

Weather

Merit Badge Workbook

Merit badges are earned by doing: reading the pamphlet, practicing the skills, and showing your counselor what you have learned.
This workbook gives you a place to organize your notes and track your progress along the way.
Merit badge counselors may not require the use of this or any similar workbook.
You still must satisfy your counselor that you can demonstrate each skill and have learned the information.
Use the space under each requirement to note what you have done and what you want to talk about, not to write out full answers.
When a requirement says discuss, show, tell, explain, or demonstrate, that is what you must do.
No one may add to or subtract from the official requirements found on scouting.org (Guide to Advancement 7.0.4.8).
Scouting America last updated this badge's requirements page on December 31, 2025.
Requirements change from time to time. Double-check scouting.org before you start.

Scout's name: _____ Unit: _____ Date started: _____

Counselor's name: _____ Phone no.: _____ Email: _____

Links marked "Scouting America resources" are the ones Scouting America shares on its official badge page.
Links marked "ScoutSmarts" open the matching part of Cole's guide. This workbook is unofficial and not endorsed by Scouting America.

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1. Define meteorology. Explain what weather is and what climate is. Discuss how the weather affects farmers, sailors, aviators, and the outdoor construction industry. Tell why weather forecasts are important to each of these groups.

Scouting America resources: What Is Meteorology? (video) · Weather vs Climate (video) · **ScoutSmarts:** Requirement 1 explained

What meteorology is

Weather and climate

Term	What it means
Weather	
Climate	

Who depends on the weather

Group	How the weather affects them	Why forecasts are important to them
Farmers		
Sailors		
Aviators		
Outdoor construction industry		

Requirement 1 completed on _____ counselor initials _____

2. Name five dangerous weather-related conditions. Give the safety rules for each when outdoors and explain the difference between a severe weather watch and a warning. Discuss the safety rules with your family.

Scouting America resources: Severe Weather Safety (video) · Know the Difference Between a Watch and a Warning (video) Winter's Hidden Hazard—Cold Weather Health & Safety (video) · Hurricane Preparation and Safety (video)
ScoutSmarts: Requirement 2 explained

Five dangerous weather-related conditions

Condition	Safety rules when outdoors

The difference between a severe weather watch and a warning

Discussed the safety rules with my family on

Requirement 2 completed on counselor initials

3. Identify at least two sources of weather forecasts that can be used to prepare for hikes, overnight camping, and other outdoor activities. Name two sources of emergency weather warnings both at home and during outdoor Scout functions.

Scouting America resources: The Best Weather App? (video) · Ways To Get Warnings (video) · National Weather Service (website)

Weather forecast sources for outdoor activities

Source	Notes

Sources of emergency weather warnings

Where I am	Source 1	Source 2
At home		
At outdoor Scout functions		

Requirement 3 completed on counselor initials

4. Explain the difference between high and low pressure systems in the atmosphere. Tell which is related to good and to poor weather. Draw cross sections of a cold front and a warm front, showing the location and movements of the cold and warm air, the frontal slope, the location and types of clouds associated with each type of front, and the location of precipitation.

Scouting America resources: What Are Weather Fronts? Warm Front, Cold Front? (video)
Weather 101: High Pressure vs. Low Pressure (video) · **ScoutSmarts:** Requirement 4 explained

High and low pressure systems

System	How it differs from the other	Good or poor weather?
High pressure		
Low pressure		

Cross section of a cold front (draw here or attach)

Cross section of a warm front (draw here or attach)

- ☐ Cold and warm air: location and movement
- ☐ Frontal slope
- ☐ Clouds: location and types
- ☐ Location of precipitation

Requirement 4 completed on _____ counselor initials _____

5. Tell what causes wind, why it rains, and how lightning and hail are formed.

Scouting America resources: What Creates Weather? (video) · What Causes Lightning? (video) · What Is Hail? (video)
ScoutSmarts: Requirement 5 explained

How weather happens

Question	My explanation
What causes wind	
Why it rains	
How lightning is formed	
How hail is formed	

Requirement 5 completed on _____ counselor initials _____

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6. Identify and describe clouds in the low, middle, and upper levels of the atmosphere. Relate these to specific types of weather.

Scouting America resources: What Are the Different Types of Clouds? (video) · **ScoutSmarts:** Requirement 6 explained

Clouds at each level of the atmosphere

Level	Clouds and what they look like	Types of weather they relate to
Low		
Middle		
Upper		

Requirement 6 completed on _____ counselor initials _____

7. Draw a diagram of the water cycle and label its major processes. Explain the water cycle to your counselor.

Scouting America resources: Easy Water Cycle Drawing (video) · How Does Rain Form and What Is the Water Cycle? (video)
ScoutSmarts: Requirement 7 explained

My water cycle diagram with its major processes labeled (draw here or attach)

Explained the water cycle to my counselor on _____

Requirement 7 completed on _____ counselor initials _____

8. Identify some human activities that can alter the environment, and describe how they affect the climate and people.

Scouting America resources: 10 Human Activities Heavily Impacting Climate Change (video)
Causes and Effects of Climate Change (video) · **ScoutSmarts:** Requirement 8 explained

Human activities that can alter the environment

Activity	How it affects the climate	How it affects people

Requirement 8 completed on _____ counselor initials _____

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9. Describe how the tilt of Earth's axis helps determine the climate of a region near the equator, near the poles, and across the area in between.

Scouting America resources: Why Do We Have Different Seasons? (video)
Why Do We Have Different Climates Across the Globe? (video) · **ScoutSmarts:** Requirement 9 explained

How the tilt of Earth's axis shapes climate

Region	How the tilt helps determine its climate
Near the equator	
Near the poles	
The area in between	

Requirement 9 completed on _____ counselor initials _____

10. Do ONE of the following:

☐ **(a)** Make one of the following instruments: wind vane, anemometer, rain gauge, or hygrometer. Keep a daily weather log for one week using information from this instrument as well as from other sources such as local radio and television stations, NOAA Weather Radio All Hazards, and internet sources (with your parent or guardian's permission). Record the following information at the same time every day: wind direction and speed, temperature, precipitation, and types of clouds. Be sure to make a note of any morning dew or frost. In the log, also list the weather forecasts from radio or television at the same time each day and show how the weather really turned out.

Scouting America resources: Weather 101: Build Your Own Wind Vane! (video) · DIY Anemometer (Measure Wind Speed) (video)
How To Make a Rain Gauge (video) · How To Make Your Own Hygrometer (video)

☐ Wind vane ☐ Rain gauge
☐ Anemometer ☐ Hygrometer

Time I recorded each day _____ Other sources I used _____

My daily weather log

Day and date	Wind direction and speed	Temperature	Precipitation	Types of clouds	Morning dew or frost
Day 1					
Day 2					
Day 3					
Day 4					
Day 5					
Day 6					
Day 7					

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Forecasts compared with the real weather

Day	Forecast from radio or television	How the weather really turned out
Day 1		
Day 2		
Day 3		
Day 4		
Day 5		
Day 6		
Day 7		

☐ **(b)** Visit a National Weather Service office or talk with a local radio or television weathercaster, private meteorologist, local agricultural extension service officer, or university meteorology instructor. Find out what type of weather is most dangerous or damaging to your community. Determine how severe weather and flood warnings reach the homes in your community.

Scouting America resources: Behind the Scenes of the National Weather Service Atlanta/Peachtree City (video)

Who I visited or talked with _____ Date _____

The type of weather most dangerous or damaging to my community

How severe weather and flood warnings reach homes in my community

Requirement 10 completed on _____ counselor initials _____

11. Give a talk of at least five minutes to a group (such as your unit or a Cub Scout pack) explaining the outdoor safety rules in the event of lightning, flash floods, and tornadoes. Before your talk, share your outline with your counselor for approval.

ScoutSmarts: Requirement 11 explained

Group _____ Date _____ How long I spoke _____

Counselor approved my outline on _____

My talk outline

Part of my talk	Points I will cover
Opening	
Lightning	
Flash floods	
Tornadoes	
Closing	

Requirement 11 completed on _____ counselor initials _____

12. Explore careers related to this merit badge. Research one career to learn about the training and education needed, costs, job prospects, salary, job duties, and career advancement. Your research methods may include—with your parent or guardian's permission—an internet or library search, an interview with a professional in the field, or a visit to a location where people in this career work. Discuss with your counselor both your findings and what about this profession might make it an interesting career.

Scouting America resources: Hurricane Hunter (video)
Careers in Meteorology—National Weather Service Hurricanne Meteorologist (video)
Careers in Meteorology—Broadcast Meteorology (video) · Careers in Meteorology—Digital Meteorology (video)

Careers related to weather

Career	What people in it do

The career I researched _____ How I researched it _____

What I learned about this career

Topic	What I found
Training and education	
Costs	
Job prospects	
Salary	
Job duties	
Career advancement	

What might make it an interesting career for me

Requirement 12 completed on _____ counselor initials _____

Counselor sign-off

Your counselor signs your blue card or approves the badge in Scoutbook, and your unit records it. This line is for your own records.

Counselor's signature _____ Date completed _____

Official Scouting America resources

Scouting America resources: Weather merit badge page (requirements and resources) · Weather merit badge pamphlet (free PDF)
All merit badges · **ScoutSmarts:** Weather Merit Badge Guide, Part 1 · Weather Merit Badge Guide, Part 2

Made by Cole at ScoutSmarts.com, an Eagle Scout who loves helping Scouts.
Spot an error or a requirement change? Tell me at scoutsmarts.com/contact.
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