




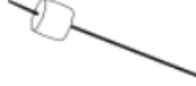

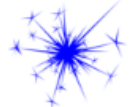










Science Exam Guide

Chemical Change & Physical Change

 breaking glass	 freezing a popsicle	 spilling milk	 mowing the grass
 slicing bread	 roasting marshmallows	 breaking an egg	 exploding fireworks
 mixing kool-aid packets with water	 squeezing an orange for juice	 evaporating water	 burning toast
 burning wood	 popping popcorn	 bleaching / coloring hair	 melting chocolate

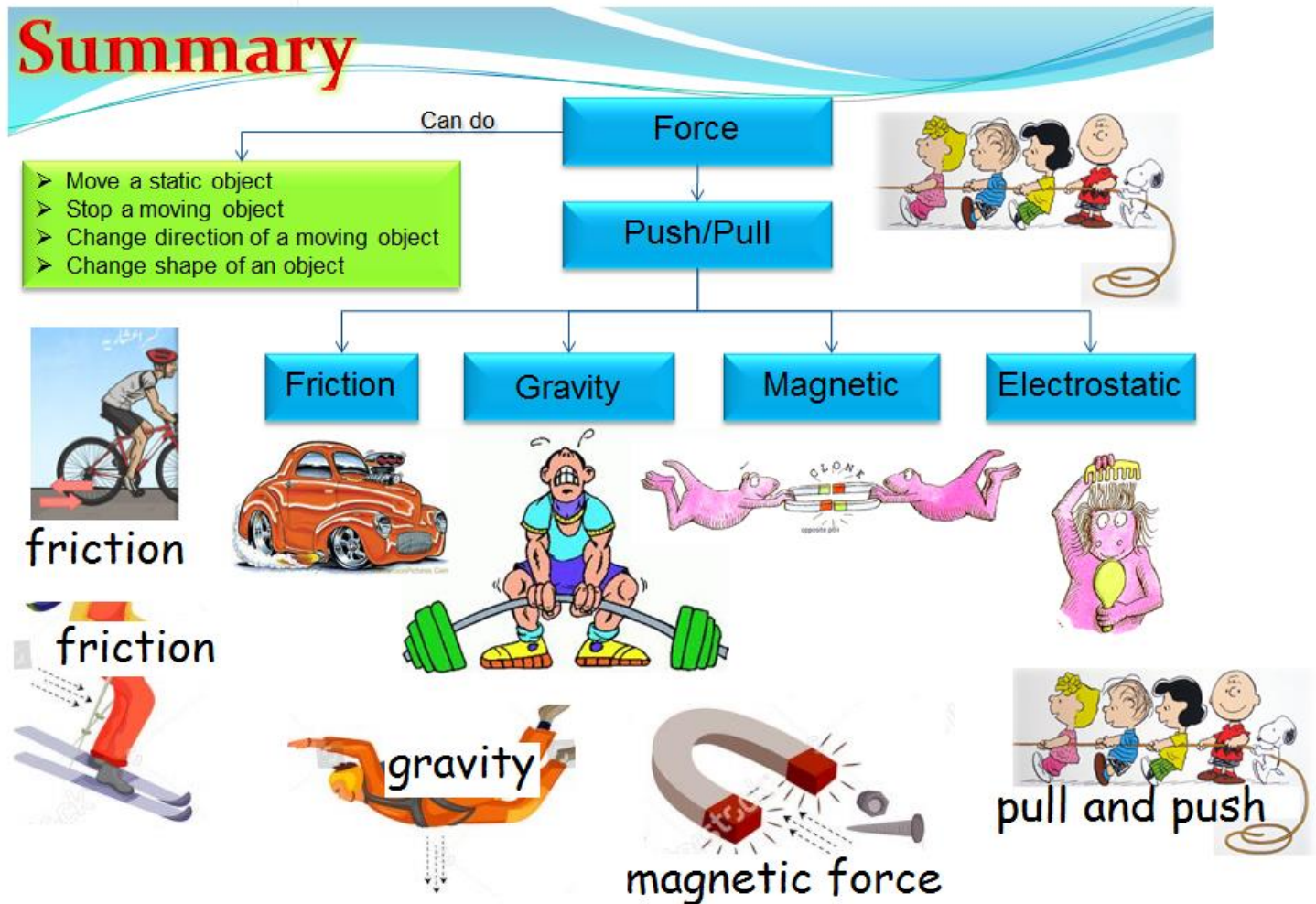
Chemical change makes a new thing and the new thing cannot go back to the old one.

Bananas going black cannot go back to yellow. This is a chemical change.

A physical change does not make something new. It may be smaller in size but still the same. If we break stones. They are still stones. If we melt ice we can freeze the water and make it ice again. This is a physical change.

Science Exam Guide

Types of Forces



Questions

1. What force do you need for a bike to move? **We need friction.**
2. Do ice-skaters like friction? No do not want friction. **Friction makes them stop.**
3. What force pulls us down when we jump up? **Gravity**
4. Name a non-contact (no contact) force. **Magnetic force**
5. If you rub a balloon on your head what force do you make? **Electromagnetic**

Name _____

SIMPLE MACHINES SORT

A **simple machine** is a non-motorized device that changes the direction of a force.

MACHINE	DEFINITION	EXAMPLES	
LEVER 	a rod balanced on a fixed point that can help lift a heavy weight with less effort		
WHEEL and AXLE 	used to carry loads around easily, for long distances with less effort.		
INCLINED PLANE 	any slope or ramp that makes it easier to lift something		
WEDGE 	made of 2 inclined planes and used to push objects apart		
SCREW 	an inclined plane wrapped into a spiral		
PULLEY 	uses wheels and a rope to raise, lower or move a load		

Pulley, screw, wedge, inclined plane,
wheel and axel, lever

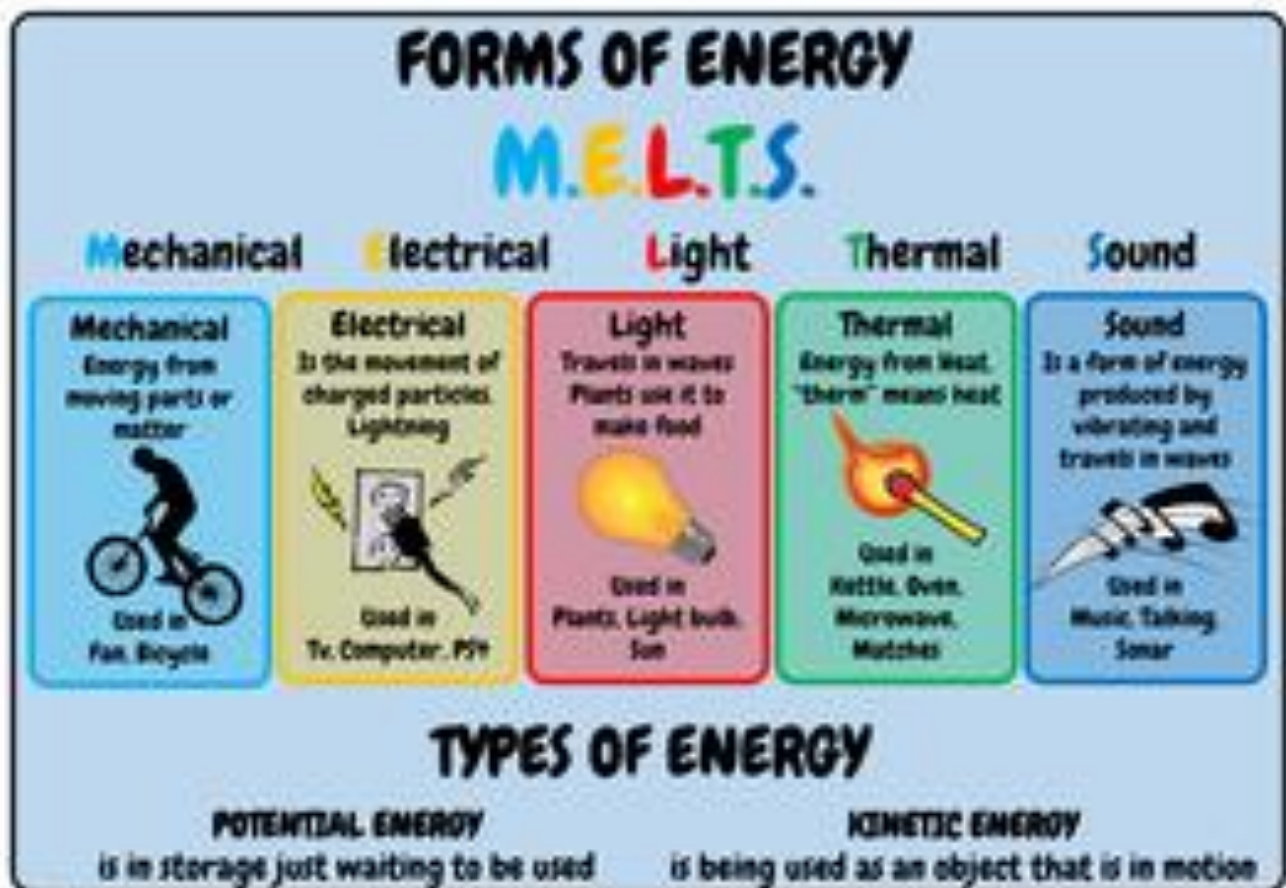
Science Exam Guide

Work & Energy

Work is done when there is a force and something moves.

Questions:

1. When you push a wall - is this work? **No**
2. When you press down on a table - is this work? **No**
3. When you are thinking - is this work? **No**
4. When you walk down the steps - is this work? **Yes**
5. When you pick up a book is this work? **Yes**



Potential energy is in storage waiting to be used.

Kinetic energy is being used on an object that is moving.

Eight Forms of Energy

There are **eight** forms of **energy**. Here are some **examples** of each type:

Electrical Energy

Wherever there's a **current** flowing, there's **electrical energy**.



Light Energy

Anything **luminous** gives off **light energy** — things like the Sun, light bulbs, candles and glow worms.



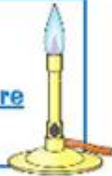
Sound Energy

Anything **noisy** gives off **sound energy** — things like vocal chords, speakers and musical instruments.



Thermal (Heat) Energy

Everything has some **heat energy** — the **hotter** it is, the **higher** its **temperature** and the **more** heat energy it has.



Gravitational Potential Energy

Anything in a **gravitational field** (i.e. anything that can **fall**) has **potential energy** — the **higher** it goes, the **more** it has.



Chemical Energy

Anything with **energy** which can be released by a **chemical reaction** — things like food, fuels and batteries.



Kinetic (Movement) Energy

Anything that **moves** has **kinetic energy**.



Elastic Energy

Anything **stretched** has **elastic energy** — things like rubber bands, springs,



Questions:

Name the energy.

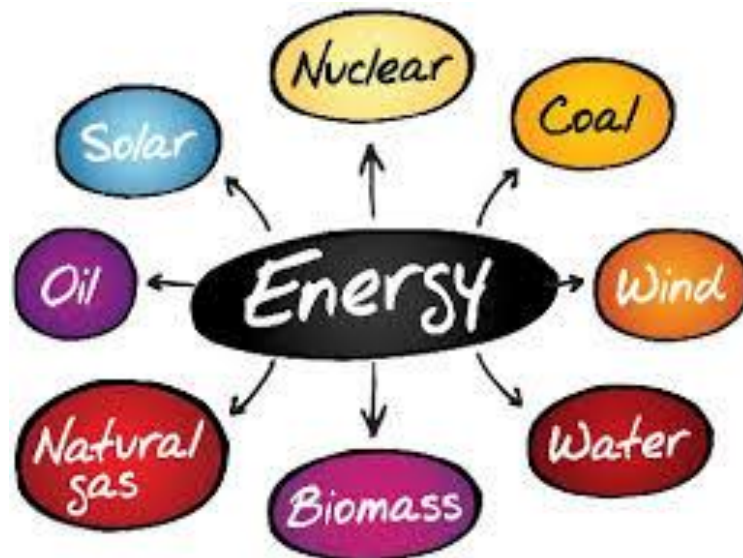
1. Playing a drum
2. A bus moving
3. An apple falling to the floor
4. A fire burning
5. The sun
6. A flashlight
7. A phone
8. Pizza
9. Fireworks on Eid

Types of Energy

Find more examples of each.

- Chemical Energy - food
- Magnetic Energy - magnets
- Light Energy - flashlight
- Heat energy - sun
- Electrical energy - battery
- Sound Energy - alarm clocks
- Gravitational energy - earth
- Kinetic energy - car
- Potential energy - stored energy
- Mechanical - using a hammer

We get energy from the following:



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Conductors and Insulators



Which is a conductor and which is an insulator?

Which is magnetic and which is non-magnetic?

Conductor –

Any material that allows electric current to pass through it

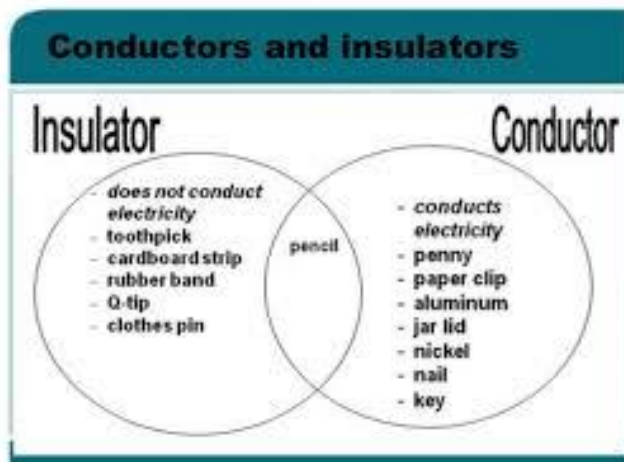
•copper

•aluminum

•steel

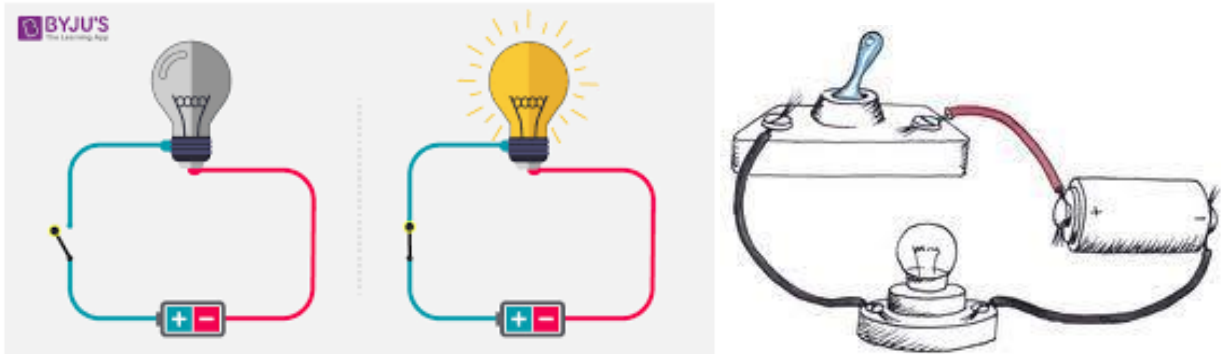


•any metal



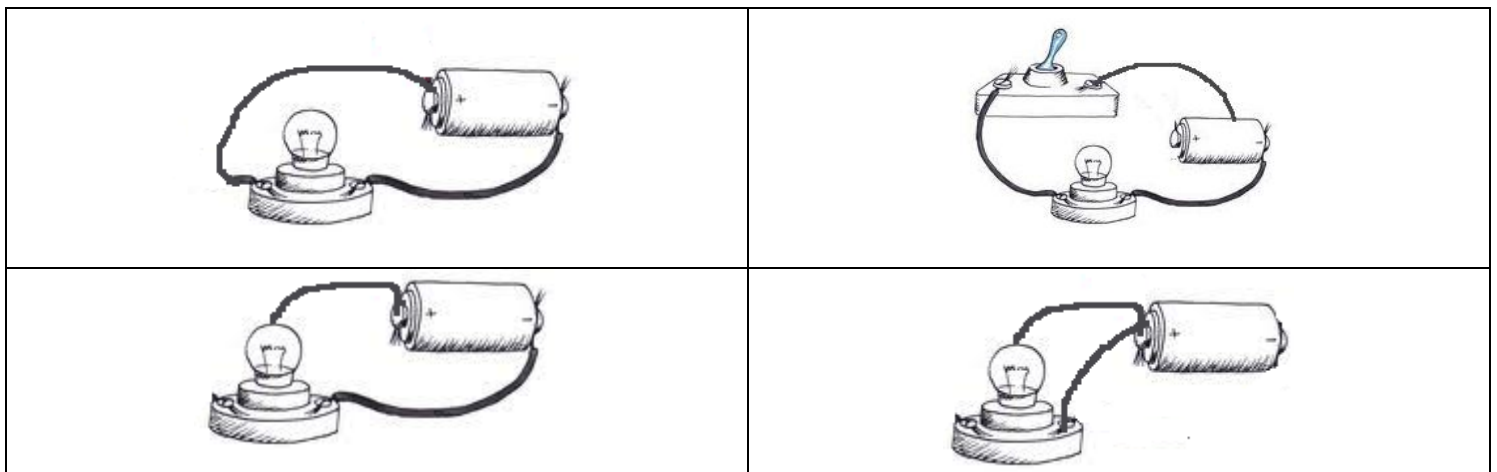
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Electric Circuits and Conductors



Questions

1. What do you need to make the bulb light up? *battery and wire*
2. Draw a circuit and label bulb, wire, battery.
3. Which circuit will light the bulb?



Circle the conductors:

paper **metal spoon** **cotton** **copper** **wood**
key **coin** **nail** **wool** **rock** **glass** **plastic**
needle **pen** **pencil** **paper clip**

Match the Word to the Electrical Appliance

			Electrical Appliances
			Match pictures with these numbers. -----
			1. Fan
			2. Oven
			3. Iron
			4. Radio
			5. Mixer
			6. Dryer
			7. Light
			8. Stove
			9. Blender
			10. Toaster
			11. Telephone
			12. Hair dryer
			13. Television
			14. Microwave
			15. Refrigerator
			16. Tape recorder
			17. Food processor
			18. Coffee Maker
			19. Vacuum Cleaner
			20. Washing Machine
			21. Sandwich Machine

Heat Transfer

Directions- On the line, write what kind of heat transfer is taking place. Use convection, conduction and radiation to fill in the blanks.

1. a snowball in your hand _____
2. warm and cold air meeting _____
3. sun rays warming a puddle _____
4. an egg on a hot skillet _____
5. pouring cold water in your hot coffee _____
6. using your blow dryer _____
7. a heater heating up the inside of the car _____
8. the sun warming the surface of a rock _____
9. a pan of boiling water on the stove _____
10. using a curling iron to curl your hair _____
11. feeling the sun's heat on your back _____
12. butter melting on warm pancakes _____
13. adding hot water to your cold bath water _____
14. baking a cake inside the oven _____
15. ironing a wrinkled shirt _____



<p>CONVECTION the transfer of heat through a fluid (liquid or gas) caused by molecular motion</p> <p>CONDUCTION the transfer of heat or electric current from one substance to another by direct contact.</p> <p>RADIATION energy that is radiated or transmitted in the form of rays or waves or particles</p>	<ol style="list-style-type: none"> 1. Conduction 2. Convection 3. Radiation 4. Conduction 5. Convection 6. Convection 7. convection 8. radiation 9. convection 	<ol style="list-style-type: none"> 10. radiation 11. radiation 12. conduction 13. convection 14. convection 15. conduction
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Static Electricity with Balloons

Use this fun activity to explore the concept of static electricity with your second grader.

You will need:

- Balloon
- Mirror
- Paper
- Hole punch



Instructions:

- Use the hole punch to make small paper circles and set them aside.
- Blow up the balloon and tie it.
- Now, stand in front of the mirror and rub the balloon on the top of your head.
- After a few seconds, put the balloon down and observe what happens to your hair.
- Rub the balloon on your head once again and hold it over the paper circles.
- What happens when you do this?

How does it happen?

When you rub the balloon on the top of your head, your hair will rise but itself. When you rub the balloon on your head and hold it over the paper circles, it will pick them up like a magnet. Both results are due to the effect of static electricity – the excess electric charge that transfers from the balloon to your hair.

Is it Magnetic?

Directions: Draw a line from the magnet to the objects that are magnetic.

