



Topic/Objective CHAPTER:

NAME:

Thunderstorms/
Lightning.

Pd: 1 2 4 5 other

DATE

Essential Question

What is Lightning? How does it occur?

Cue: Review:

Thoughts: Main Idea

NOTE Taking AREA:

How lightning starts

- Begins from a spark & travels to an opposite charge.

Lightning

- is the transfer of electrical charge.
- referred to as _____

- is the result of an imbalance b/t negative "-" & positive "+" charges in an object.

i.e.

- walking across a carpet w/socks

- Positive or Negative charged particle

- Build up of static electricity starts from the ice particles bumping into each other.

- That happens b/c the Atmosphere is rubbing against the ground, which begins to separate the charged _____

Charge differential

- Separation of _____ into groups



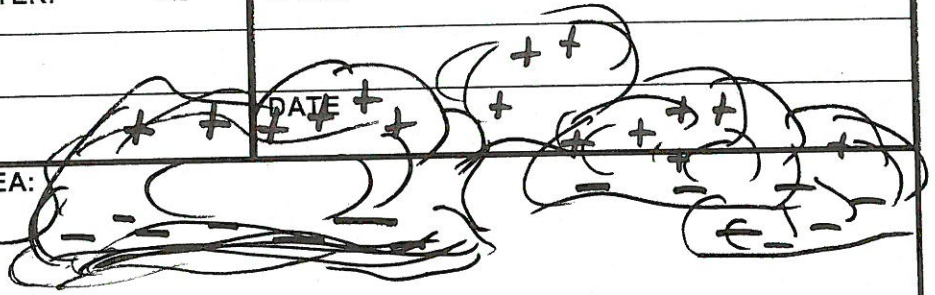
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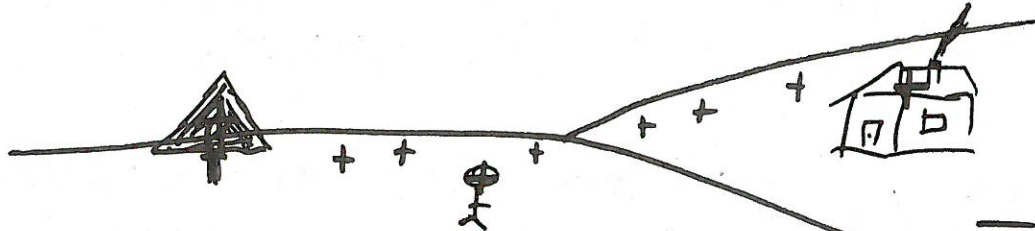
NOTE Taking AREA:

Cue: Review:
Thoughts: Main Idea

Clouds →



Positive Ion
Negative Ion



Deep under-ground →

- Above diagram shows friction
- This separation is due to friction b/c the updrafts and downdrafts
- like static the charges are attracted to each other. The build up of charge is released.
- Negative then seeks out a positive charge, in 1 of 3 ways.

(See next page)

SUMMARY:



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Lightning

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Essential Question

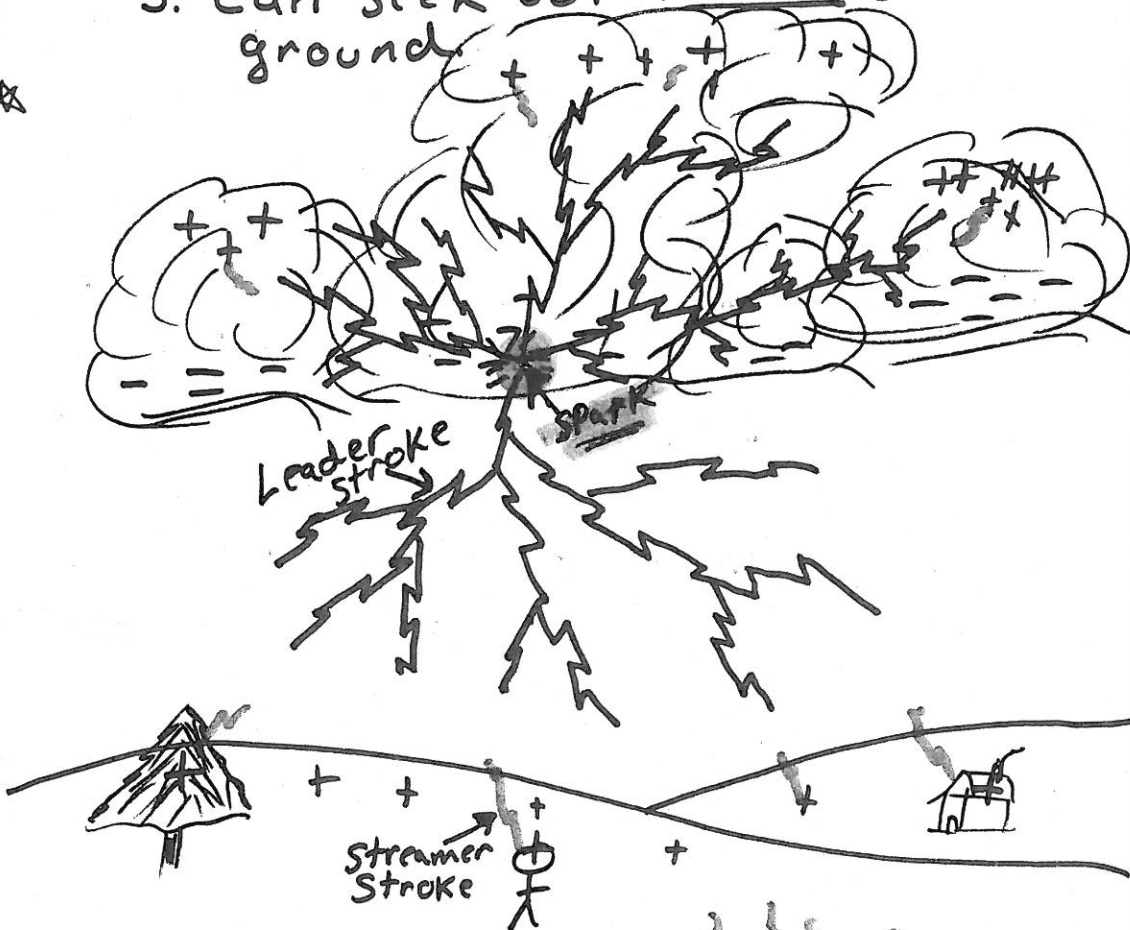
Cue: Review:
Thoughts: Main Idea

NOTE Taking AREA:

3 ways
negative
seeks positive

- 3 things can happen AFTER the "Spark" of the negative Ion.

1. 1 part of the cloud to another part of a cloud
2. Some can jump from cloud to cloud
3. Can seek out TOWARDS the ground.



Stroke
1st step of
branch
lightning
* You can NOT
see this

Streamer
Stroke

- is the Positive Ions extending out from the object.



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Cue: Review:
Thoughts: Main Idea

NOTE Taking AREA:

Streamer
Stroke

- any object along the ground is positively charged.
- Taller the object the more "+" charge it can hold.
- The streamer stroke is actually "+" charged Ions "reaching" out toward the step leader stroke.

Why is
the ground
"+" charged

- Side note: Why is the ground "+" charged
 - the "-" charge at the base of the cloud has an affect on the ground beneath it.
 - the "-" charge in the ground is pushed further into the ground, leaving "+" charge near the surface.
 - this is charged by _____
- the "+" charge is concentrated on the point corners of an object.

SUMMARY:



Topic/Objective CHAPTER: PT 3

NAME:

TB/lightning

Pd: 1 2 4 5 other

DATE

Essential Question

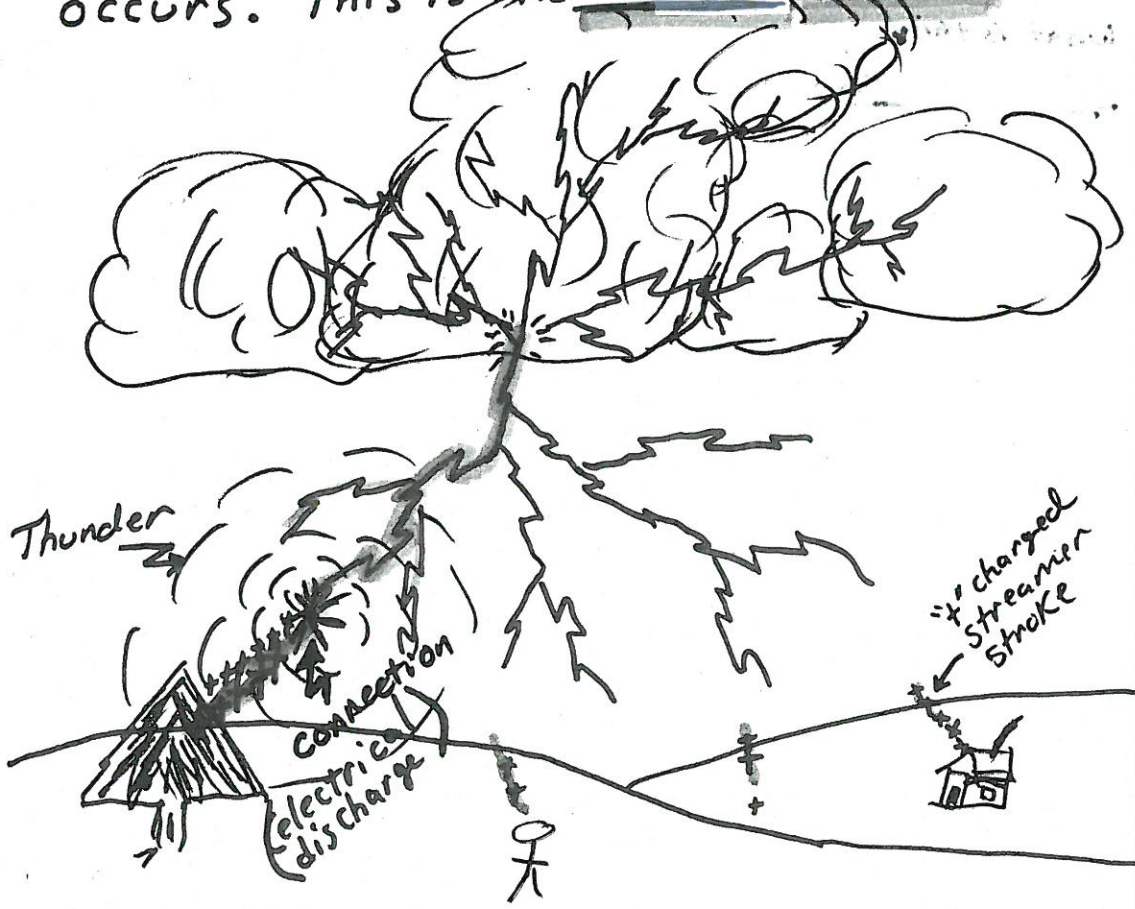
Cue: Review: Thoughts: Main Idea

NOTE Taking AREA:

- when a ^{step} Leader stroke meets the streamer stroke an electrical discharge occurs.
- is the release & transmission of electricity
- the path is connected and bright flash occurs. this is the stroke

discharge

this is what you see!



Return Stroke

- the charge that rushes upward from the farthest pt. to the spark, in steps, or breaks.

NOTES CONTINUE ON OTHER SIDE



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Cue: Review:
Thoughts: Main Idea

NOTE Taking AREA:

- the return stroke will illuminate the connection w/ 100 million volts of electricity.
- Lightning bolt heats the surrounding air to over 50,000 °F (~30,000 °C)
- 5x hotter than the surface of the Sun.

What is this?

- is the sound you hear because the surrounding air is superheated rapidly due to the expansion & contracts

Lightning Trivia

- Lastly, the charged ions are redistributed and the buildup starts all over again.
- Lightning can extend outward to at least 4 miles away. 1 mile = 1.6 km
- hits earth an average of 8.6 million x/day or 100 strikes/second
- 2nd cause of death in the U.S. Flooding #1

SUMMARY:

- every 5 seconds = 1 mile (w/in 2 miles in danger)

Heat lightning - does not exist. [sort of]

- It is a storm off in the distance too far away for you to hear thunder.