

Morning Frost: Ice That Was Never Dew

Name: _____

Date: _____

Class: _____

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

Remember

Frost forms when a surface cools to freezing and below, and water vapor in the air turns directly into ice crystals on it, skipping the liquid stage. That direct jump is called deposition, and it is why frost grows as feathery crystals instead of frozen droplets. The recipe needs a clear sky and calm air, so the ground can radiate its heat away all night undisturbed. And because official temperature is measured several feet up while the ground runs colder, frost can whiten your lawn on a night the thermometer never admits reached freezing.

Questions

1. What is frost?

- ☐ A. Dew that froze after forming
- ☐ B. Ice crystals built directly from water vapor on a below freezing surface
- ☐ C. Very light snow

2. The classic frost night is:

- ☐ A. Clear and calm
- ☐ B. Cloudy and calm
- ☐ C. Clear and windy

3. The official low was 37, yet the lawn is white. How?

- ☐ A. The thermometer was broken
- ☐ B. Official temperature is measured several feet up, and the surface ran colder
- ☐ C. Frost can form at any temperature

4. Why do valley floors and hollows frost first?

- ☐ A. They are wetter
- ☐ B. They get less sunshine in the evening
- ☐ C. Cold air is dense and drains downhill, pooling in low spots

5. Covering a garden bed at dusk prevents frost by:

- ☐ A. Keeping the frost from landing on the leaves
- ☐ B. Trapping the ground's outgoing heat, like a private cloud
- ☐ C. Keeping the plants dry

In your own words

The overnight low was officially 37 degrees, yet the lawn was white at sunrise. Explain how both of those facts can be true at once, and name the kind of night that makes it happen.

Answer key (for the teacher)

1. What is frost?

B. Ice crystals built directly from water vapor on a below freezing surface — Frost forms by deposition: vapor turning straight into ice with no liquid stage. Frozen dew exists too, but it looks like glassy beads, not feathered crystals.

2. The classic frost night is:

A. Clear and calm — A clear sky lets the ground radiate heat away all night, and calm air lets a deeply cold layer settle at the surface. Clouds blanket; wind stirs. Either one can spoil the recipe.

3. The official low was 37, yet the lawn is white. How?

B. Official temperature is measured several feet up, and the surface ran colder — On clear calm nights the coldest air pools in the bottom few inches. The instrument a few feet higher honestly reads above freezing while the grass honestly freezes.

4. Why do valley floors and hollows frost first?

C. Cold air is dense and drains downhill, pooling in low spots — Cold air behaves like slow water on a calm night. It slides down the slopes and collects in the dips, which is why the bottom of the yard whitens before the top.

5. Covering a garden bed at dusk prevents frost by:

B. Trapping the ground's outgoing heat, like a private cloud — The cover does what a cloud deck does: it catches heat radiating up from the soil and holds it near the plants. Frost is not something that falls; it is something the cold builds in place.