

# The Magic School Bus

A Science Chapter Book #14

## Electric Storm Lapbook

by  
Amy Yee



*Yee Shall Know*

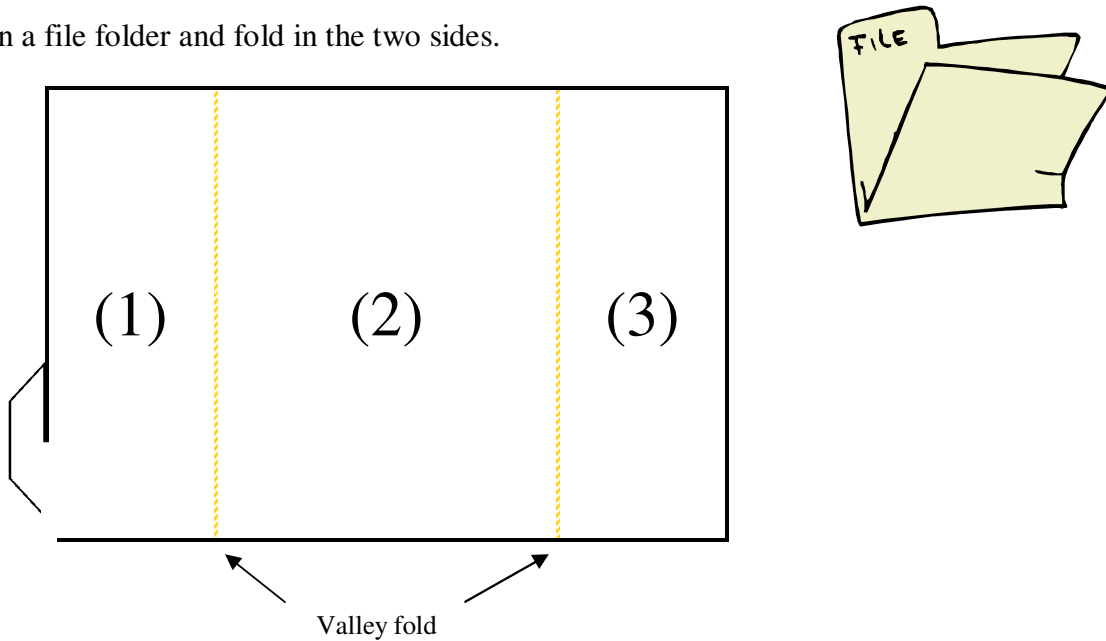
<http://www.yeeshallknow.com>



# Lapbook Basics

Follow the instructions in the following page(s) to complete all the individual pieces that will go into your lapbook. And then assemble as follows:

Open a file folder and fold in the two sides.



Glue the booklets inside. Close the shutters and decorate the cover.

If more space is needed to complete your project, there are several methods to extend your file folder. You can fold another folder in the similar fashion and glue the back of section 3 of your first folder to the back of section 1 of your second folder. You can also lay an additional piece of paper (card stock) just above or below the middle section (2) of the folder. Use packing tape or other strong tape, secure the paper to the folder creating a flap that can be opened to display your student's work. You can also staple the crease between sections two and three of the first folder to the crease between sections one and two of the second folder using a long stapler. This method will give you two additional surfaces to add your student's completed work.

Some students prefer to assemble the lapbook after they have completed all the activities so they can arrange their booklets, while others prefer to affix each booklet to the lapbook after each activity. Either way will work.

**A note on cutting and folding.** In the following templates, please cut on the solid lines. The black dotted lines are folding lines for mountain folds (when you are done folding, the black dotted lines should be on the outside of the fold). The yellow dotted lines are for valley folds (when you are done folding, the line is tucked on the inside of your fold). Do make sure that you use firm pressure to make your creases as sometimes these creases will help the final booklet to fall into their proper positions.

For some younger students you may wish to have them dictate their answers to you or you may write down the answers for them to copy.

Lapbooks not only are fun for kids to do and help with their information retention, they also serve as a permanent record of their learning. The students can refer to it when looking for information, or they can use it in presentations to friends and relatives thus further reinforcing their learning.

I hope your student(s) will enjoy this lapbook and the information learned will remain with them.

## Activities

1. Define: weather, meteorologist, water vapor, evaporate, humidity, atom.
2. The sun provides the earth with what? What kinds of changes can the sun cause here on earth?
3. What is the basic building block which makes up everything we see?
4. What does heat do to atoms?
5. What does warm air do?
6. How are updrafts created? What do updrafts carry with them high into the sky?
7. What is a front? Which type of air gets pushed out of the way?
8. What happens to the temperature as you travel higher in the atmosphere?
9. What are clouds made of?
10. Describe these types of clouds: cumulus, stratus, cirrus, cumulonimbus.
11. How big are water droplets in the clouds? What happens to them when they become too big?
12. What happens with the air inside developing thunder clouds?
13. How is hail formed?
14. How high can cumulonimbus clouds reach?
15. What is the typical size of hailstones? How big can they get?
16. How quickly can a cumulus cloud be changed into a cumulonimbus cloud?
17. Up to what speed can winds travel inside cumulonimbus clouds?
18. What three parts make up an atom? What are the charges of each part? What parts make up the nucleus of an atom?
19. How can atoms have static electricity?
20. In a cloud, how do things become charged? Which objects collect the most electrons? Where do these objects usually end up?
21. What does static mean? Unlike the electricity we usually think of, static electricity cannot do what?
22. When electrons are moving, what kind of energy do they create? What is an electric current?
23. Which types of electric charges attract each other? Which types of electric charges pushes each other away?
24. How does the stream of electrons released from the bottom of a cumulonimbus cloud move toward the ground? What is this stream called? How long does each stroke last? How many strokes does it take the stream to reach the ground?
25. What type of path does a stepped leader take?
26. Describe a streamer.
27. Are stepped leaders and streamers visible? When can we see lightning?
28. What unit measures electric current? How much current is in a bolt of lightning? How much current does most houses use?
29. What causes thunder?
30. How hot does lightning get?
31. How can you figure out how far you are from the source of a lightning?
32. How often does lightning strike in the world? How often does lightning strike the ground in

the United States each year?

33. Describe the different types of lightning: sheet lightning, heat lightning, ball lightning, St. Elmo's fire.
34. Do most people survive from being struck by lightning? How many people are killed each year by lightning? What can lightning damage?
35. What should you do during a thunderstorm? If you are inside? If you are stuck outside?
36. What is one example of lightning striking the same place many times? What is one example of lightning striking the same person many times?
37. What is the purpose of lightning rods? What are they made of? How are they placed on a building? What happens when a lightning strikes?

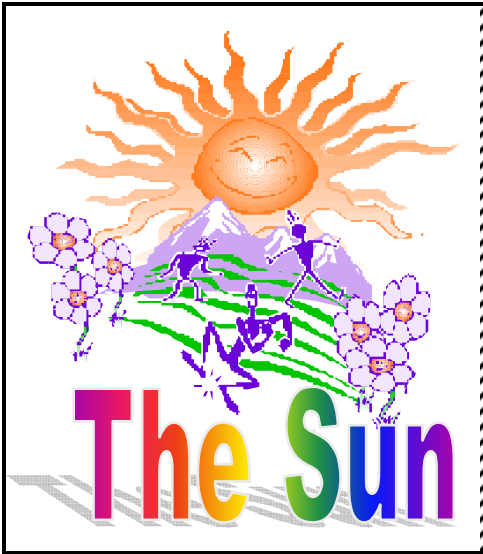
## Instructions

1. **Definition.** Cut out the shape and cut on the lines between the words. Fold along the dotted lines. Write the definitions under each flap.
2. **The Sun.** Cut out the shape, fold accordion style along the dotted lines, and fill in your answers.
3. **Basic building block.** Cut out the shape, fold in half, and answer the question on the inside.
4. **Heat and atoms.** Cut out the shape, fold in half, and answer the question on the inside.
5. **Warm air.** Cut out the shape, fold in half, and answer the question on the inside.
6. **Updraft.** Cut out the shape, fold along the dotted lines, and answer the questions under each flap.
7. **Weather front.** Cut out the shape, fold accordion style along the dotted lines, and fill in your answers.
8. **Higher and higher.** Cut out the shape, fold in half, and on the inside answer the question about air temperature as you travel higher.
9. **What are clouds made of.** Cut out the shape, fold in half, and answer the question on the inside.
10. **Cloud description.** Cut out the pocket, fold along the dotted lines, and glue the flaps to the back of the pocket. Cut out the four cards and write a description of each type of cloud. Place the cards inside the pocket.
11. **Water droplets.** Cut out the shape, fold along the dotted lines, and answer the questions under each flap.
12. **Air inside.** Cut out the shape, fold in half, and on the inside of the card write a description of the air inside a developing thunderstorm.
13. **How is hail formed.** Cut out the shape, fold in half, and answer the question on the inside.
14. **How high.** Cut out the shape, fold accordion style along the dotted lines, and fill in your answers.
15. **Hail sizes.** Cut out the shape, fold in half, and on the inside write down the typical size of hailstones and how big they can get.
16. **How quickly.** Cut out the shape and fold along the dotted lines into a matchbook. Write your answer on the inside.
17. **What speed.** Cut out the shape, fold in half, and answer the question on the inside.
18. **All about atoms.** Cut out the shape, and cut along all solid lines. Fold along the dotted lines. Answer the questions under the two flaps on the left and write down the charge for each part of an atom.
19. **Atoms and static.** Cut out the shape, fold in half, and answer the question on the inside.
20. **Charges in a cloud.** Cut out the shape and fold along the dotted lines. Write your answer under each flap.
21. **Static electricity.** Cut out the shape, fold accordion style along the dotted lines, and fill in your answers.
22. **Electric current.** Cut out the shape, fold along the dotted lines, and answer the questions under each flap.
23. **Attract and push.** Cut out the shape, fold along the dotted lines, and answer the questions

under each flap.

24. **Electron stream.** Cut out the shape, fold accordion style along the dotted lines, and answer the questions.
25. **Step leader.** Cut out the shape, fold in half, and answer the question on the inside.
26. **Streamer.** Cut out the shape, fold in half, and write your description on the inside.
27. **Seeing lightning.** Cut out the shape, fold along the dotted lines, and answer the questions under each flap.
28. **Measure of current.** Cut out the shape and fold along all dotted lines. Answer the questions under each flap.
29. **What causes thunder.** Cut out the shape, fold in half, and write your description on the inside.
30. **How hot.** Cut out the shape, fold in half, and write your description on the inside.
31. **How far are you.** Cut out the shape, fold accordion style along the dotted lines, and fill in your answer.
32. **Lightning strikes.** Cut out the shape, fold along the dotted lines, and answer the questions under each flap.
33. **Types of lightning.** Cut out the pocket, fold along the dotted lines, and glue the flaps to the back of the pocket. Cut out the four cards and write a description of each type of lightning. Place the cards inside the pocket.
34. **When lightning strikes.** Cut along all the solid lines and fold along all the dotted lines. Write your answer under each flap.
35. **During thunderstorm.** Cut along all the solid lines and fold along all the dotted lines to make into a connected matchbook. List the do's and don'ts of what to do during a thunderstorm if you are inside or outside.
36. **Lightning strikes again.** Cut out the shape. Fold in the two side flaps along the dotted lines. Fold the top flap over along the dotted line. Give your example under each flap.
37. **Lightning rod.** Cut out the shape and fold each flap over in clockwise order along the dotted lines so each question is showing after the next flap is folded over. Tuck in the last flap under the first to secure the card. Write your answer under each flap.

evaporate	<div style="border: 2px solid black; padding: 10px; display: inline-block;"> <b>North</b> </div>	weather
humidity		meteorologist
atom		water vapor



The sun provides the earth with what?

What kinds of changes can the sun cause here on earth?

What is the basic building block which makes up everything we see?

**WHAT DOES HEAT  
DO TO ATOMS?**

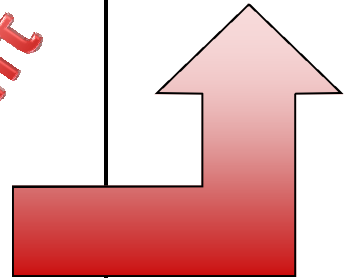


**What does  
warm  
air do?**



What do updrafts  
carry with them  
high into the sky?

**Updraft**



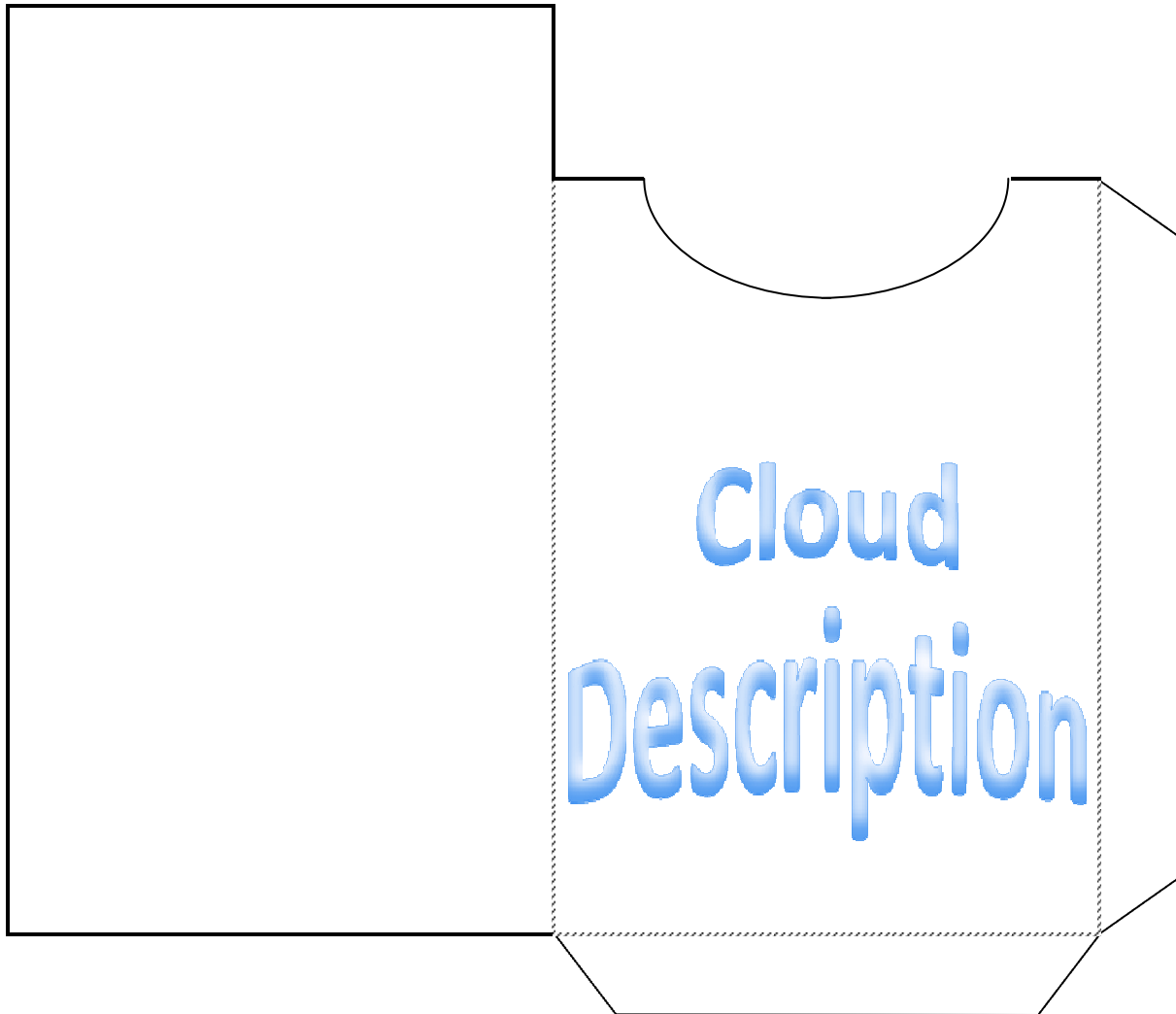
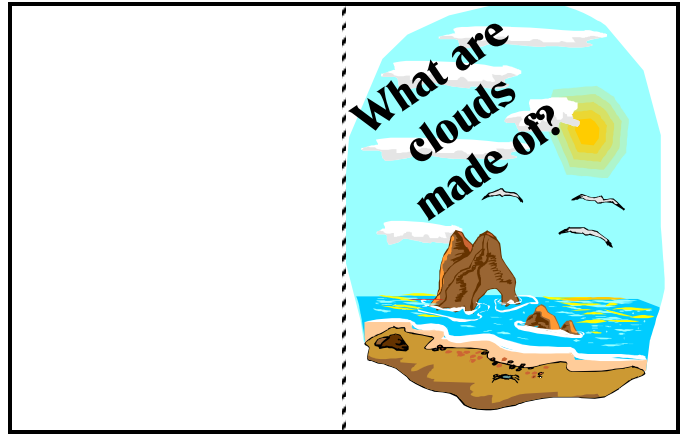
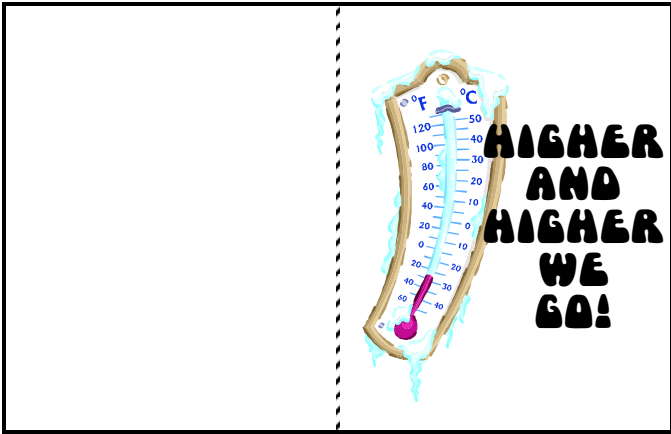
How are updrafts  
created?

**Weather  
Front**



What is a weather front?

Which type of air gets pushed  
out of the way?



Cumulus

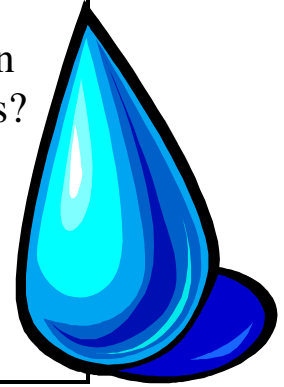
Stratus

Cirrus

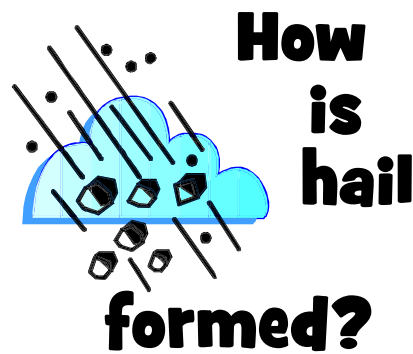
Cumulonimbus

What happens  
to them  
when they  
become  
too  
big?

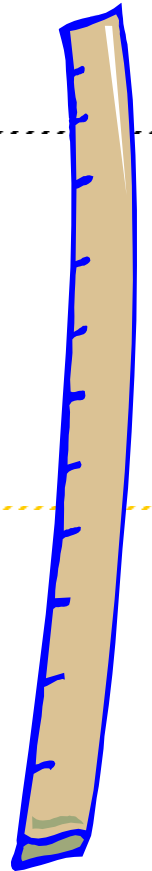
How big  
are water  
droplets in  
the clouds?



How high can  
cumulonimbus  
clouds reach?



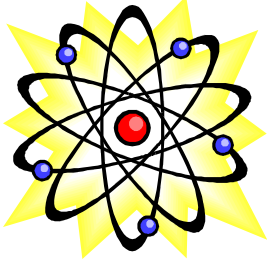
**Hail  
Size**



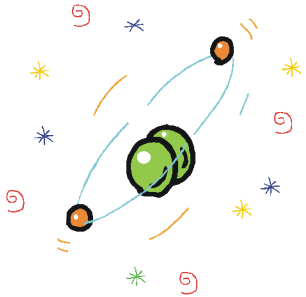
How quickly can a cumulus  
cloud be changed into a  
cumulonimbus  
cloud?



*Up to what  
speed can winds  
travel inside  
cumulonimbus  
clouds?*

<i>electron</i>	<b>W h a t  c h a r g e ?</b>	<i>It's All About Atoms</i>	<i>What makes up an atom?</i>
<i>proton</i>			
<i>neutron</i>			

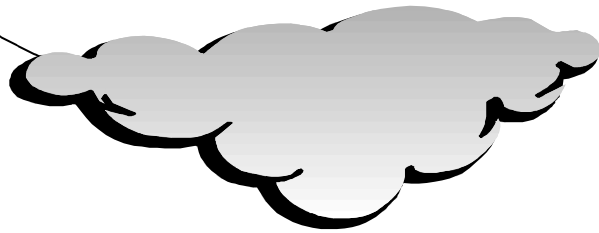
How can atoms have static electricity?



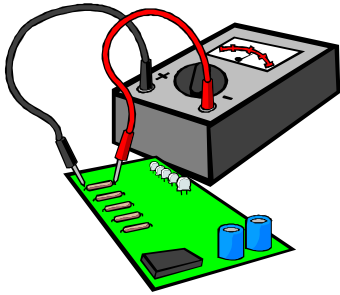
*Which  
objects  
collect  
the most  
electrons?*

*In a  
cloud  
how do  
things  
become  
charged?*

*Where do these objects  
usually end up?*

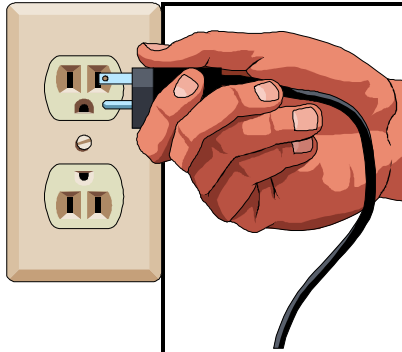


# Static Electricity



What does static mean?

Unlike the electricity we usually think of, static electricity cannot do what?



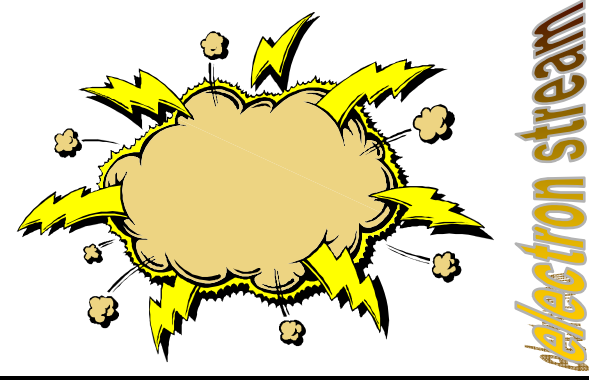
What is an electric current?

When electrons are moving, what kind of energy do they create?



Which types of electric charges attract each other?

Which types of electric charges pushes each other away?



How does the stream of electrons released from the bottom of a cumulonimbus cloud move toward the ground?

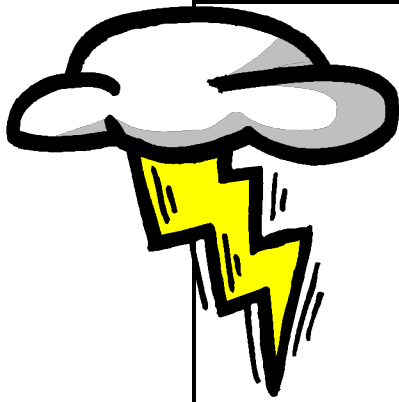
What is this stream called?

How long does each stroke last?

How many strokes does it take the stream to reach the ground?

**+** **DESCRIBE** **+**  
**A**  
**+** **STREAMER** **+**  
**+** **+**

What type of path does a stepped leader take?



When can we see lightning?

Are stepped leaders and streamers visible?

What unit measures electric current?

How much current does most houses use?



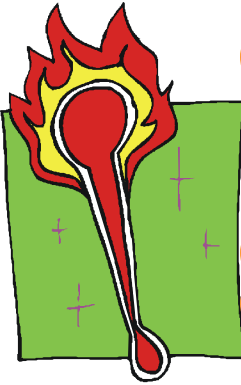
How much current is in a bolt of lightning?



What causes thunder?



How hot does lightning get?

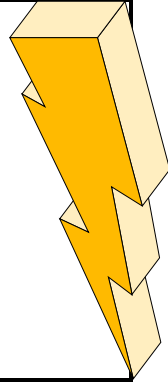


How can you figure out how far you are from the source of a lightning?



**How often does lightning strike the ground in the US each year?**

**How often does lightning strike in the world?**



# Types of Lightning

Sheet Lightning

Heat Lightning

Ball Lightning

St. Elmo's Fire

What can lightning damage?

**When lightning strikes**



Do most people survive from being struck by lightning?

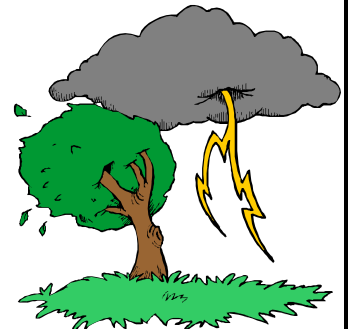
How many people are killed each year by lightning?

**Inside**

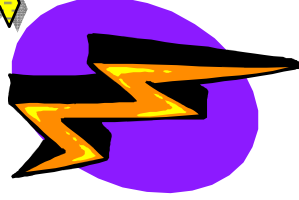
**Stuck Outside**



**What should you do during a thunderstorm if your are...**

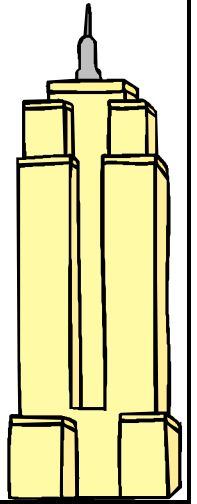


# Lightning Strikes Again!



Example of a person struck multiple times

Example of a building struck multiple times...



**How are lightning rods placed on a building?**

**What is the purpose of lightning rods?**

**What is the purpose of lightning rods?**

**What are lightning rods made of?**

# Extra Pictures

