Conductors & Insulators

1. Conductors and insulators are all around us. Those pictured here are easy to identify. Can you describe why each is either a conductor or an insulator?

2. Photo B shows how air and distance can be good insulators. Why is air a good insulator? Why is distance a good insulator?

3. It’s not always easy to tell if something is a good conductor of electricity. Which of the items pictured are good conductors? Why?

4. Which of the items pictured are good insulators? Why?

5. Explain how the items pictured could create an electrical hazard to you.

Visit tampaelectric.com/safety to learn more about electrical safety.

Never fly a kite near power lines.
Electromagnets are used every day to perform large and small tasks. They make it possible for a crane to pick up large pieces of metal or a pad-mounted transformer to power your home. They can even make it possible for your doorbell to ring when you have a visitor.

The crane magnet, pad-mounted transformer and doorbell all contain a wire-wrapped electromagnet just like the one you created in class. However, a crane magnet and pad-mounted transformer use much more electricity.

Which one of the photographs shows an electromagnet?

Which one of the photographs does not show an electromagnet?

How could a pad-mounted transformer be dangerous to you?

If you see a pad-mounted transformer that has been damaged or its door is open, how is this dangerous and what should you do?

Don’t play on or near electrical equipment.

Visit tampaelectric.com/safety to learn more about electrical safety.
Electricity from a power plant that is carried across power lines to provide electricity to a city is an example of a **large closed circuit**.

If a conductive object makes **contact** with a power line, it can result in a completed circuit that can be very **dangerous**. It is dangerous because the object provides a **path** to carry electricity to ground, thus completing the circuit.

**DANGER!** If you touch a downed power line, your body is **conductive** and can complete a circuit and provide a pathway for electricity to flow to ground. This could result in serious injury and you could die. You should **never** touch a downed power line. **Always stay away and tell an adult.**

Which one of the photographs shows a **closed** circuit?

Which one of the photographs shows an **open** circuit?

If you walk outside after a **thunderstorm** and see power lines lying under a fallen tree, how could you accidentally complete an open circuit? Why is this **dangerous**? What could happen to you?

Why should you stay away from **ANY** downed power line, even if it does not spark or move around? What should you do if you see a **downed power line**?

Visit [tampaelectric.com/safety](http://tampaelectric.com/safety) to learn more about electrical safety.
Static Electricity

1. Static electricity is a **build-up** of electrical charges on an object.

2. Objects with **opposing** electrical charges attract one another.

3. A cloud develops and stores electricity by moving through the **atmosphere**. Since earth is the opposite charge, **lightning** is a static discharge, just like the one that occurs between two balloons and the one that occurs when you touch a metal object after rubbing your feet across a carpet. The only difference is the amount of energy and voltage.

4. Which of the items pictured represents **static electricity**?

5. Which item pictured represents the most **danger** to you?

6. Why is it **dangerous** to stand in an open field during a thunderstorm? What could happen to you?

7. Why is it **dangerous** to be outside standing near a tree or holding **metal** objects during a thunderstorm?

Seek shelter indoors during a thunderstorm.

Visit [tampaelectric.com/safety](http://tampaelectric.com/safety) to learn more about electrical safety.
Electrical Circuit

1. **Electrical circuits are all around us.** An electrical circuit makes it possible to turn on an electric device like your television. When your television is “on,” this means it is part of an electrical circuit.

2. Which of the items pictured represent electrical circuits? Which are not?

3. **Danger!** Your body can complete a circuit if you touch a power line or other source of electricity. This is because you become the pathway for electricity to flow to ground. This could result in serious injury and you could die. You should never touch a downed power line. Always stay away and tell an adult.

4. Which of the items pictured represents a situation where you or another person could become part of an electrical circuit?

5. Why are people warned to never touch or go near a downed power line?

6. If you see an extension cord with exposed bare wires, what should you do? Why?

7. If you see a vehicle that has a power line resting on it following a crash, urge everyone to stay far away from the vehicle until help arrives. Why?

8. If a downed power line makes contact with any part of your vehicle, stay inside and tell others to stay away until the line is safely removed and power is turned off. Attempting to exit from the vehicle may result in serious injury and you could die. Explain why you should avoid getting out of the vehicle.

Visit tampaelectric.com/safety to learn more about electrical safety.