shown in the table below. This could then be printed and attached to the cardboard. 1. 2. Attach paper clips to the board at each question and answer. 2. 3. Behind the board attach a wire from the paperclip of each question to the corresponding paperclip with the correct answer (one connection shown). 3. 4. Attach the two 12” wires with electrical tape to large nails that will be used as probes. Attach the other side of one 12” wire to the positive side of the Energizer power pack and the other side of the second 12” wire to the bulb holder. Then connect the other side of the bulb holder to the negative of the Energizer power pack. 4. 5. Place one probe on the paper clip by a question and place the other probe on the paper clip by an answer. If you select the wrong answer the light bulb does not light up. 5. 6. Place one probe on the paper clip by a question and place the other probe on the paper clip by an answer. If you select the wrong answer the light bulb does not light up.	Akela
02 Feb 18:00	5	**Activities :** Juice and biscuits		Juice and biscuit break	Akela

02 Feb 18:05	15	**Activities :** Wiring a Plug	plugs, wires, cutters, screwdrivers, instructions	## Wiring a Plug 1. Bare the ends of the three wires inside the electrical cord for about half a centimeter, by cutting away the plastic insulation. 2. Gently twist the strands of copper wire with your fingers until each strand is tight. 3. Fold over the twisted strands. 4. Remove the plug cover by either "snapping" or unscrewing it. 5. Unscrew the little screws on each of the plug's pins. 6. Insert the twisted copper wires into the holes in the pins. 7. The green and yellow wire must always be inserted into the top pin. 8. The blue wire is inserted into the left pin (the pin is marked with a blue spot or the letter N). 9. The brown wire is inserted into the right pin (the pin is marked with a brown spot or the letter L) 10. Tighten the little screw on each of the plug's pins. 11. Make sure the electrical cord is firmly gripped by the arrestor clips. 12. Replace the cover of the plug. Bare the ends of the three wires inside the electrical cord for about half a centimeter, by cutting away the plastic insulation. Gently twist the strands of copper wire with your fingers until each strand is tight. Fold over the twisted strands. Remove the plug cover by either "snapping" or unscrewing it. Unscrew the little screws on each of the plug's pins. Insert the twisted copper wires into the holes in the pins. The brown wire is Tighten the little screw on each of the plug's pins.	Akela

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02 Feb 18:20	15	**Activities :** Steady Hand Game	• *Energizer*® Power Pack • Bulb holder • One piece of bare solid copper wire about 30” long • No. 22 insulated copper wire • Lid from a shoe box and masking tape	Is your hand quicker than your eye? Hand to eye coordination is part of almost every activity you undertake. You can build this game to develop your skill. 1. 1. Cut a long piece of insulated #22 wire at least 2’ in length. Strip 3 inches of insulation off one end and make a loop to form a wand. 2. 2. Bend the 30” bare wire in a curly line. You can bend it vertical, horizontal, or in any shape you want. 3. 3. Put the curly wire through the wand and place ends through holes punched in box lid. Bend over wire ends in opposite directions as shown and tape to the inside. 4. 4. Use insulated wire to connect from the positive of the power pack to one end of the curly bare wire. Connect the negative end of the power pack to the light bulb holder and then the other end of the bulb holder to the wand. Use electrical tape at the ends of the curly wire so the light will be off when the end is reached. When the game is not in use the wand should rest at the end so that the light is not left on and the batteries are not discharged. 5. 5. Try to pass the loop all the way over the curly wire without lighting the bulb. If the wand touches the wire, the circuit is complete and the bulb turns on. As your skill increases, put more bends in the curly wire. Play with family and friends and see who can complete the challenge faster.	Akela
02 Feb 18:35	15	**Activities :** Make an Electromagnet	Iron nail Copper wire	Choose an iron nail or screw as the core. Pick out a piece of iron that you have around your home, such as a nail, screw, or bolt. Choose an iron item 3–6 inches (7.6–15.2 cm) in length so	Akela

			Crocodile clips Battery/transformer	that there’s plenty of room to wrap the wire around the iron object. Take your copper wire. Position the wire so that it's perpendicular to the iron core, making it easy to wrap the wire around it many times. Leave 5–7 cm of copper wire loose at the end. Before you start wrapping the wire, leave a strand of wire loose from the iron that will attach to the battery. Position the wire so that it’s perpendicular to the iron core and at one end. Wrap insulated copper wire around the iron going in one direction. Create an ongoing spiral around the piece of iron to conduct the electricity. Wrap the wire in one continuous strand, going in one direction, so that there’s a strong electrical current. [3] It's essential that the wire is wrapped in the same direction so the electricity flows in one direction. If you wrap the wire in different directions, the electricity will flow in different directions, and you won't create a magnetic field. Push the wire close together as you’re wrapping it. Wrap the wire tightly around the iron, forming as many spirals as possible to create the best current. The more wire you use, the stronger the electrical current, so be careful and use caution when creating your magnet. Wrap the entire nail in wire. Remove 1–2 cm of insulation from the ends of the wires. Use wire strippers, sandpaper, or a razor to carefully scrape off the insulation from each end. This will help the wires conduct energy more easily. As you remove the insulation, the wire will turn from the copper color of the insulation to the natural silver color of the wire. Position the ends of the wires to each end of a D battery. Find a D battery, or a 1.5 volt battery, and place each end of the wire on an end of the battery so they're touching. Place pieces of electrical tape or duct tape over each wire end to hold them in place or use crocodile clips if available. Position one wire end at the negative end of the battery and the other wire end at the positive end of the battery. Test out the magnet while holding the wire onto ends of the battery. Once you have a good grip on the battery with the wires, test it out! Hold the battery and iron close to a small metal object, such as a paperclip or safety pin. If the nail, screw, or bolt picks up the metal object, the magnet is working. If the battery becomes hot, use a small towel to hold the wires to the battery. When you're finished using the magnet, detach the wire ends	

				from the battery.	
02 Feb 18:50	10	**Activities :** Closing	Totem, Skin Badges, certificates	Announcements Badge handouts Grand Howl Flag Down Prayer Dismiss	Akela

Programme prepared on 08 May 22:59

Make a Quiz Game

Category	Activities
Time to allocate (mins)	15
Outcome	Build a fun quiz game which lights up when the correct answer is given. Any quiz can be done to fit with various themes, eg. Jungle Book
Resources	• *Energizer*® Power Pack • Two 12” pieces and eight 16” pieces of No. 22 insulated copper wire with approximately 1” of insulation stripped off all ends • Bulb holder • 8” x 12” cardboard • 16 paper clips • Two large nails • Ruler • Electrical tape

Instructions

Looking for a fun and easy way to learn math, history, countries, capitals, etc.? Use your knowledge of electricity to make this game for you, your family, and friends.

You can also adapt it to the Jungle book specifically for Cubs...

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  principles-of-electricity-quiz-game

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Entry written by Sharon Venn of 1st Randburg

Documents

quiz_game.docx
