

The Thunderstorm Recipe: Moisture, Lift, and Instability

Name: _____

Date: _____

Class: _____

Read the lesson at myweatherrock.com/journal/explainers/thunderstorm-recipe (or the printed copy), then answer below.

Remember

Thunderstorms need three ingredients: moisture to fuel them, instability so rising air keeps rising, and lift to start the rising. With all three, a storm runs a three stage life: a towering cumulus of pure updraft, a mature stage where updraft and rain cooled downdraft coexist and the weather peaks, and a dissipating stage where the downdraft wins and the storm exhales itself apart. Add wind shear and storms organize, live longer, and turn severe.

Questions

1. Which three ingredients does every thunderstorm need?

- ☐ A. Moisture, instability, lift
- ☐ B. Heat, wind, pressure
- ☐ C. Clouds, rain, lightning

2. During which stage does a storm produce its heaviest weather?

- ☐ A. Towering cumulus
- ☐ B. Mature, when updraft and downdraft coexist
- ☐ C. Dissipating

3. What does wind shear do to a thunderstorm?

- ☐ A. Blows it apart immediately
- ☐ B. Tilts and organizes it so it lives longer and can turn severe
- ☐ C. Only changes which direction it moves

4. Lightning can strike how far from the rain shaft?

- ☐ A. Only inside the rain
- ☐ B. Ten miles is routine
- ☐ C. A hundred miles regularly

5. The official severe hail threshold is:

- ☐ A. Pea size
- ☐ B. One inch, about a quarter
- ☐ C. Golf ball size

In your own words

Name the three ingredients every thunderstorm needs, and describe what happens to a storm when its downdraft cuts off its own updraft.

Answer key (for the teacher)

1. Which three ingredients does every thunderstorm need?

A. Moisture, instability, lift — Fuel, the tendency for lifted air to keep rising, and a trigger to start the rise. Miss one and the sky stays quiet.

2. During which stage does a storm produce its heaviest weather?

B. Mature, when updraft and downdraft coexist — Maturity is the only stage running both drafts at once, and it owns the peak rain, lightning, and hail.

3. What does wind shear do to a thunderstorm?

B. Tilts and organizes it so it lives longer and can turn severe — Shear separates the downdraft from the updraft's fuel supply, extending the storm's life; strong shear can set the updraft rotating.

4. Lightning can strike how far from the rain shaft?

B. Ten miles is routine — Bolts from the storm's anvil routinely land ten miles out, sometimes beyond the thunder you can hear.

5. The official severe hail threshold is:

B. One inch, about a quarter — One inch diameter hail or 58 mph gusts make a storm officially severe; a tornado does it instantly.