

The Science of Snow Lesson

- Lesson
- Word Search and Scramble
- NO PREP - Just download and Go!

6th, 7th, 8th Grade



SCROLL
to take a look inside!

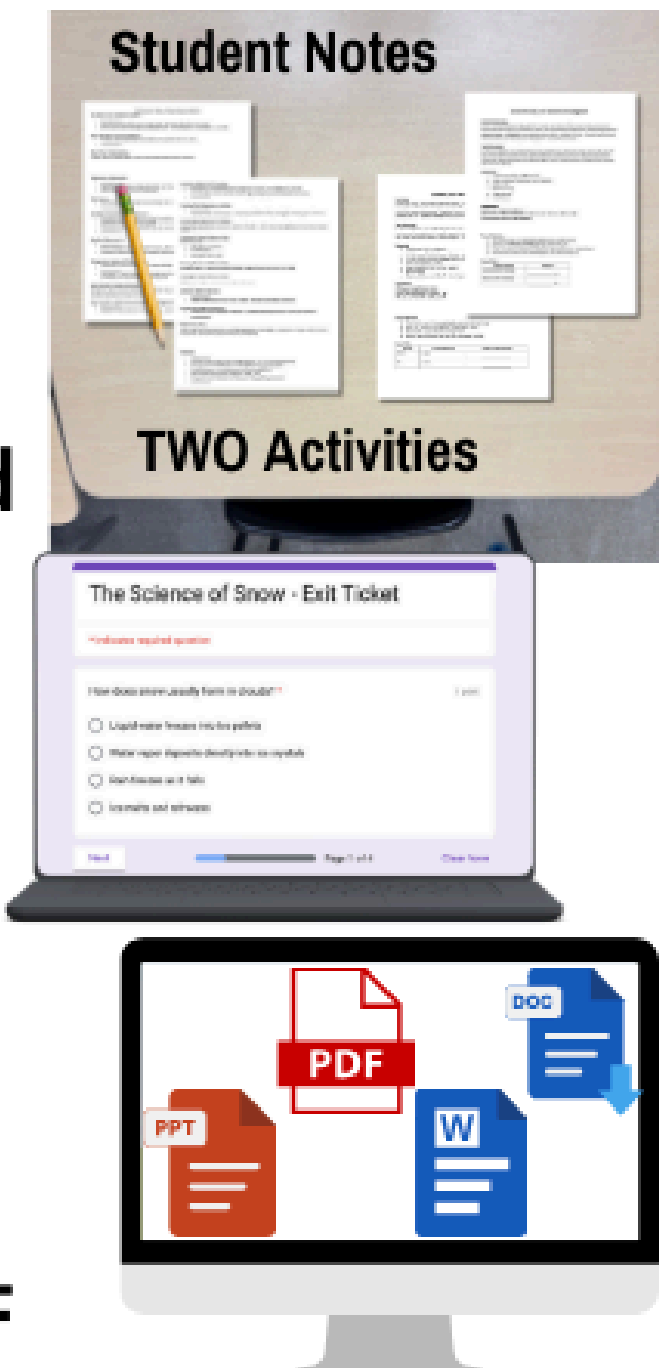


HOW THIS LESSON HELPS YOU

- **Saves Prep Time** - Everything is pre-made, ready to go, and fully editable.
- **Provides Built-In Assessments** - The Exit Ticket and Activities let you quickly check for understanding.
- **Provides Applicability** - the lesson includes multiple examples of real-life applications.

NO PREP

- ✓ **Simply Download and Teach/Upload** to your class site.
- ✓ **Assessment Included** 4 Question, Auto-Graded Exit Ticket + TWO Activities
- ✓ **Interactive & Video-Enhanced Lesson**
- ✓ **Google, Office, & PDF**





**A Complete, Fully-
Editable Lesson &
Student Notes**

**Teacher and Student
Versions of your Lesson
with Embedded Videos**

**4 Question, Auto-
Graded Exit Ticket +
TWO at home or in class
Activities**



What You Get

THE SCIENCE OF SNOW TEACHER & STUDENT VERSION

Student Notes

TWO Activities

Snow vs. Ice

- Snow forms when water vapor turns directly into ice crystals (deposition) in freezing clouds
- _____

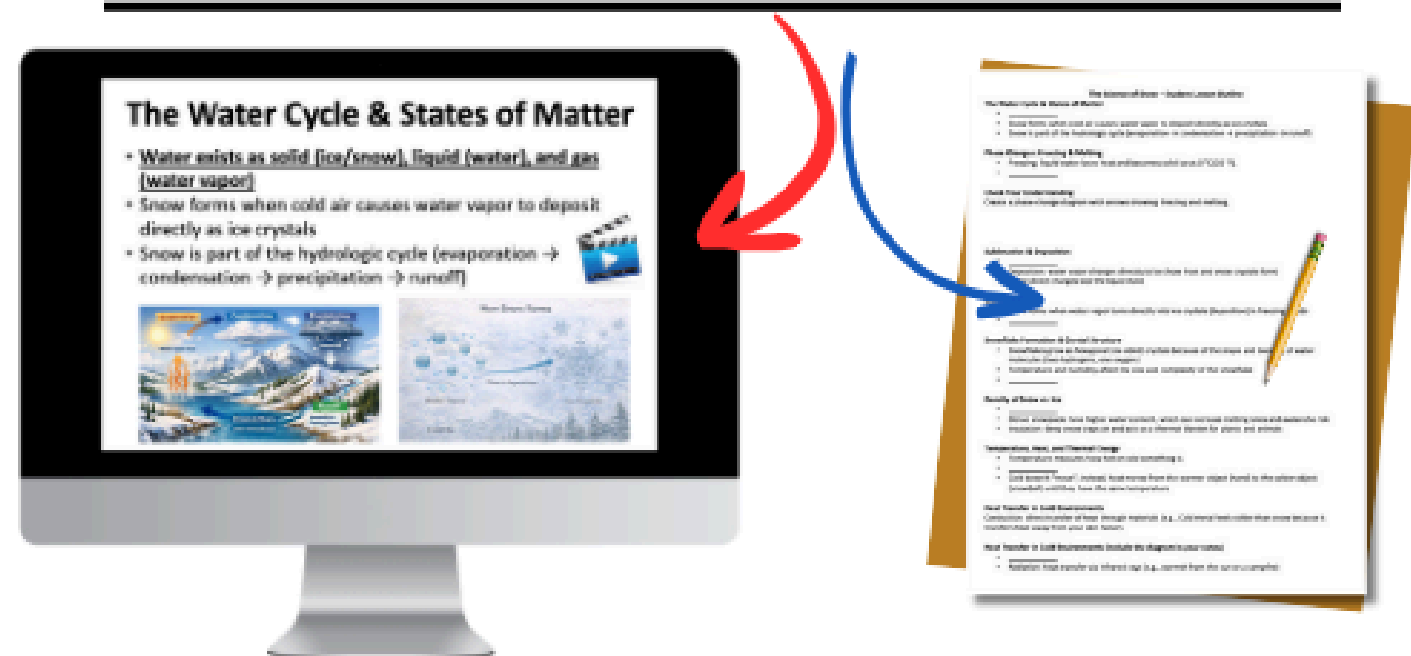
Temperature, Heat, and Thermal Energy

- Temperature measures how hot or cold something is.
- Heat is energy transferred due to temperature differences. Energy flows from objects at higher temperatures to objects at lower temperatures.
- Cold doesn't "move". Instead, heat moves from the warmer object toward the colder object (eventually until they have the same temperature).

Student version of the lesson includes blanks to fill in.

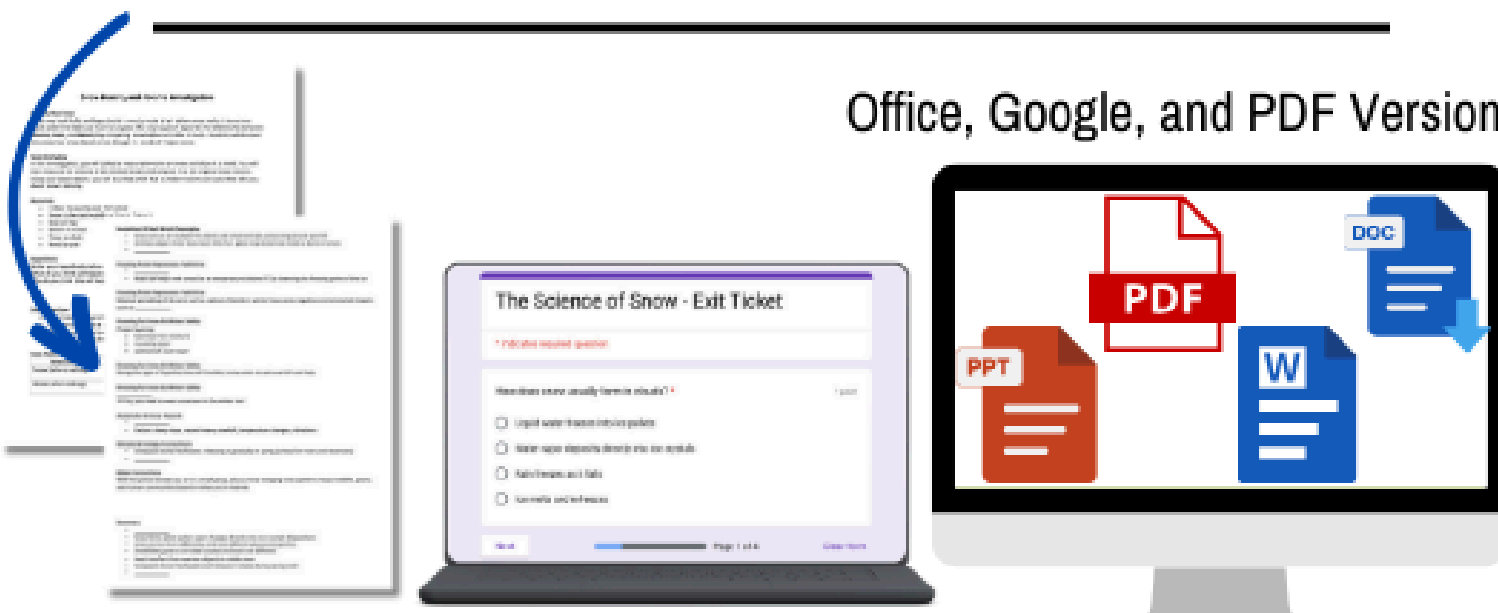
What Will Your Students Learn?

Videos Embedded & Student Notes



TWO Activities + Exit Ticket

Office, Google, and PDF Versions



- ✓ The Water Cycle & States of Matter
- ✓ How Snow Forms
- ✓ Freezing, Melting, Sublimation & Deposition
- ✓ Snow vs. Ice: Structure & Properties
- ✓ Snowflake Formation & Crystal Shape
- ✓ Density of Snow vs. Ice
- ✓ Snow as an Insulator
- ✓ Temperature, Heat, and Thermal Energy
- ✓ Heat Transfer: Conduction, Convection & Radiation
- ✓ Freezing Point Depression (Salt & Ice)
- ✓ Winter Clothing & Cold-Weather Safety
- ✓ Avalanches & Snow Hazards
- ✓ Snowpack, Climate Change & Water Supply



The Science of Snow

Exploring states of matter, snow formation, density, heat transfer, and real-world connections

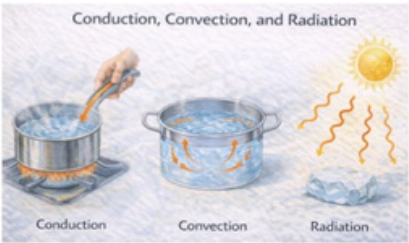
Sublimation & Deposition

- **Sublimation: ice changes directly to water vapor (for example, snow disappearing on sunny, cold days).**
- Deposition: water vapor changes directly to ice (how frost and snow crystals form)
- These direct changes skip the liquid state



Heat Transfer in Cold Environments

Conduction: direct transfer of heat through materials (e.g., Cold metal feels colder than snow because it transfers heat away from your skin faster).



Dressing for Snow & Winter Safety

Proper layering:



base layer for moisture insulating layer waterproof outer layer

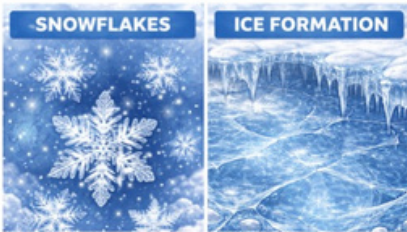
The Water Cycle & States of Matter

- **Water exists as solid (ice/snow), liquid (water), and gas (water vapor)**
- Snow forms when cold air causes water vapor to deposit directly as ice crystals
- Snow is part of the hydrologic cycle (evaporation → condensation → precipitation → runoff)



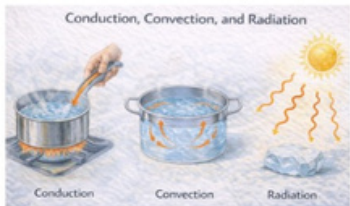
Snow vs. Ice

- Snow forms when water vapor turns directly into ice crystals (deposition) in freezing clouds
- **Ice forms when liquid water freezes, resulting in a dense, solid, and often transparent structure**



Heat Transfer in Cold Environments

- **Convection: heat transfer through fluids (air or water), such as wind chill or warm clothing trapping air**
- Radiation: heat transfer via infrared rays (e.g., warmth from the sun or a campfire)



Dressing for Snow & Winter Safety

Recognize signs of hypothermia and frostbite; know when to seek warmth and help.



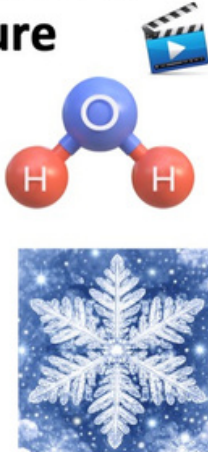
Phase Changes: Freezing & Melting

- Freezing: liquid water loses heat and becomes solid ice at 0 °C (32 °F).
- **Melting: solid ice absorbs heat and becomes liquid water**



Snowflake Formation & Crystal Structure

- Snowflakes grow as hexagonal (six-sided) crystals because of the shape and bonding of water molecules (two hydrogens, one oxygen)
- Temperature and humidity affect the size and complexity of the snowflake
- **Each snowflake is different due to variations in environmental conditions during its fall**



Insulation & Real-World Examples

- Snow acts as an insulator for plants and small animals, preserving ground warmth
- Animals adapt: Arctic foxes have thick fur; igloos trap body heat inside a dome of snow
- **Proper winter clothing uses layers to trap warm air and reduce heat loss**



Dressing for Snow & Winter Safety

Winter safety includes staying hydrated, using sunscreen, and avoiding overexertion.

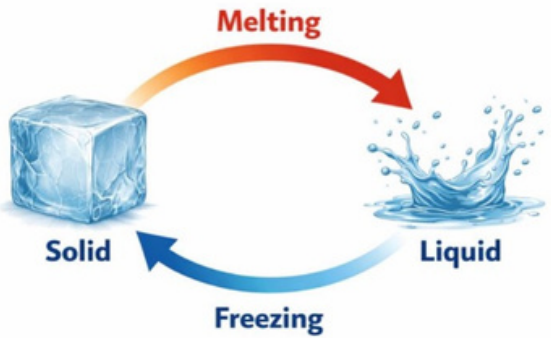
→ Yes, you need to wear sunscreen in the winter too!



Check Your Understanding

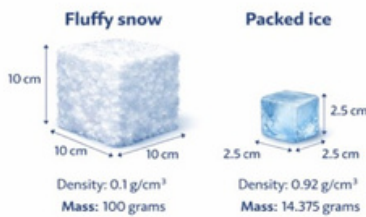
Create a phase-change diagram with arrows showing freezing and melting.

Check Your Understanding



Density of Snow vs. Ice

- **Snow is mostly air: loose, fluffy snow has low density; ice is solid and dense**
- Dense snowpacks have higher water content, which can increase melting rates and avalanche risk
- Insulation: deep snow traps air and acts as a thermal blanket for plants and animals



Freezing Point Depression: Salt & Ice

- **Adding substances like salt to water lowers its freezing point (freezing point depression)**
- Road salt helps melt snow/ice at temperatures below 0°C by lowering the freezing point of the ice



Freezing Point Depression: Salt & Ice

Massive spreading of de-icers such as calcium chloride in winter have some negative environmental impacts such as **contaminating freshwater ecosystems, poisoning aquatic life, damaging soil, and harming vegetation.**



Avalanche & Snow Hazards

- **Avalanches occur when layers of snow stop sticking together and slide downhill**
- Factors: steep slope, recent heavy snowfall, temperature changes, vibrations



Climate & Ecology Connections

- Snowpack stores freshwater, releasing it gradually in spring (critical for rivers and reservoirs)
- **Climate change affects snowfall patterns and snowpack stability, influencing water supply and ecosystems**



Make Connections

With the person beside you or in a small group, discuss how changing snow patterns impact wildlife, plants, and human communities based on what you’ve learned.

Make Connections

With the person beside you or in a small group, discuss how changing snow patterns impact wildlife, plants, and human communities based on what you’ve learned.

- Changing snow patterns can affect wildlife, plants, and people in many ways.**
- **Animals may struggle to find food or stay warm if snow comes late or melts early, and some lose camouflage.**
 - **Plants rely on snow to protect roots, so less snow can cause freezing damage.**
 - **Humans may face water shortages, flooding, or reduced winter activities when snow patterns change.**

Summary

- **Water exists as solid, liquid, and gas**
- Snow forms when water vapor changes directly into ice crystals (Deposition)
- Snow and ice form differently and have different physical properties
- Snowflakes grow as six-sided crystals and each are different
- Heat transfers from warmer objects to colder ones
- Snowpack stores freshwater and releases it slowly during spring melt
- **Climate change alters snowfall patterns, snowpack stability, and ecosystems**



Your Lesson

The Science of Snow – Student Lesson Outline

The Water Cycle & States of Matter

- _____
- Snow forms when cold air causes water vapor to deposit directly as ice crystals
- Snow is part of the hydrologic cycle (evaporation → condensation → precipitation → runoff)

Phase Changes: Freezing & Melting

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Heat Transfer in Cold Environments (include the diagram in your notes)

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Student Notes in Word

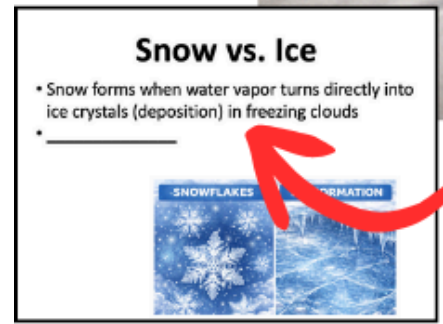
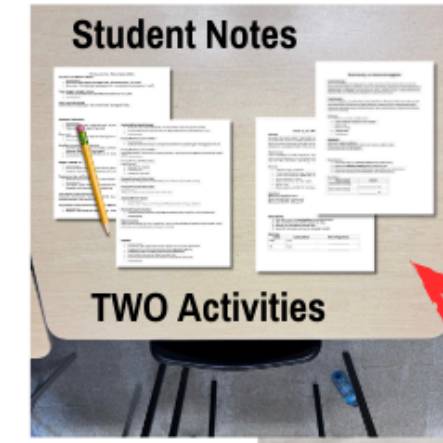


1-Click Google Access

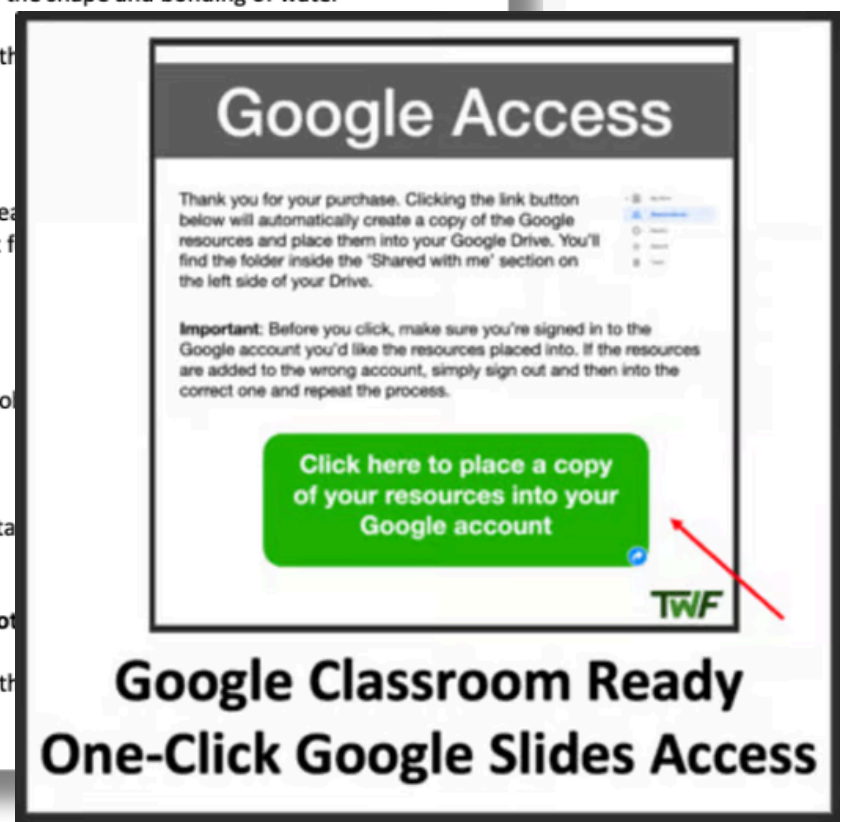
Teacher and Student Versions of the Lesson

Videos embedded in your slides

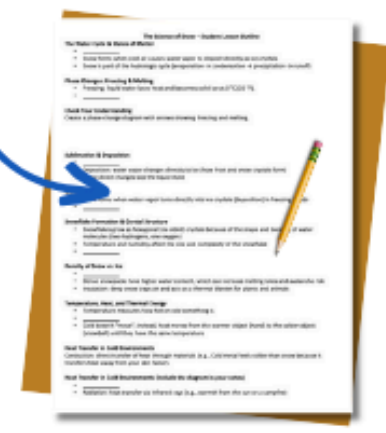
THE SCIENCE OF SNOW TEACHER & STUDENT VERSION



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Videos Embedded & Student Notes



As a special bonus, I want to send you a few resources that you can use in your classroom tomorrow. Completely free and geared towards what you teach!



Just



and then choose what you teach!

thanks
**for your interest
in this resource!**



devon@teachwithfergy.com