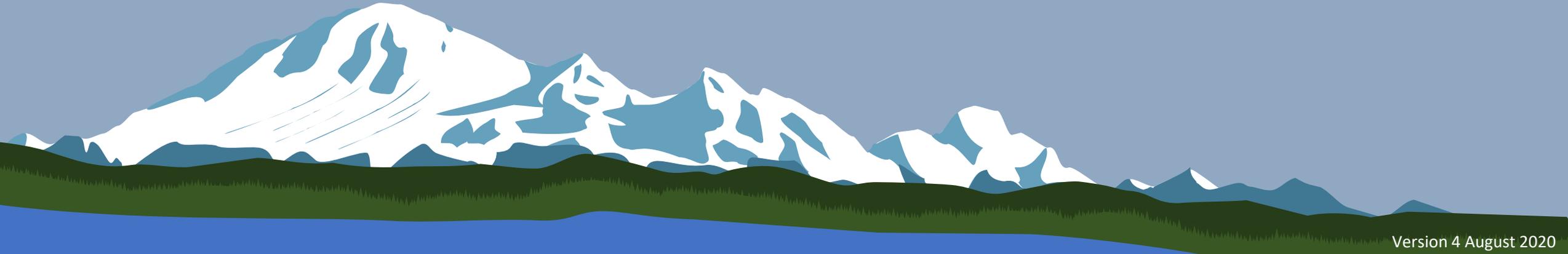
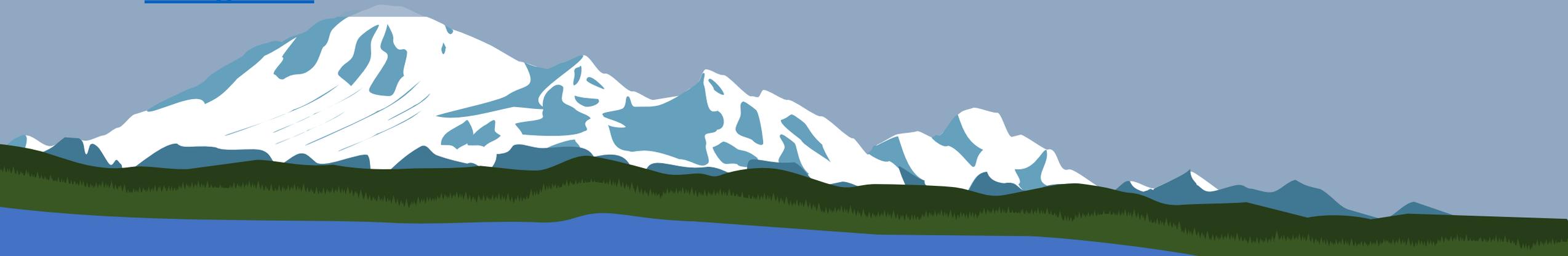


Hiking & Backpacking & Camping Merit Badges



Index

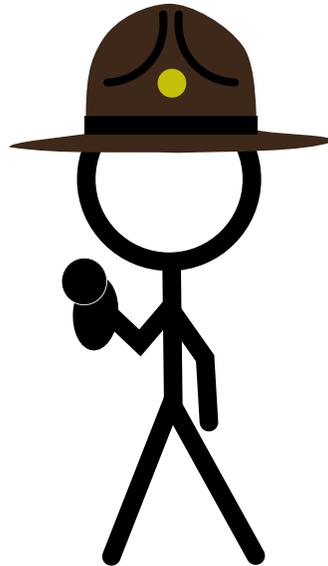
1. [Hiking Merit Badge Requirements](#)
2. [Backpacking Merit Badge Requirements](#)
3. [Camping Merit Badge Requirements](#)
4. [Merit Badge Intro](#)
5. [Hazards](#)
6. [First Aid](#)
7. [Gear](#)
8. [Water](#)
9. [Food](#)
10. [Navigation](#)
11. [Leave No Trace](#)
12. [Hiking Philosophy](#)
13. [Preparation](#)
14. [Hiking - Getting Out There](#)
15. [Backpacking - Getting Out There](#)
16. [Camping – Getting Out There](#)
17. [Final Thoughts](#)
18. [Resources](#)
19. [Instructor's Corner](#)



Copyright Notice

This presentation is protected by US and International copyright laws. Reproduction and distribution of this presentation without written permission of the sponsor is prohibited.

© 2021



Copyright Notice

Do NOT post or upload copies of this presentation on the WEB!



Terms and Conditions of Use

This slide set was designed to aid Merit Badge Counselors to deliver a Merit Badge course and to aid Scouts in completion of a Merit Badge.

Scouts, Merit Badge Counselors and other Scouters are free to use this material for teaching and learning Merit Badge requirements. Use of material in other scout related classes is also acceptable.

You may modify (add, delete, change) the slides for your own personalized use.

Do not post original or modified versions of these slides on the internet.

Questions? Contact the owner.



Disclaimer

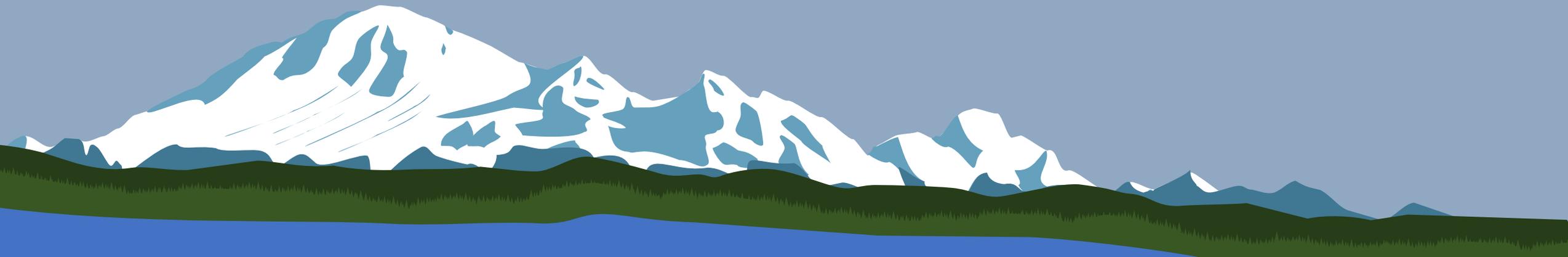
This PowerPoint slideshow was designed to be used to prepare scouts for the Hiking, Backpacking and Camping Merit Badges and nothing more.

Examples used and opinions shared do not reflect policies of the BSA, your local council or any other person or entity related to this presentation.

1. Hiking Merit Badge Requirements	11. Leave No Trace
2. Backpacking Merit Badge Requirements	12. Hiking Philosophy
3. Camping Merit Badge Requirements	13. Preparation
4. Merit Badge Intro	14. Hiking - Getting Out There
5. Hazards	15. Backpacking - Getting Out There
6. First Aid	16. Camping - Getting Out There
7. Gear	17. Final Thoughts
8. Water	18. Resources
9. Food	19. Instructor's Corner
10. Navigation	



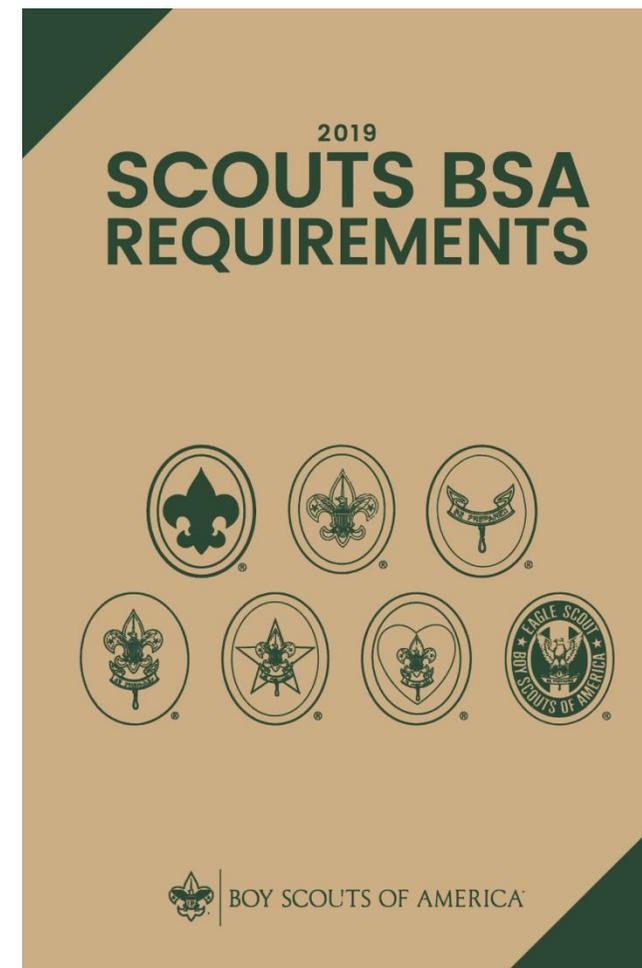
Hiking Merit Badge Requirements



Hiking Merit Badge Requirements

Requirements

- Merit Badge requirements are taken from:
2019 Scouts BSA™ Requirements Book



Hiking Merit Badge Requirements

Requirements

1. Do the following:
 - a. Explain to your counselor the most likely hazards you may encounter while hiking, and what you should do to anticipate, help prevent, mitigate, and respond to these hazards.
 - b. Show that you know first aid for injuries or illnesses that could occur while hiking, including hypothermia, frostbite, dehydration, heat exhaustion, heatstroke, sunburn, hyperventilation, altitude sickness, sprained ankle, blisters, insect stings, tick bites, and snakebite.
2. Explain and, where possible, show the points of good hiking practices including proper outdoor ethics, hiking safety in the daytime and at night, courtesy to others, choice of footwear, and proper care of feet and footwear.

SCOUTS BSA
REQUIREMENTS



Hiking Merit Badge Requirements

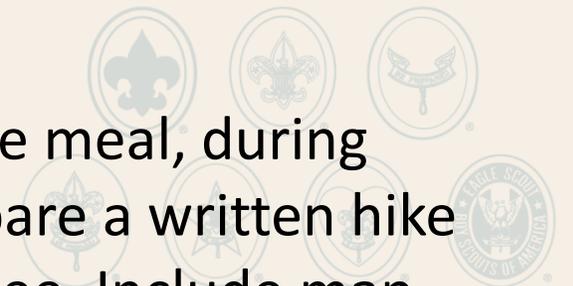
Requirements

3. Explain how hiking is an aerobic activity. Develop a plan for conditioning yourself for 10-mile hikes, and describe how you will increase your fitness for longer hikes.
4. Take the five following hikes, each on a different day, and each of continuous miles. These hikes **MUST** be taken in the following order:
 - One 5-mile hike
 - Three 10-mile hikes
 - One 15-mile hike

You may stop for as many short rest periods as needed, as well as one meal, during each hike, but not for an extended period (example: overnight). Prepare a written hike plan before each hike and share it with your Scoutmaster or a designee. Include map routes, a clothing and equipment list, and a list of items for a trail lunch. *

* The required hikes for this badge may be used in fulfilling hiking requirements for rank advancement. However, these hikes cannot be used to fulfill requirements of other merit badges.

2019
SCOUTS BSA
REQUIREMENTS



BOY SCOUTS OF AMERICA

Hiking Merit Badge Requirements

Requirements

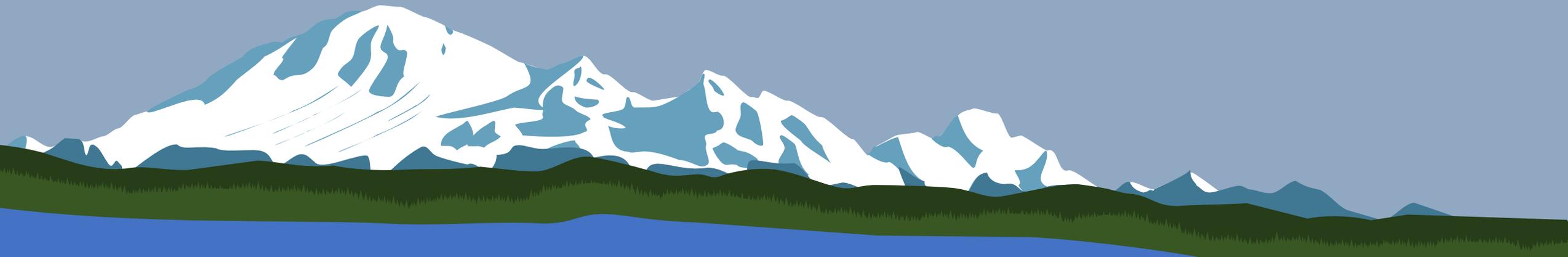
5. Take a hike of 20 continuous miles in one day following a hike plan you have prepared. You may stop for as many short rest periods as needed, as well as one meal, but not for an extended period (example: overnight).*
6. After each of the hikes (or during each hike if on one continuous "trek") in requirements 4 and 5, write a short reflection of your experience. Give dates and descriptions of routes covered, the weather, and any interesting things you saw. It may include something you learned about yourself, about the outdoors, or about others you were hiking with. Share this with your merit badge counselor.



1. Hiking Merit Badge Requirements	11. Leave No Trace
2. Backpacking Merit Badge Requirements	12. Hiking Philosophy
3. Camping Merit Badge Requirements	13. Preparation
4. Merit Badge Intro	14. Hiking - Getting Out There
5. Hazards	15. Backpacking - Getting Out There
6. First Aid	16. Camping - Getting Out There
7. Gear	17. Final Thoughts
8. Water	18. Resources
9. Food	19. Instructor's Corner
10. Navigation	



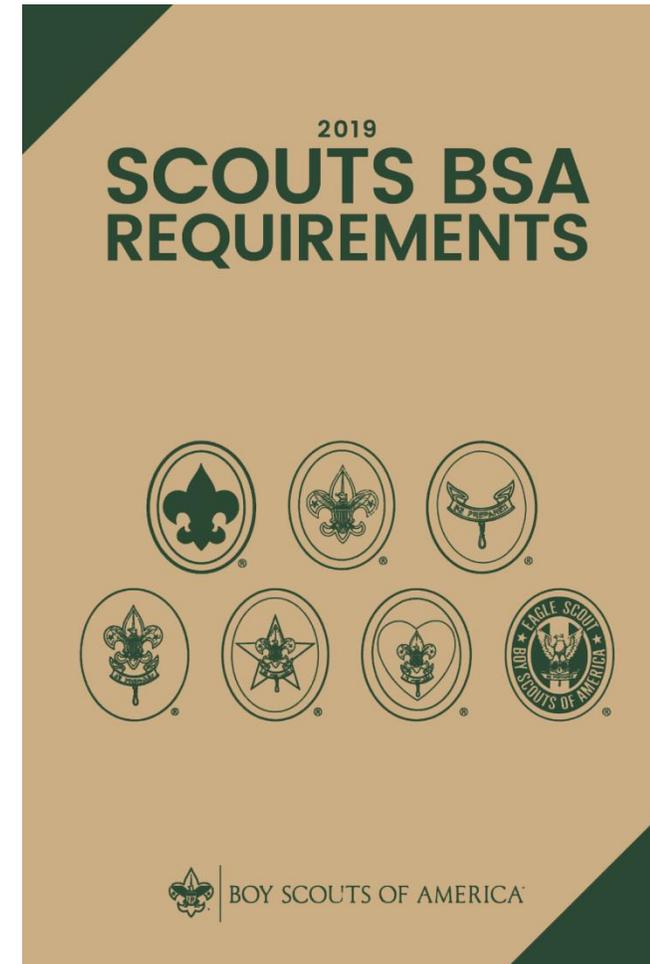
Backpacking Merit Badge Requirements



Backpacking Merit Badge Requirements

Requirements

- Merit Badge requirements are taken from:
2019 Scouts BSA™ Requirements Book



Backpacking Merit Badge Requirements

Requirements

1. Discuss the prevention of and treatment for the health concerns that could occur while backpacking, including hypothermia, heat reactions, frostbite, dehydration, insect stings, tick bites, snakebite, and blisters.
2. Do the following:
 - a. List 10 items that are essential to be carried on any backpacking trek and explain why each item is necessary.
 - b. Describe 10 ways you can limit the weight and bulk to be carried in your pack without jeopardizing your health or safety.
3. Do the following:
 - a. Define limits on the number of backpackers appropriate for a trek crew.
 - b. Describe how a trek crew should be organized.
 - c. Tell how you would minimize risk on a backpacking trek.
 - d. Explain the purpose of an emergency response plan.



Backpacking Merit Badge Requirements

Requirements

4. Do the following:
 - a. Describe the importance of using Leave No Trace principles while backpacking, and at least five ways you can lessen the crew's impact on the environment.
 - b. Describe proper methods of handling human and other wastes while on a backpacking trek. Describe the importance of and means to assure personal cleanliness while on a backpacking trek.
 - c. Tell what factors are important in choosing a campsite.

5. Do the following:
 - a. Demonstrate two ways to treat water and tell why water treatment is essential.
 - b. Explain to your counselor the importance of staying well hydrated during a trek.

6. Do the following:
 - a. Demonstrate that you can read topographic maps.
 - b. While on a trek, use a map and compass to establish your position on the ground at three different locations, OR use a GPS receiver unit to establish your position on a topographic map and on the ground at three different locations.
 - c. Explain how to stay found, and what to do if you get lost.

SCOUTS BSA
REQUIREMENTS



Backpacking Merit Badge Requirements

Requirements

7. Tell how to prepare properly for and deal with inclement weather.
8. Do the following:
 - a. Explain the advantages and disadvantages of the different types of backpacking stoves using at least three different types of fuel.
 - b. Demonstrate that you know how to operate a backpacking stove safely and to handle liquid fuel safely.
 - c. Prepare at least three meals using a stove and fuel you can carry in a backpack.
 - d. Demonstrate that you know how to keep cooking and eating gear clean and sanitary, and that you practice proper methods for food storage while on a backpacking trek.
9. Do the following:
 - a. Write a plan that includes a schedule for a patrol/crew backpacking hike of at least 2 miles.
 - b. Conduct a prehike inspection of the patrol and its equipment.
 - c. Show that you know how to properly pack your personal gear and your share of the crew's gear and food.
 - d. Show you can properly shoulder your pack and adjust it for proper wear.
 - e. While using the plan you developed for requirement 9a, carry your fully loaded pack to complete a hike of at least 2 miles.

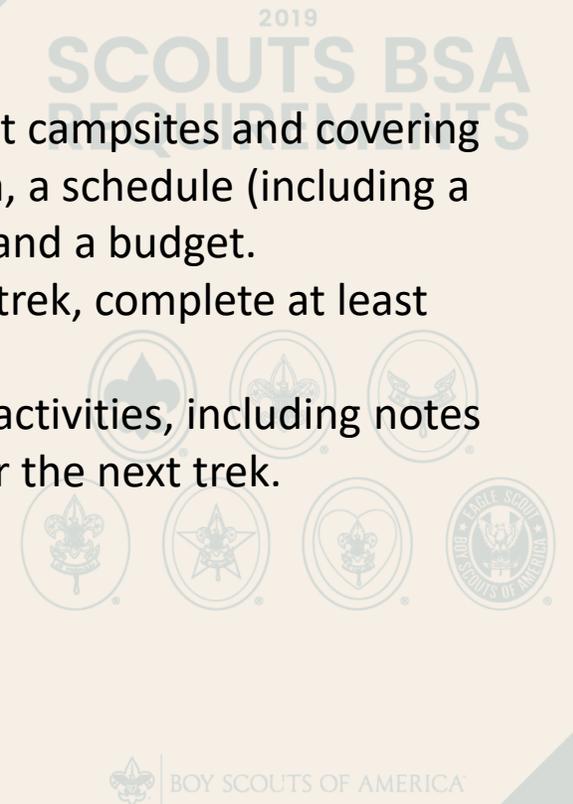
SCOUTS BSA
REQUIREMENTS



Backpacking Merit Badge Requirements

Requirements

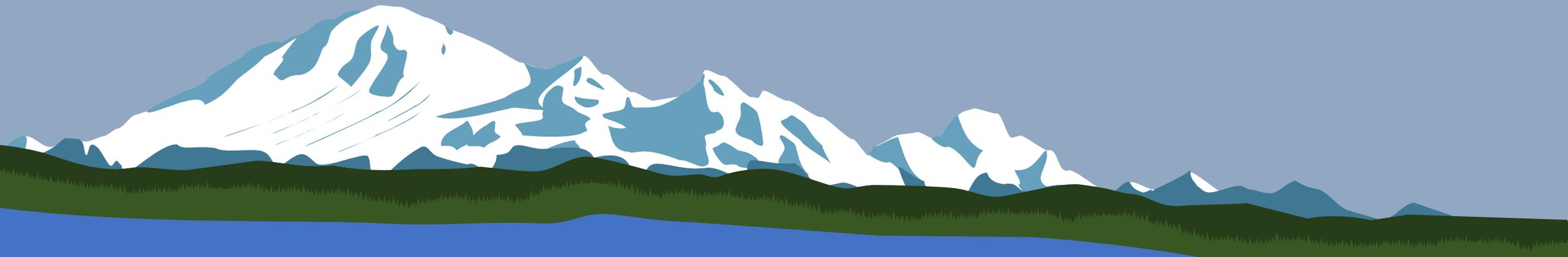
10. Using Leave No Trace principles, participate in at least three backpacking treks of at least three days each and at least 15 miles each, and using at least two different campsites on each trek. Carry everything you will need throughout the trek.
11. Do the following:
 - a. Write a plan for a backpacking trek of at least five days using at least three different campsites and covering at least 30 miles. Your plan must include a description of and route to the trek area, a schedule (including a daily schedule), a list of food and equipment needs, a safety and emergency plan, and a budget.
 - b. Using Leave No Trace principles, take the trek you have planned and, while on the trek, complete at least one service project approved by your merit badge counselor.
 - c. Keep a daily journal during the trek that includes a day-by-day description of your activities, including notes about what worked well and thoughts about improvements that could be made for the next trek.



1. Hiking Merit Badge Requirements	11. Leave No Trace
2. Backpacking Merit Badge Requirements	12. Hiking Philosophy
3. Camping Merit Badge Requirements	13. Preparation
4. Merit Badge Intro	14. Hiking - Getting Out There
5. Hazards	15. Backpacking - Getting Out There
6. First Aid	16. Camping - Getting Out There
7. Gear	17. Final Thoughts
8. Water	18. Resources
9. Food	19. Instructor's Corner
10. Navigation	



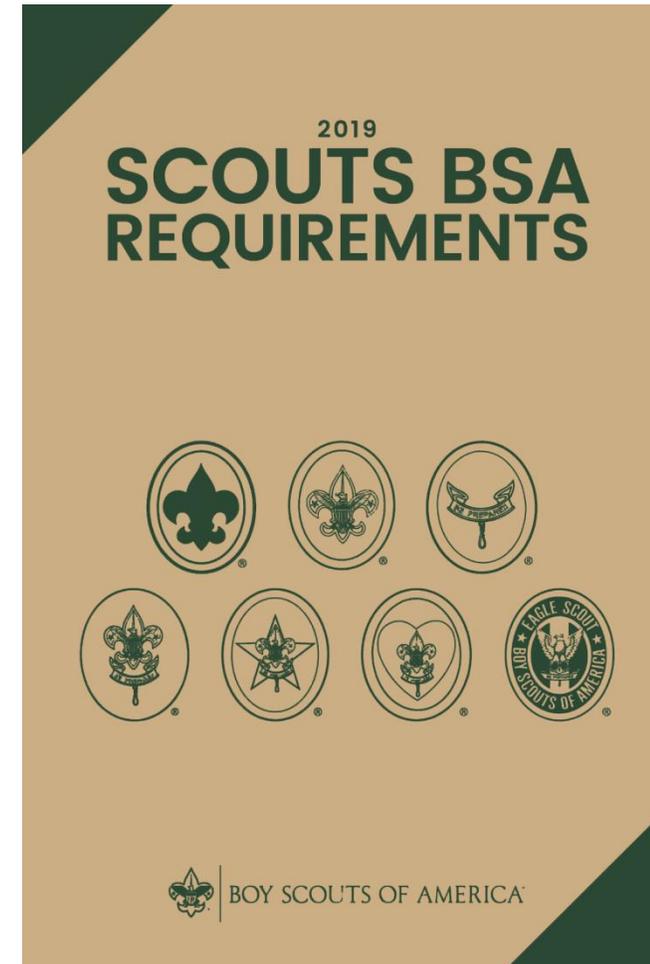
Camping Merit Badge Requirements



Requirements

Requirements

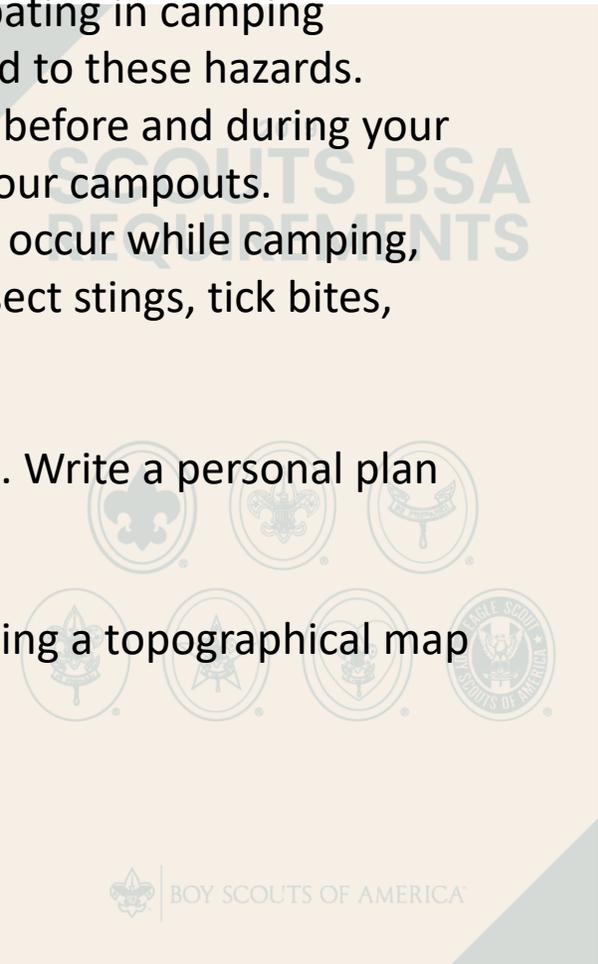
- Merit Badge requirements are taken from:
2019 Scouts BSA™ Requirements Book



2018 Requirements

2018 Requirements

1. Do the following:
 - a. Explain to your counselor the most likely hazards you may encounter while participating in camping activities and what you should do to anticipate, help prevent, mitigate, and respond to these hazards.
 - b. Discuss with your counselor why it is important to be aware of weather conditions before and during your camping activities. Tell how you can prepare should the weather turn bad during your campouts.
 - c. Show that you know first aid for and how to prevent injuries or illnesses that could occur while camping, including hypothermia, frostbite, heat reactions, dehydration, altitude sickness, insect stings, tick bites, snakebite, blisters, and hyperventilation.
2. Learn the Leave No Trace principles and the Outdoor Code and explain what they mean. Write a personal plan for implementing these principles on your next outing.
3. Make a written plan for an overnight trek and show how to get to your camping spot using a topographical map and
 - a. a compass
 - b. a GPS receiver
 - c. a smartphone with a GPS app



2018 Requirements

2018 Requirements

4. Do the following:
 - a. Make a duty roster showing how your patrol is organized for an actual overnight campout. List assignments for each member.
 - b. Help a Scout patrol or a Webelos Scout unit in your area prepare for an actual campout, including creating the duty roster, menu planning, equipment needs, general planning, and setting up camp.

5. Do the following:
 - a. Prepare a list of clothing you would need for overnight campouts in both warm and cold weather. Explain the term 'layering'.
 - b. Discuss footwear for different kinds of weather and how the right footwear is important for protecting your feet.
 - c. Explain the proper care and storage of camping equipment (clothing, footwear, bedding).
 - d. List the outdoor essentials necessary for any campout, and explain why each item is needed.
 - e. Present yourself to your Scoutmaster with your pack for inspection. Be correctly clothed and equipped for an overnight campout.

SCOUTS BSA
REQUIREMENTS

2018 Requirements

2018 Requirements

6. Do the following:
 - a. Describe the features of four types of tents, when and where they could be used, and how to care for tents. Working with another Scout, pitch a tent.
 - b. Discuss the importance of camp sanitation and tell why water treatment is essential. Then demonstrate two ways to treat water.
 - c. Describe the factors to be considered in deciding where to pitch your tent.
 - d. Tell the difference between internal- and external-frame packs. Discuss the advantages and disadvantages of each.
 - e. Discuss the types of sleeping bags and what kind would be suitable for different conditions. Explain the proper care of your sleeping bag and how to keep it dry. Make a comfortable ground bed.
7. Prepare for an overnight campout with your patrol by doing the following:
 - a. Make a checklist of personal and patrol gear that will be needed.
 - b. Pack your own gear and your share of the patrol equipment and food for proper carrying. Show that your pack is right for quickly getting what is needed first, and that it has been assembled properly for comfort, weight, balance, size, and neatness.

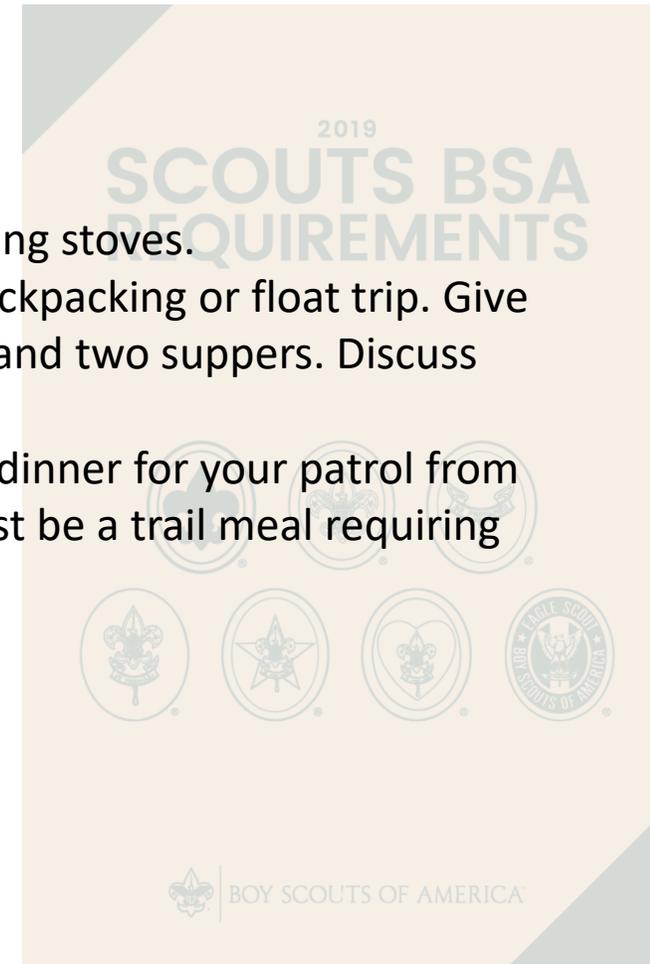
SCOUTS BSA
REQUIREMENTS



2018 Requirements

2018 Requirements

8. Do the following:
 - a. Explain the safety procedures for:
 1. Using a propane or butane/propane stove
 2. Using a liquid fuel stove
 3. Proper storage of extra fuel
 - b. Discuss the advantages and disadvantages of different types of lightweight cooking stoves.
 - c. Prepare a camp menu. Explain how the menu would differ from a menu for a backpacking or float trip. Give recipes and make a food list for your patrol. Plan two breakfasts, three lunches, and two suppers. Discuss how to protect your food against bad weather, animals, and contamination.
 - d. While camping in the outdoors, cook at least one breakfast, one lunch, and one dinner for your patrol from the meals you have planned for requirement 8c. At least one of those meals must be a trail meal requiring the use of a lightweight stove



2018 Requirements

2018 Requirements

9. Show experience in camping by doing the following:
 - a. Camp a total of at least 20 nights at designated Scouting activities or events. One long-term camping experience of up to six consecutive nights may be applied toward this requirement. Sleep each night under the sky or in a tent you have pitched. If the camp provides a tent that has already been pitched, you need not pitch your own tent.
 - b. On any of these camping experiences, you must do TWO of the following, only with proper preparation and under qualified supervision:
 1. Hike up a mountain where, at some point, you are at least 1,000 feet higher in elevation from where you started.
 2. Backpack, snowshoe, or cross-country ski for at least four miles.
 3. Take a bike trip of at least 15 miles or at least four hours.
 4. Take a non-motorized trip on the water of at least four hours or 5 miles.
 5. Plan and carry out an overnight snow camping experience.
 6. Rappel down a rappel route of 30 feet or more.
 - c. Perform a conservation project approved by the landowner or land managing agency. This can be done alone or with others.

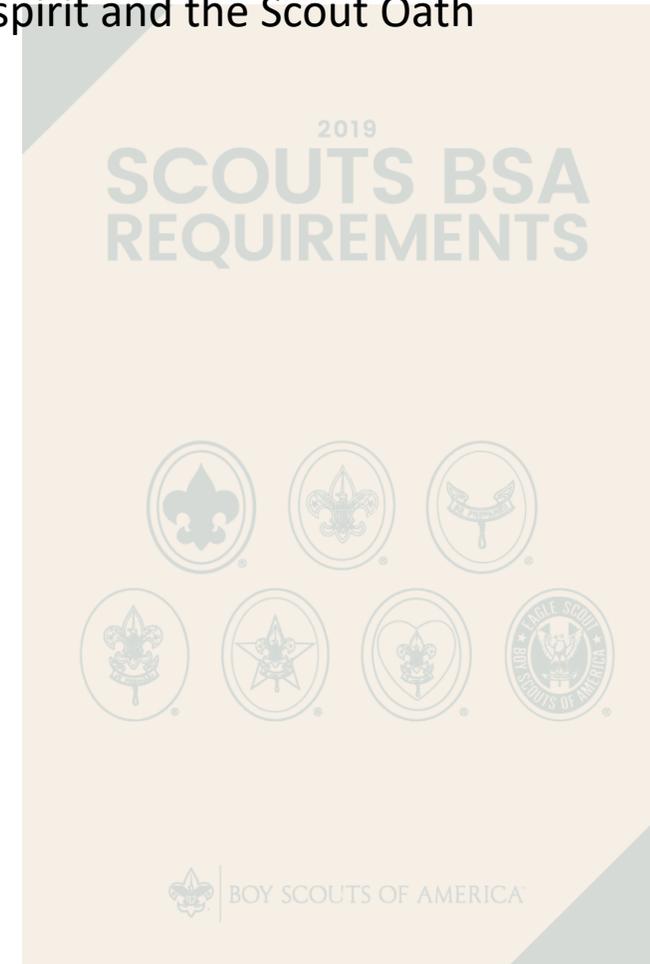
SCOUTS BSA
REQUIREMENTS



2018 Requirements

2018 Requirements

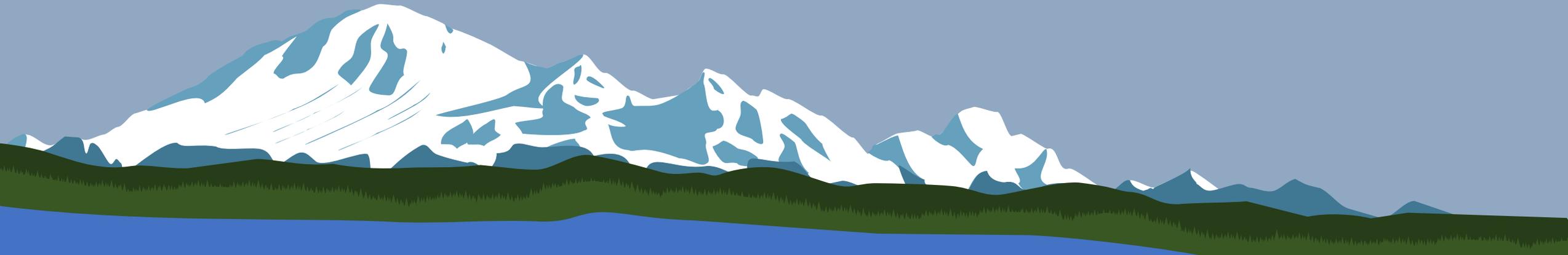
10. Discuss how the things you did to earn this badge have taught you about personal health and safety, survival, public health, conservation, and good citizenship. In your discussion, tell how Scout spirit and the Scout Oath and Law apply to camping and outdoor ethics.



1. Hiking Merit Badge Requirements	11. Leave No Trace
2. Backpacking Merit Badge Requirements	12. Hiking Philosophy
3. Camping Merit Badge Requirements	13. Preparation
4. Merit Badge Intro	14. Hiking - Getting Out There
5. Hazards	15. Backpacking - Getting Out There
6. First Aid	16. Camping - Getting Out There
7. Gear	17. Final Thoughts
8. Water	18. Resources
9. Food	19. Instructor's Corner
10. Navigation	

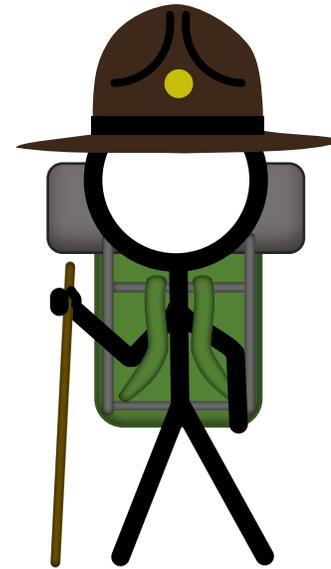


Merit Badge Intro



Merit Badge Intro

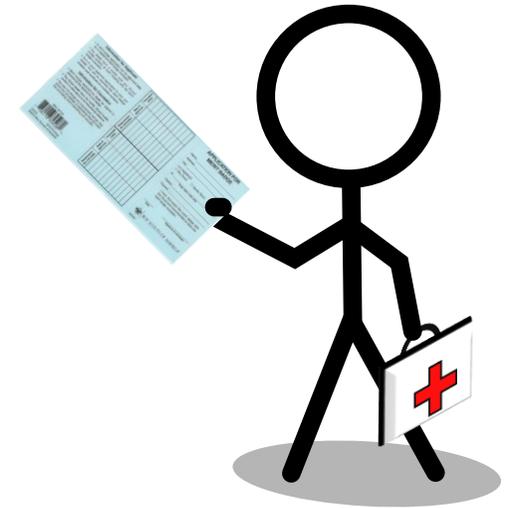
Instructor Introduction



Merit Badge Intro

Needed for Course

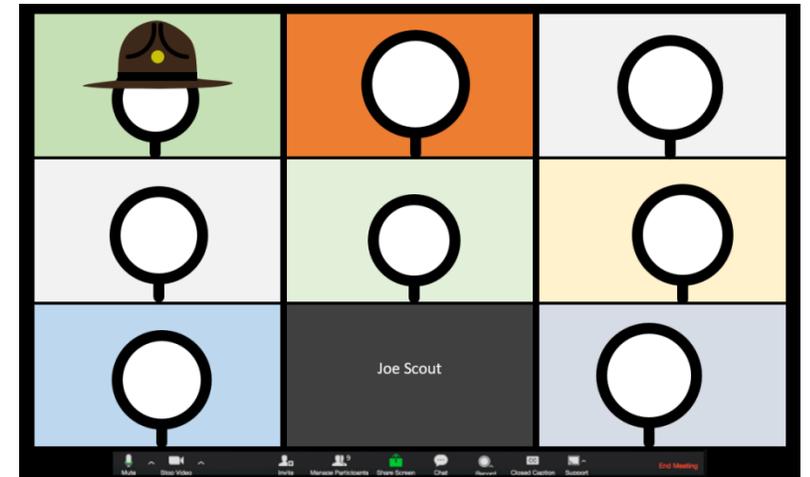
- Merit Badge Blue Card filled out and signed by your Scoutmaster
 - or other virtual agreement
- Merit Badge Pamphlet
- Scout Uniform
- A positive Scouting focus and attitude



Merit Badge Intro

Virtual Meetings

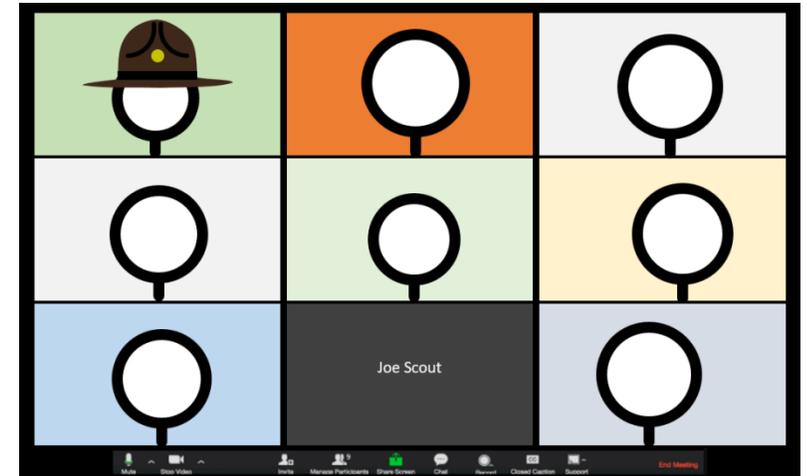
- Use your **REAL Name** and **Troop Number** if you want credit
This is how we take attendance
- MUTE yourself unless speaking to the group
- Please turn your video on so we can see you
- No Chat SPAMMING
- If you need to go pee, go
- If something isn't working, please let us know!



Merit Badge Intro

Virtual Meetings

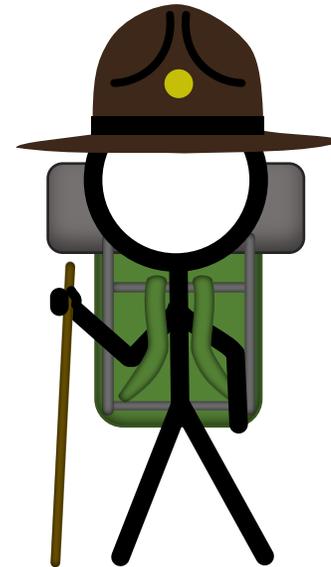
- We can't do ALL the requirements virtually
- Option 1 – Partial Completion
- Option 2 – Completion – need proof
- Please send completed homework **AFTER** the final class
- Tell us who we should CC about completion



Merit Badge Intro

Course Overview

- We will cover most of the requirements for this Merit Badge in class
- We need proof that you completed these requirements
 - Please turn in a completed **Workbook** if possible
This makes is easier on the counselor
 - If you can't complete a **Workbook**, please contact your councilor for alternatives
- [Hiking Workbook](#)
- [Backpacking Workbook](#)



Merit Badge Intro

What is Hiking?

Hiking for fun took off in a big way in the late 1800s and early 1900s.

Hiking clubs encouraged people to get out and walk.

Long-distance hikers made their way from the Atlantic Ocean to the Pacific Ocean.

Construction of the Appalachian Trail, the Pacific Crest Trail, Continental Divide Trail, and hundreds of other routes provided the public with pathways to walk on for a day, for a week, or even for months at a time.

Merit Badge Intro

What is Backpacking

- Basically, Hiking with overnight camping
- It gets you further out there
- See and experience things not able to do in just a day trip
- A wonderful experience that reconnects you with nature

Merit Badge Intro

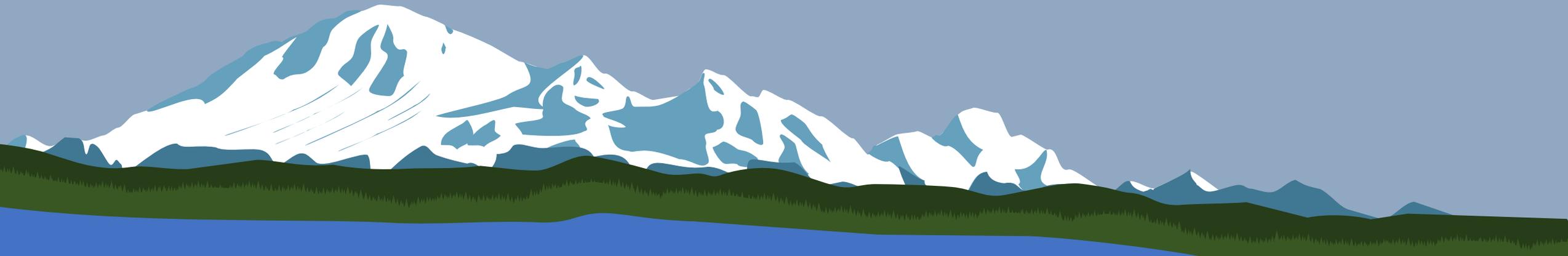
Hiking AND Backpacking

- These two activities really go together and share similar skill sets
- Learning how to hike gets you ready to for backpacking
- Backpacking makes you better prepared for hiking

1. Hiking Merit Badge Requirements	11. Leave No Trace
2. Backpacking Merit Badge Requirements	12. Hiking Philosophy
3. Camping Merit Badge Requirements	13. Preparation
4. Merit Badge Intro	14. Hiking - Getting Out There
5. Hazards	15. Backpacking - Getting Out There
6. First Aid	16. Camping - Getting Out There
7. Gear	17. Final Thoughts
8. Water	18. Resources
9. Food	19. Instructor's Corner
10. Navigation	



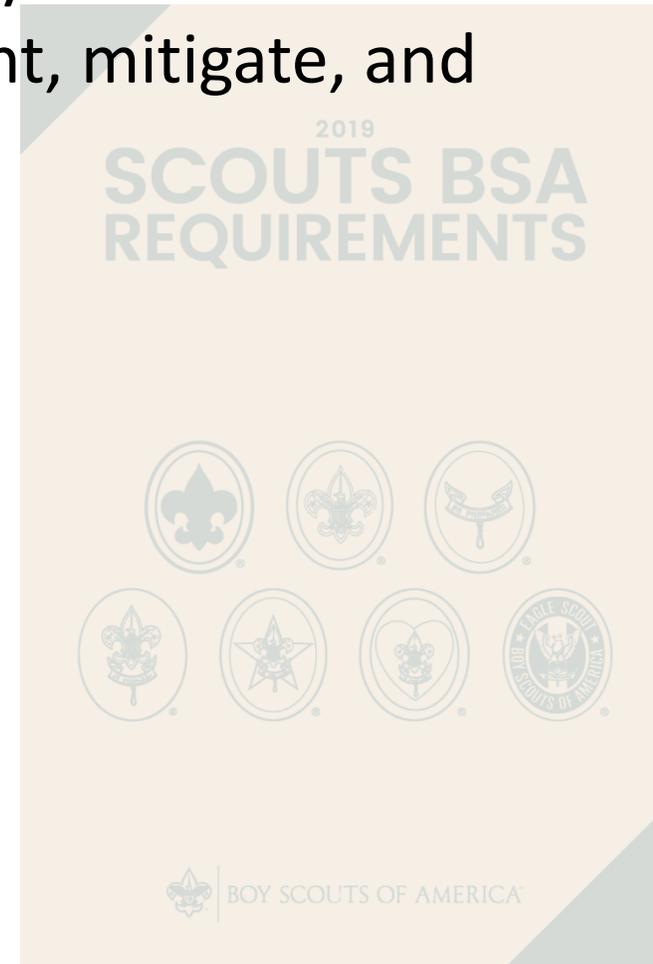
Hazards



Hazards

Requirement H1a - Hazards

Explain to your counselor the most likely hazards you may encounter while hiking, and what you should do to anticipate, help prevent, mitigate, and respond to these hazards.

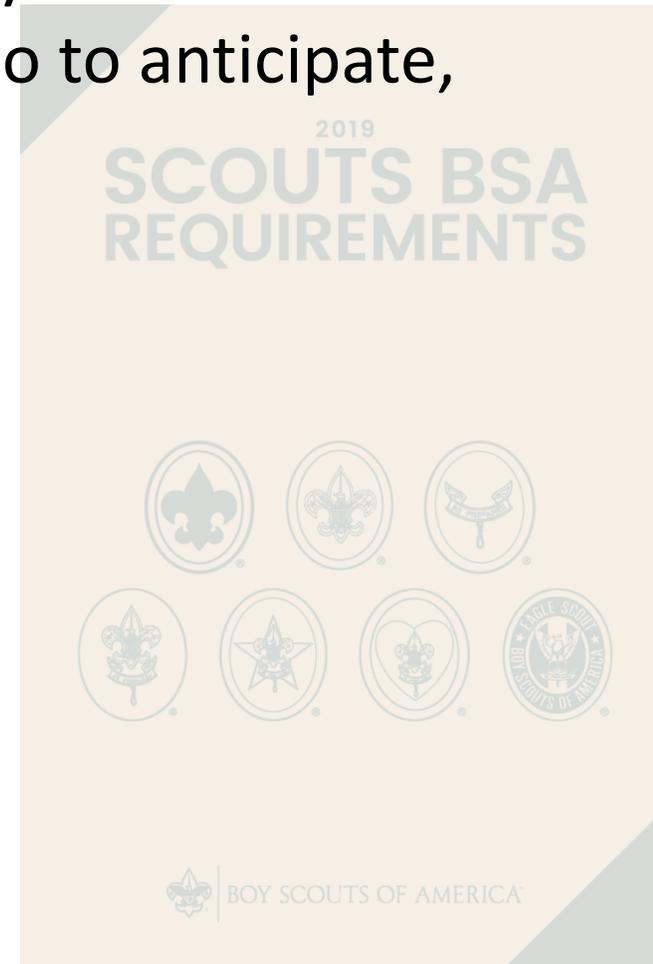


Hazards

Requirement C1a - Hazards

Explain to your counselor the most likely hazards you may encounter while participating in camping activities and what you should do to anticipate, help prevent, mitigate, and respond to these hazards.

Complete and Fill out Workbook



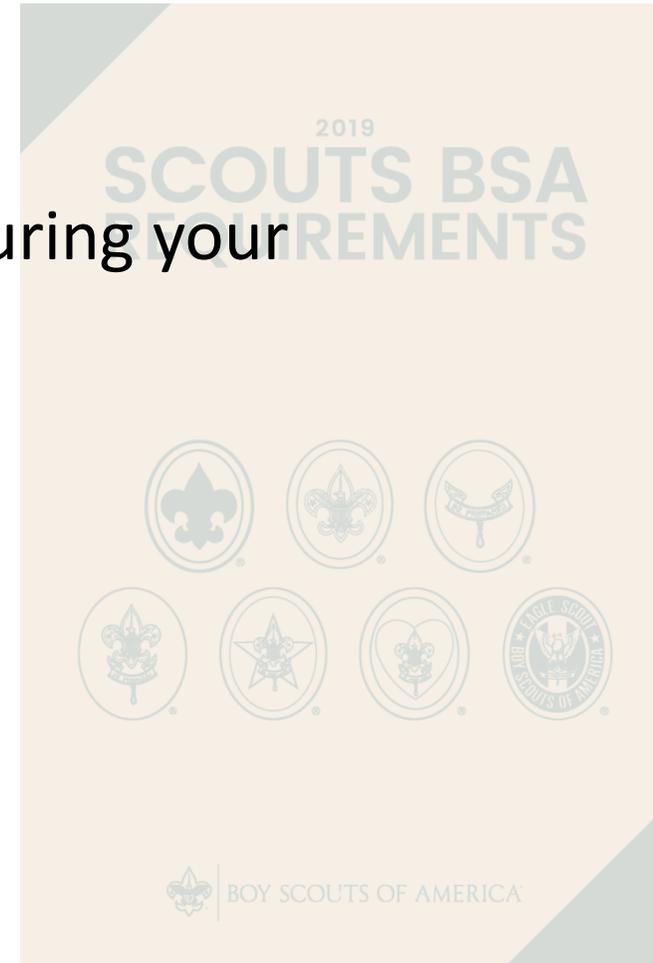
Hazards

Requirement C1b – Weather

Discuss with your counselor why it is important to be aware of weather conditions before and during your camping activities.

Tell how you can prepare should the weather turn bad during your campouts.

Complete and Fill out Workbook



Hazards

Hazards

- Environmental
- Injuries
- Flora
- Fauna

Hazards

Hazards - Environmental

- **Cold Temperatures** come with increased risk of Cold Injuries
 - Discussed in First-Aid Section
 - Planning for proper clothing and shelter will help prevent injuries
 - Wear synthetic clothing – this doesn't retain very much water
 - Don't wear cotton in the cold – it holds water close to your body
 - Dress in layers – this make it easy to adjust insulation

Hazards

Hazards - Environmental

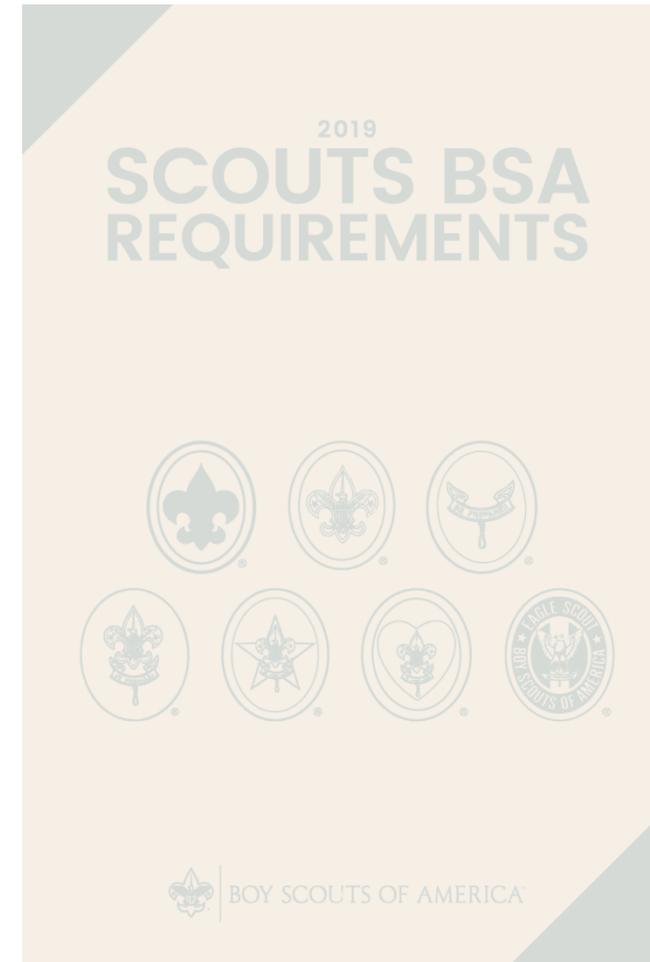
- **Hot Temperatures** come with the risk of Heat Injuries
 - Discussed in First-Aid Section
 - Balancing of workload is vital
 - Pushing through the heat is dangerous
 - Know when to take a brake or when to stop an activity
 - Hydration is vital in hot environments
 - Make sure you are staying hydrated
 - Plan for water stops as needed
 - Covering exposed skin will keep you cooler when exposed to the hot sun
 - Shelter selection helps reduce risk of injury

Planning and Preparation

Requirement B7 – Weather

Tell how to prepare properly for and deal with inclement weather.

Complete and Fill out Workbook



Hazards

Hazards – Environmental – Rain

- Rain, even in the tropics, increases the risk of hypothermia
- Be prepared for possible storms
- Have rain gear readily available
- If the storm is really bad, consider setting up shelters
- Help others in crew get into shelter and get dry

Hazards

Hazards – Environmental – Snow

- Snow is fine, but it melts
- Melted snow is dangerous for those who are unprepared
- Pack the proper gear if subfreezing temps are anticipated

Hazards

Hazards – Environmental – Lighting

- Lighting is deadly
- “When Lighting Roars, Go Indoors”
- Tents do NOT protect you from lighting
- Goal:
 - Get into grounded building
 - Get into metal hardtop vehicle
 - If these options not available
 - Get off high ground
 - Open areas



Hazards

Hazards – Injuries

- Safe activities should be selected
- Use appropriate safety gear and supervision
- Follow safety guidelines
- Know how to treat injuries

Hazards

Hazards – Flora

- Know about potential plant hazards in area
- Contact poisoning is a concern
 - Poison Oak
 - Poison Ivy
- Know of any poisonous plants that may be eaten
 - Many poisonous berries look very inviting
 - Know how to identify poisonous plants
 - Don't consume or touch them

Hazards

Hazards – Fauna

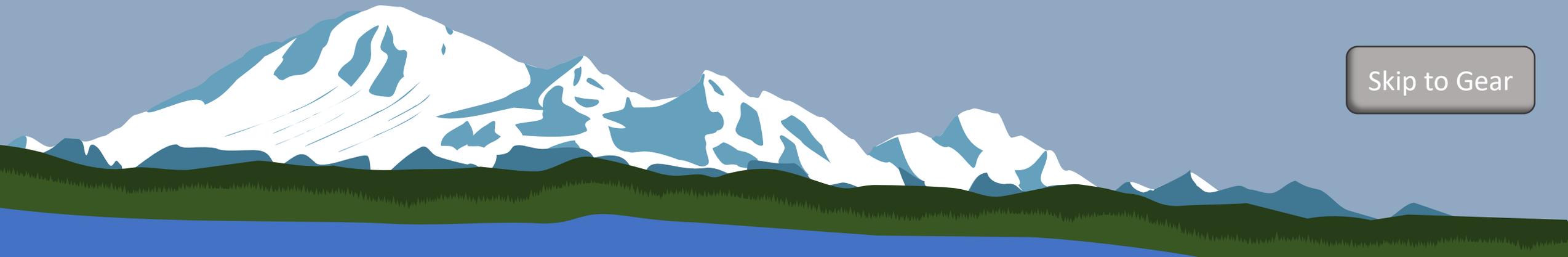
- Know of hazardous animal life in your area
- Some animals will attack
 - Don't approach animals
 - Know what actions to take with each animal hazard
- Some bugs bite
 - Discussed in First-Aid section
 - Wear clothing that covers your skin and use insect repellent
- Venomous Snakes and other animals may be in your area
 - Know how to identify them
 - Avoid them
 - Know how to treat envenomation

1. Hiking Merit Badge Requirements	11. Leave No Trace
2. Backpacking Merit Badge Requirements	12. Hiking Philosophy
3. Camping Merit Badge Requirements	13. Preparation
4. Merit Badge Intro	14. Hiking - Getting Out There
5. Hazards	15. Backpacking - Getting Out There
6. First Aid	16. Camping - Getting Out There
7. Gear	17. Final Thoughts
8. Water	18. Resources
9. Food	19. Instructor's Corner
10. Navigation	



First Aid

[Skip to Gear](#)



First Aid

Requirement H1b - First Aid

Show that you know first aid for injuries or illnesses that could occur while hiking, including:

- Hypothermia
- Frostbite
- Dehydration
- Heat exhaustion
- Heatstroke
- Sunburn
- Hyperventilation
- Altitude sickness
- Sprained ankle
- Blisters
- Insect stings
- Tick bites
- Snakebite

Complete and Fill out Workbook



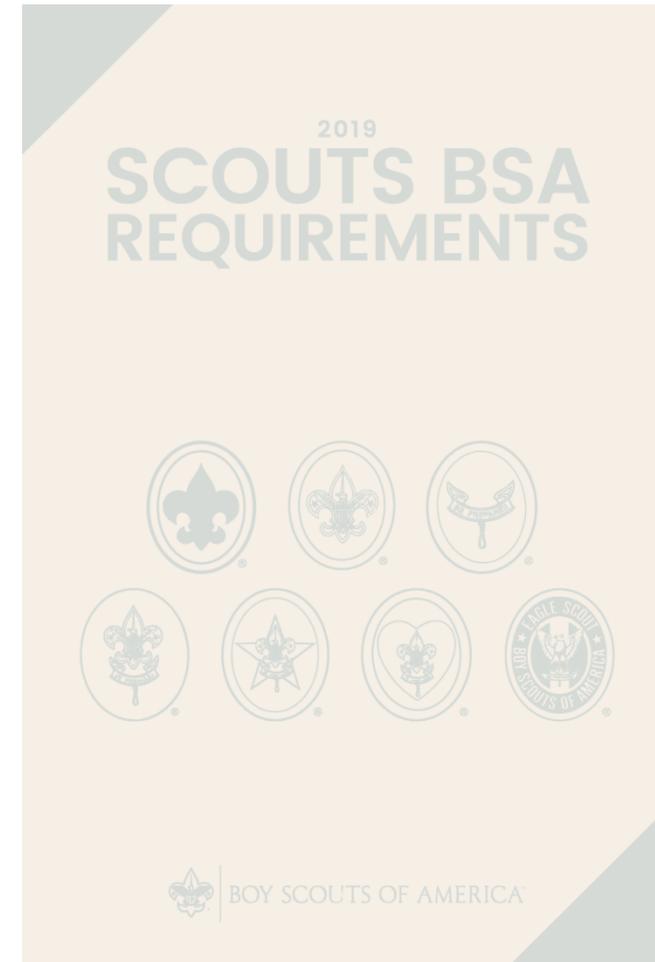
First Aid

Requirement B1 – First Aid

Discuss the prevention of and treatment for the health concerns that could occur while backpacking, including:

- Hypothermia
- Heat reactions
- Frostbite
- Dehydration
- Insect stings
- Tick bites
- Snakebite
- Blisters

Complete and Fill out Workbook



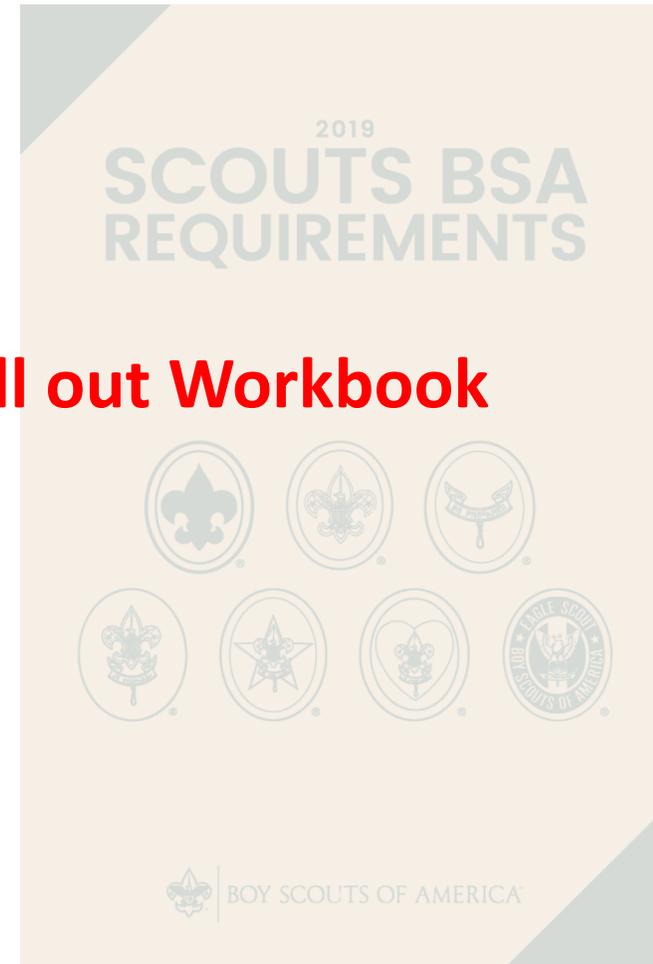
First Aid

Requirement C1c – First Aid

Show that you know first aid for and how to prevent injuries or illnesses that could occur while camping, including:

- Hypothermia
- Frostbite
- Heat reactions
- Dehydration
- Altitude sickness
- Insect stings
- Tick bites
- Snakebite
- Blisters
- Hyperventilation

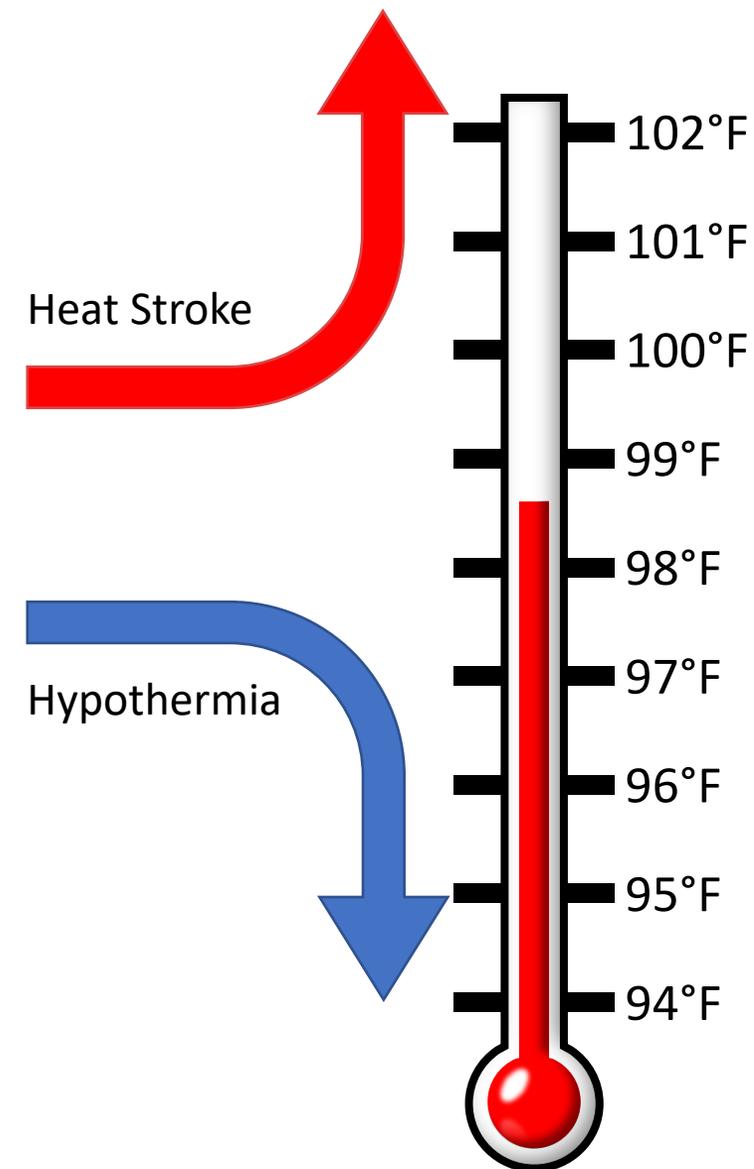
Complete and Fill out Workbook



Cold Weather Injuries

Body Temperature

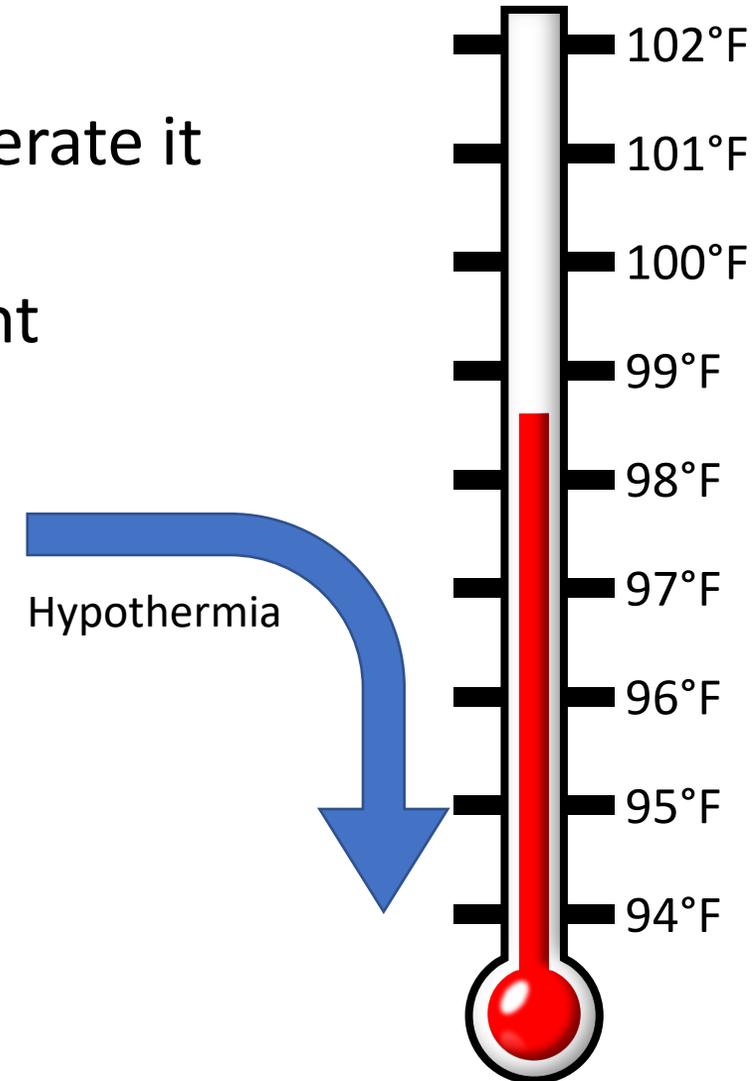
- The human body operates best around 98.6°F
- If body loses heat faster than it can generate it, it will fail to function
- If body overheats and is unable to cool itself, it will fail to function



Cold Weather Injuries

Hypothermia

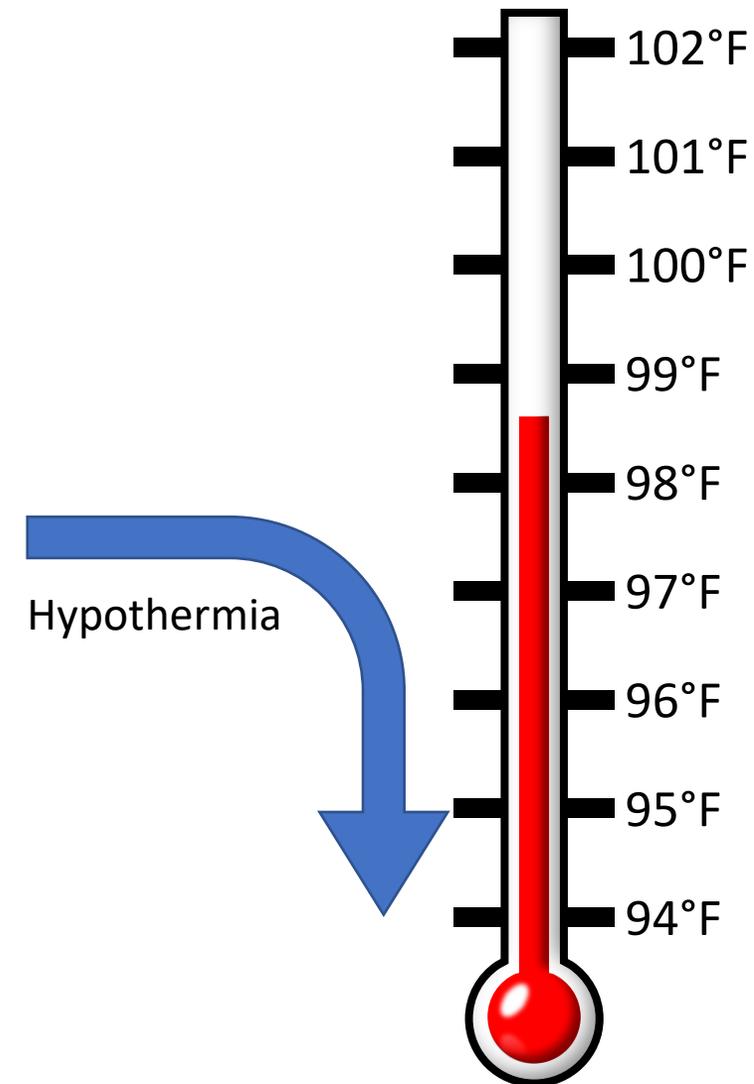
- Occurs when body loses heat faster than it can generate it
- Danger if inadequately dressed for cold environment



Cold Weather Injuries

Hypothermia

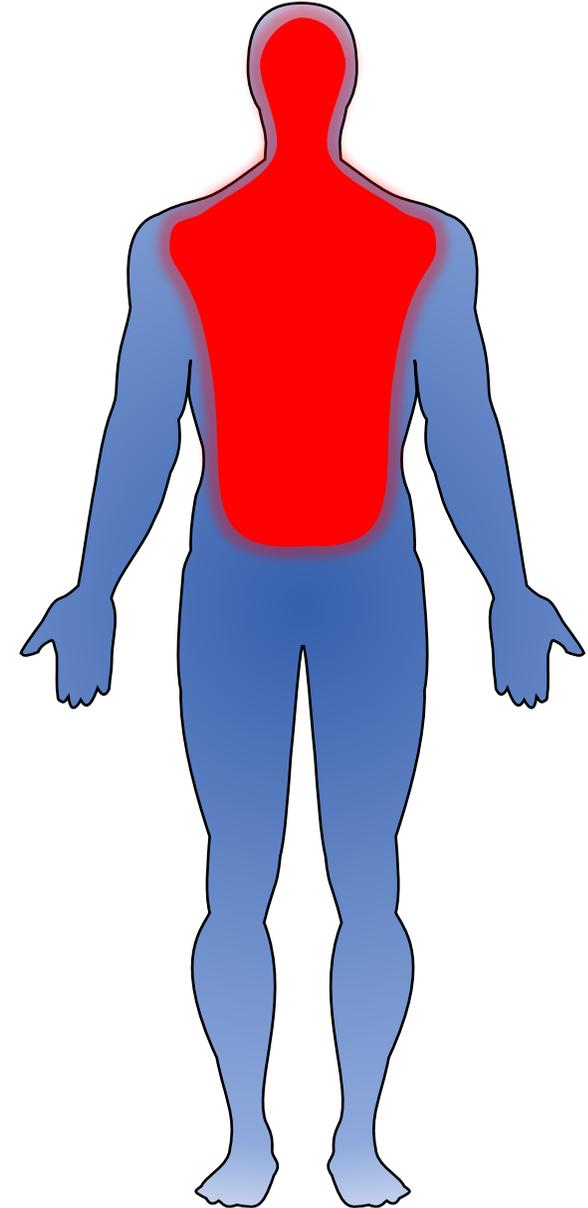
- Danger compounded by:
 - Rain
 - Wind
 - Hunger
 - Exhaustion
 - Dehydration
- Being wet and cold is a dangerous combination



Cold Weather Injuries

Hypothermia – Symptoms

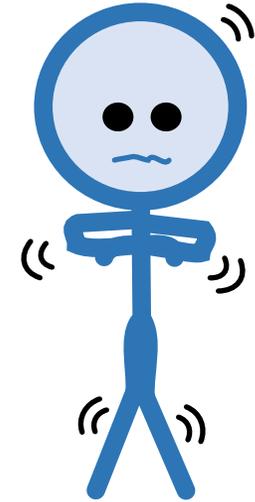
- Numbness
- Fatigue
- Irritability
- Slurred speech
- Uncontrollable shivering
- Poor judgement or decision making



Cold Weather Injuries

Hypothermia – First-Aid

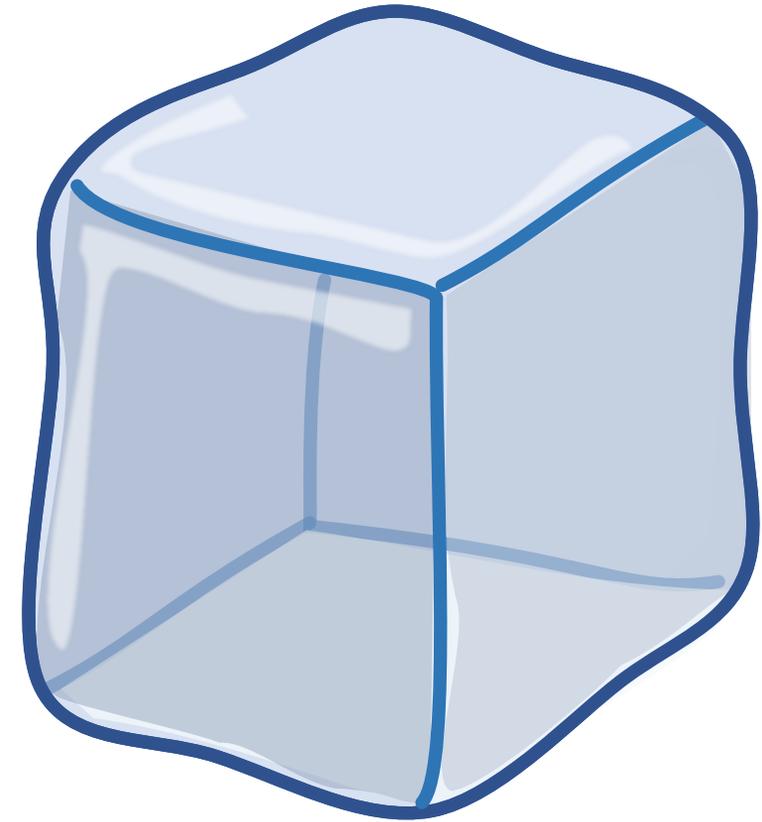
- Get the victim's body warm again!
 - Move to building or tent
 - Remove wet clothing
 - Dry off
 - Warm dry clothes and/or blankets
 - Warm, sweet liquids if conscious
 - Warm water in water bottles, wrapped in towel and place in armpits
 - Observe
- **NEVER Immerse in Warm/Hot Water** – this can be lethal!



Cold Weather Injuries

Frostbite

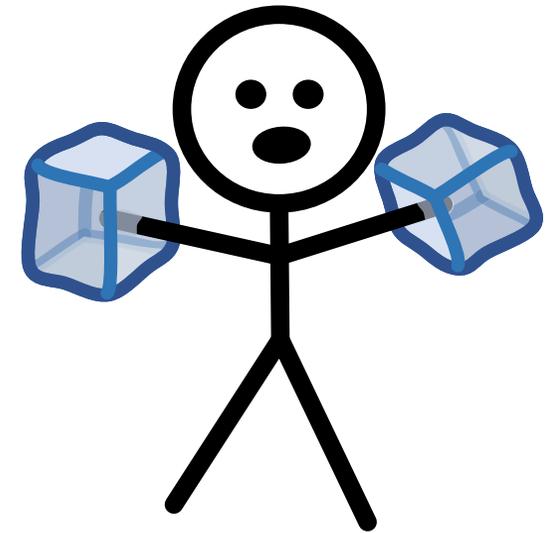
- Frostbite is when skin and tissues freeze and form ice crystals
- Exposed areas at high risk:
 - Ears
 - Nose
 - Cheeks
 - Fingers and hands
 - Toes and feet



Cold Weather Injuries

Frostbite

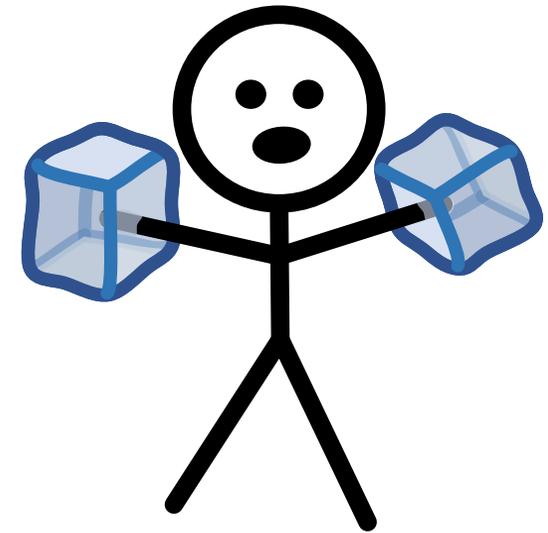
- With continuous exposure, frostbite can freeze deeper tissue
- This causes significant damage and cuts off blood circulation
 - Can lead to:
 - Tissue death
 - Gangrene



Cold Weather Injuries

Frostbite – Symptoms

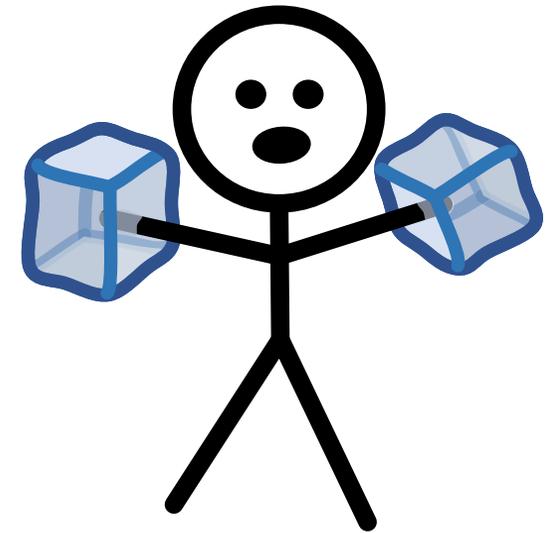
- Victim may **Feel**:
 - Pain then numbness in effected body part
 - May not notice anything



Cold Weather Injuries

Frostbite – Symptoms

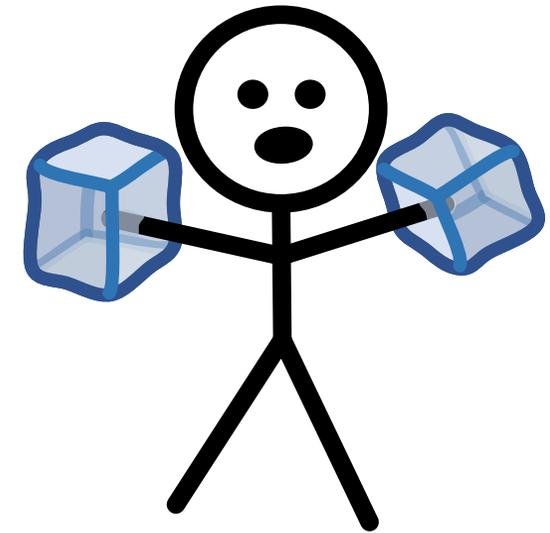
- **May See:**
 - Grayish-white patches on skin
 - Blisters or dark skin suggest severe stages of frostbite



Cold Weather Injuries

Frostbite – First-Aid

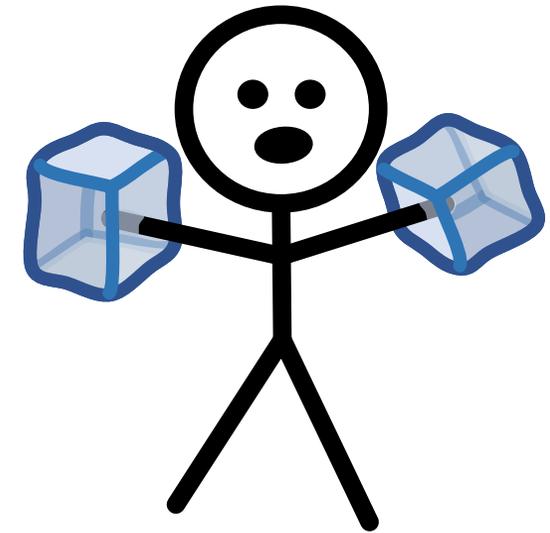
- Best treatment is to **AVOID Getting It** – it is generally preventable
- If you suspect frostbite:
 - Remove wet clothing
 - Wrap injured area in dry blanket
 - Get victim to medical care as soon as possible



Cold Weather Injuries

Frostbite – First-Aid

- Rewarming is an option
 - **Do NOT** rewarm if there is risk of refreeze! This is BAD!
 - Place affected area in warm (100-105°F) water
 - Allow affected area to regain color and warmth
 - Dry off and bandage loosely with dry dressing between digits



Dehydration

Dehydration

- The body is made up of 70% water
- Proper hydration is required for basic body functions
- Dehydration increases the risk of both cold and heat injuries
- Cold and heat both increase the risk of Dehydration



Dehydration

Dehydration

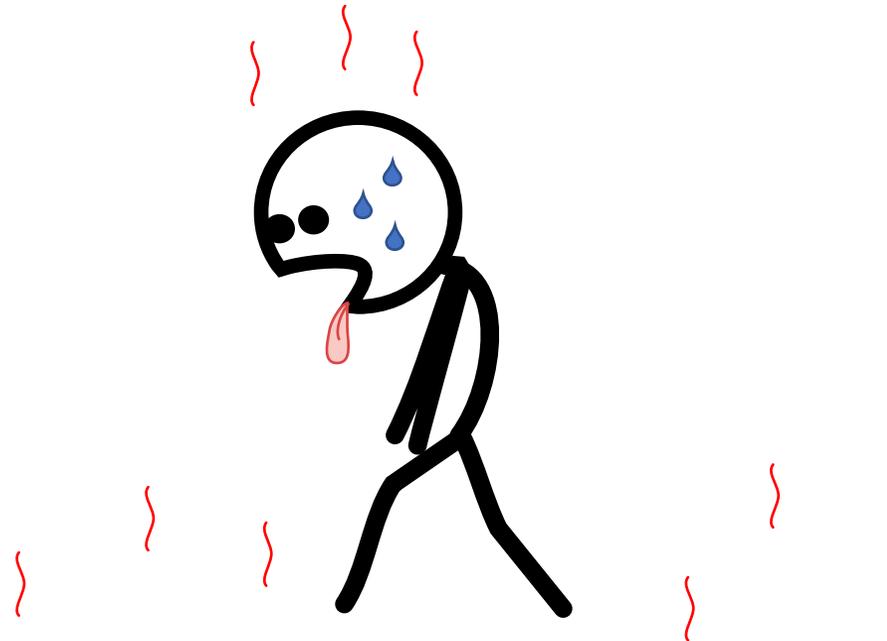
- Water is lost via:
 - Breathing
 - Sweating
 - Digestion
 - Urination



Dehydration

Dehydration – Symptoms

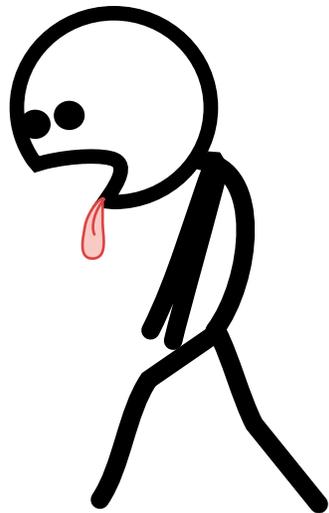
- Signals of **Mild** dehydration
 - Fatigue
 - Increased thirst
 - Dry lips
 - Dark yellow urine



Dehydration

Dehydration – Symptoms

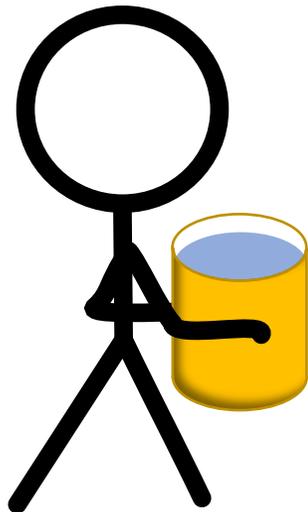
- Signals of **Moderate and Severe** dehydration
 - Dry mouth with little saliva
 - Dry skin
 - Weakness
 - Dizziness
 - Confusion
 - Nausea
 - Fainting
 - Muscle cramps
 - Loss of appetite
 - Decreased sweating
 - Decreased urine production
 - Less frequent urine
 - Dark brown urine



Cold Weather Injuries

Dehydration – First-Aid

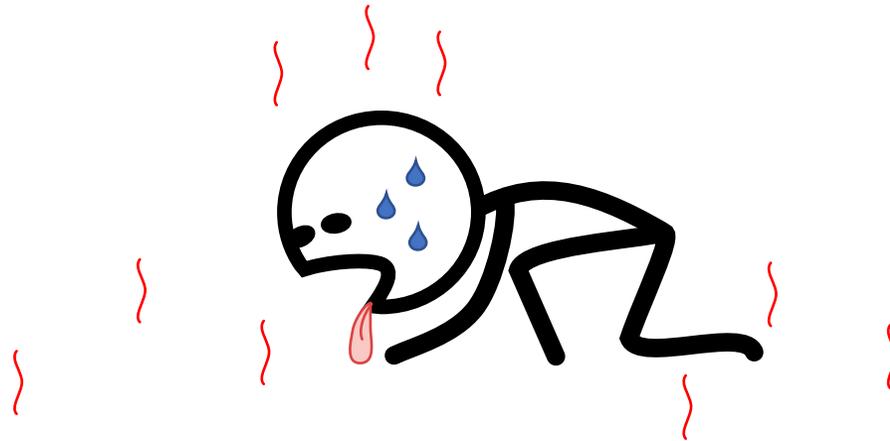
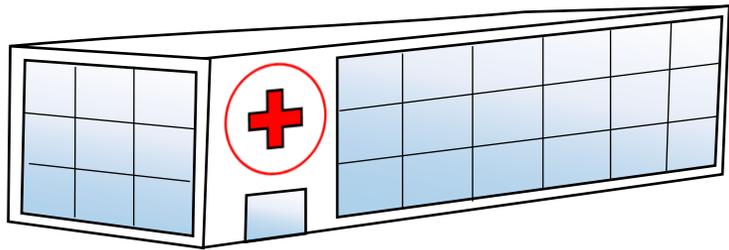
- For **Mild** Dehydration:
 - Drink plenty of water or sports drinks
 - Drink 1-2 quart/liters over 2-4 hours
 - Rest for 24 hours and continue to hydrate
 - Avoid excessive physical activity
 - May take 36 hours to replace lost fluids



Dehydration

Dehydration – First-Aid

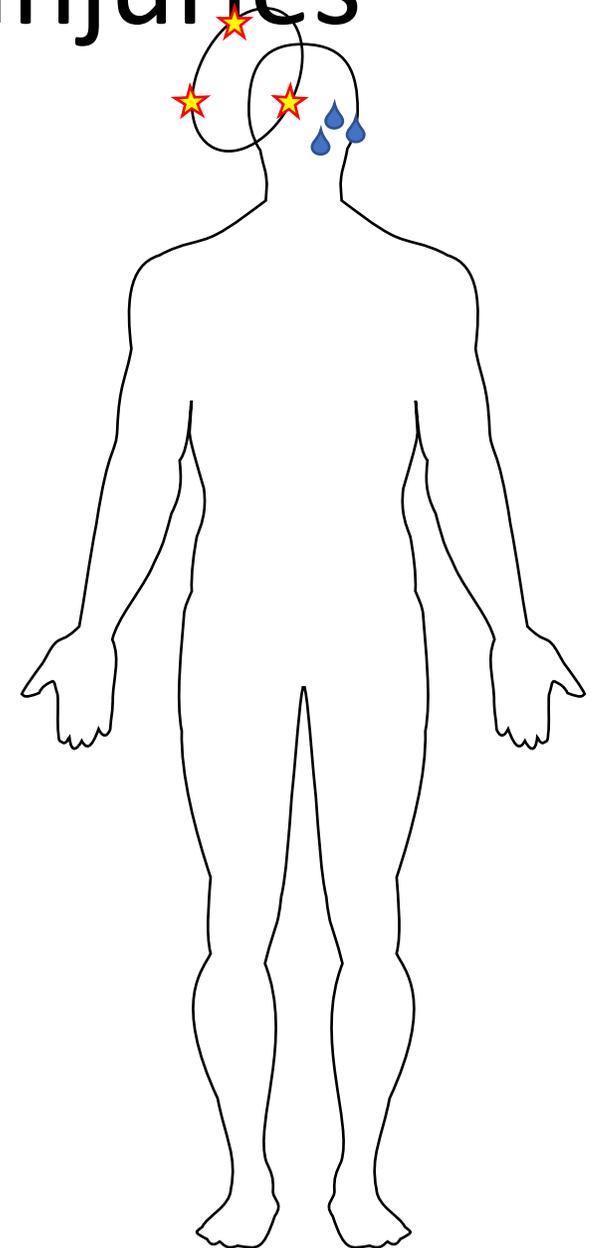
- **Moderate/Severe** dehydration requires Emergency Care
 - Needs to be treated in hospital
 - Needs IV fluids



Cold & Heat Conditions & Injuries

Heat Exhaustion

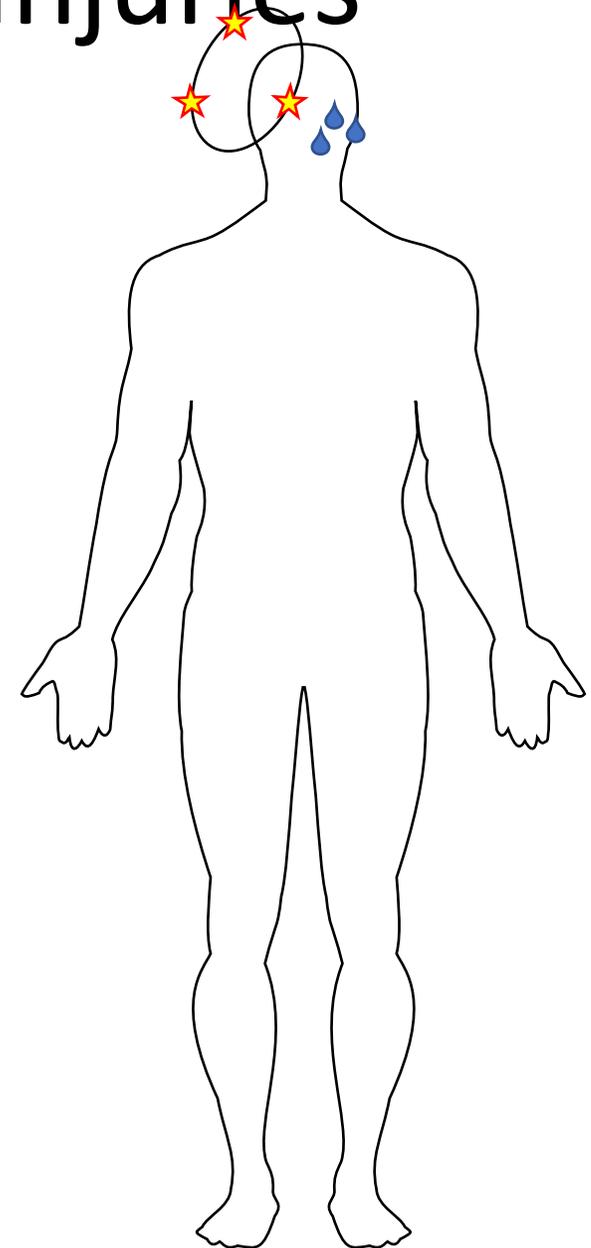
- Brought on by warm weather
- Often associated with dehydration or inadequate acclimation to heat
- Common during outdoor activities in hot environments



Cold & Heat Conditions & Injuries

Heat Exhaustion – Symptoms

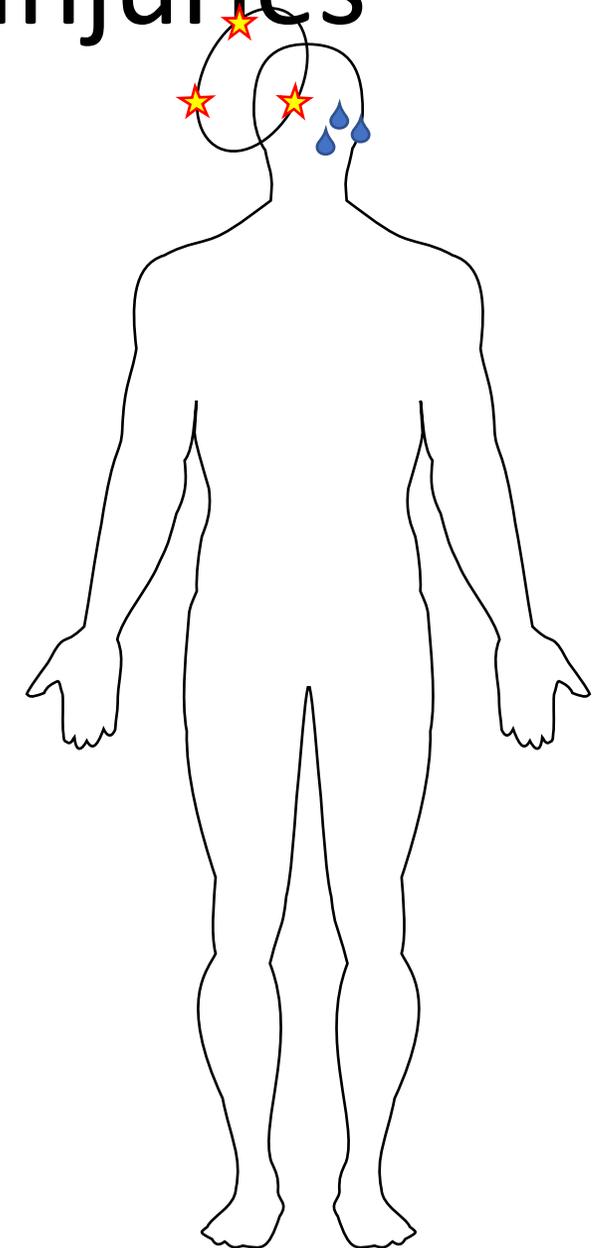
- Symptoms of Heat Exhaustion include:
 - Severe lack of energy
 - General weakness
 - Headache
 - Nausea
 - Faintness
 - Sweating
 - Cool, pale, moist skin
 - Rapid pulse



Cold & Heat Conditions & Injuries

Heat Exhaustion – First-Aid

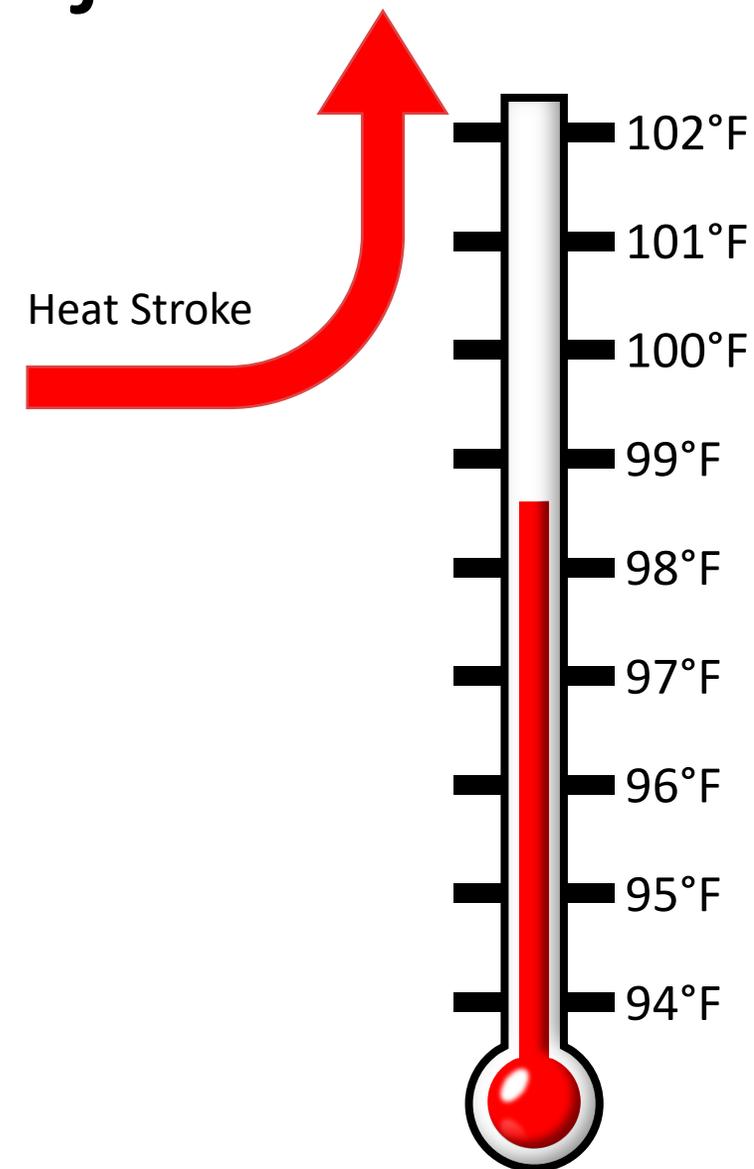
- First-Aid includes:
 - Get victim in Shade
 - Encourage to drink fluids
 - Apply cool, wet towels or cloths to the skin
 - Wet victim's clothing with cool water and fan
 - Raising legs can help them feel better
- Victim should feel better in two or three hours
 - Take it easy the rest of the day



Cold & Heat Conditions & Injuries

Heat Stroke

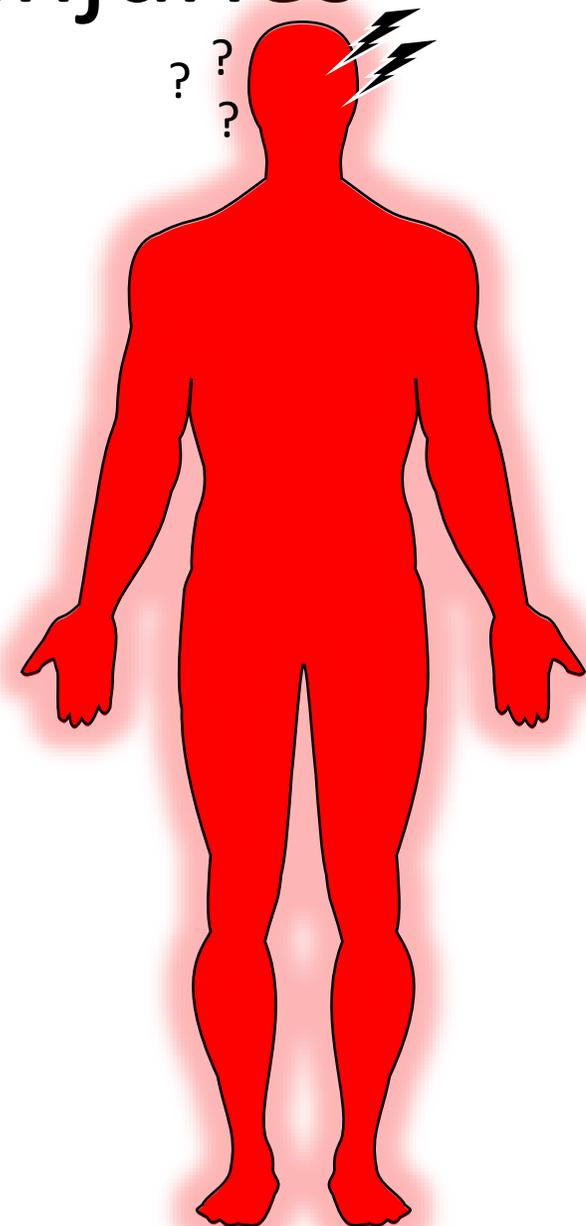
- Body overheats to the point of being life-threatening (105°F)
- Body loses ability to cool itself
- May occur with over-exertion in hot weather
- Also occurs with elderly in hot climates



Cold & Heat Conditions & Injuries

Heat Stroke - Symptoms

- Symptoms include:
 - Hot sweaty (but sometimes dry) skin
 - Confusion
 - **Disorientation**
 - Rapid pulse
 - Shallow breathing
 - Vomiting
 - Seizures



Irritability, Ataxia (balance problems), or Confusion are hallmark signs of Heat Stroke

Heat Exhaustion

Faint or dizzy

Excessive Sweating



Cool, pale, clammy skin

Nausea or vomiting

Rapid, weak pulse

Muscle cramps

Heat Stroke

Throbbing Headache

No Sweating

Red, hot dry skin

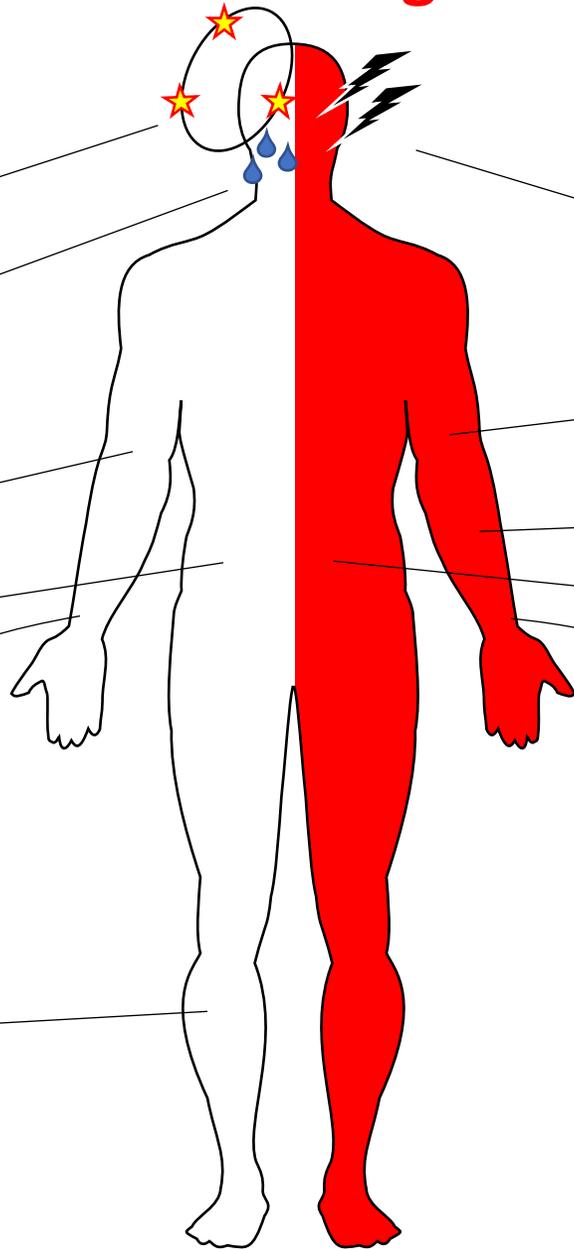


$\geq 104^\circ$

Nausea or vomiting

Rapid, strong pulse

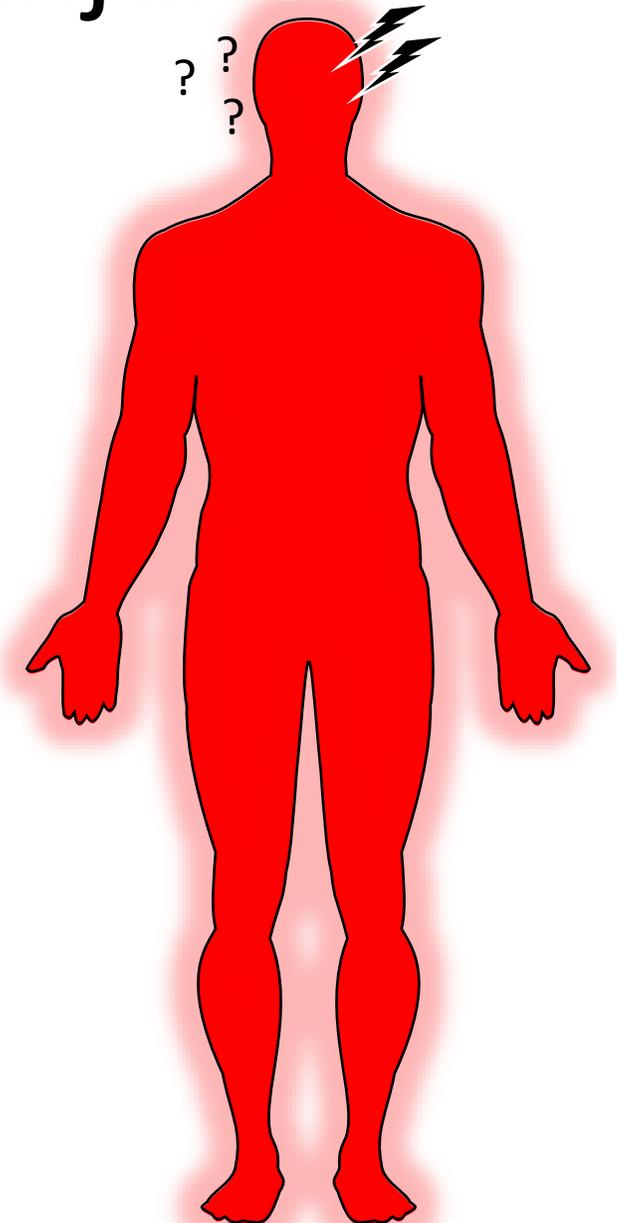
May lose consciousness or have seizures



Cold & Heat Conditions & Injuries

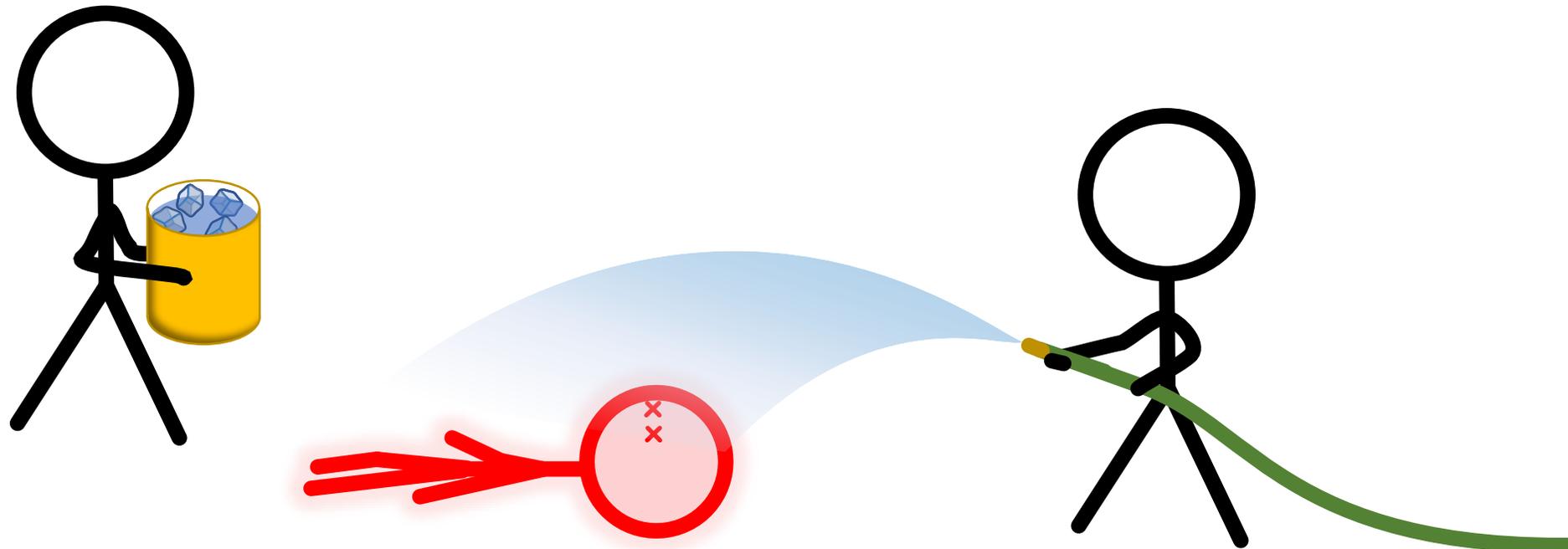
Heat Stroke – First-Aid

- This is **LIFE-THREATENING**
- Cool immediately!
- Call 911! Do it NOW!
- Cooling includes:
 - Immersion or spray of cold water
 - Ice packs wrapped in cloth in armpits and skin
 - Fanning
 - AC



Heat Injuries

Heat Stroke – First-Aid

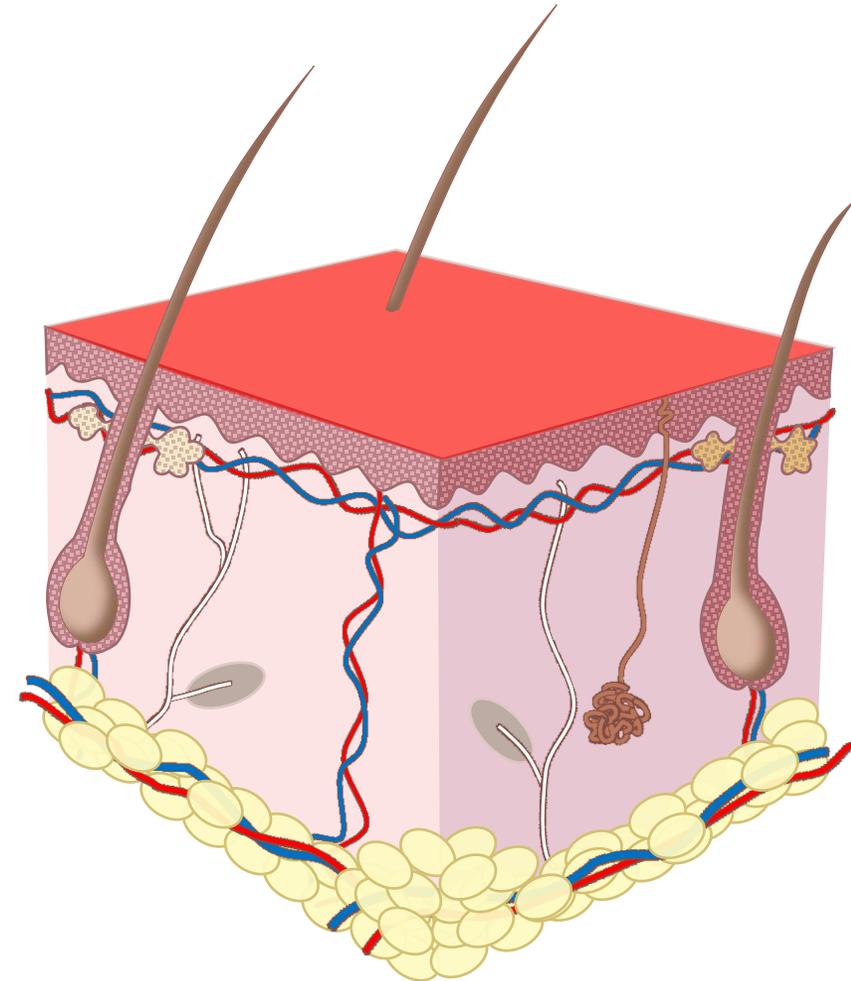
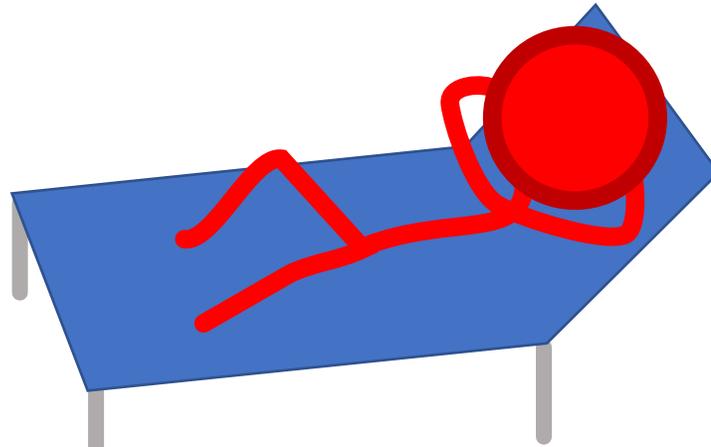




Sun Burns

Burns – Severity – 1st Degree Sunburn

- Only affects the outer most layer of skin
- **Symptoms**
 - Painful
 - Reddened skin



Sun Burns

Burns – Severity – 1st Degree Sunburn

- **First-Aid**
 - Generally does not require medical treatment unless
 - Covers more than 20% body surface

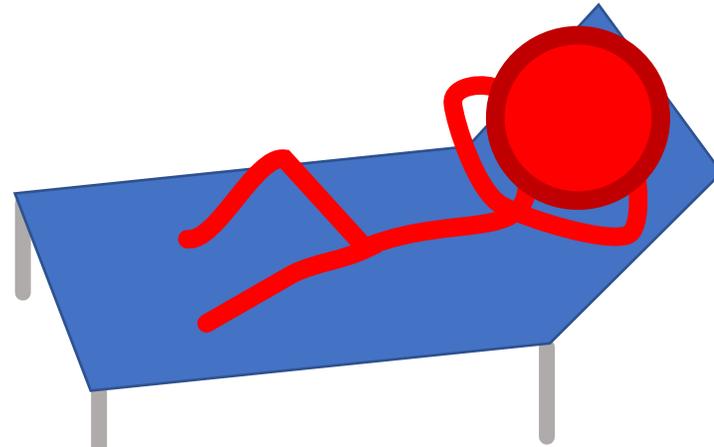
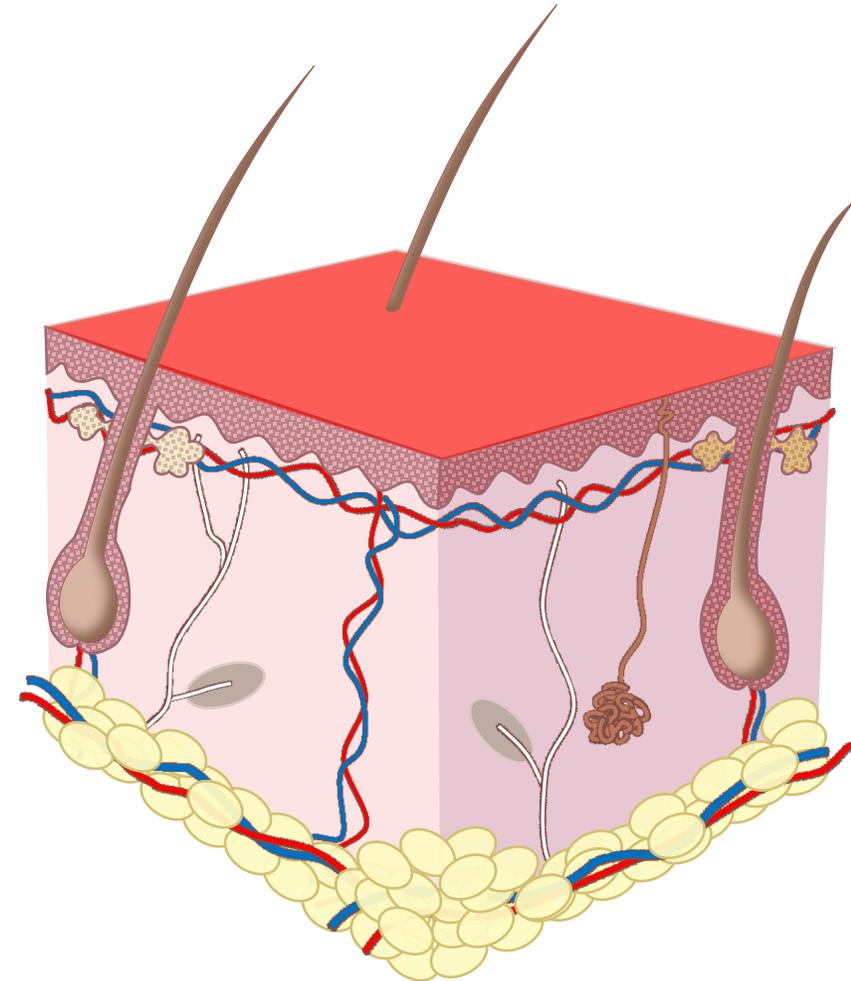


Image Source: U.S. Army Medical Department Center and School Fort Sam Houston, TX 78234-6100 Wound Care Subcourse MD0576



Sun Burns

Burns – Severity – 1st Degree Sunburn

- **First-Aid**
 - Best Treatment
 - Avoidance and prevention
 - Cover exposed skin

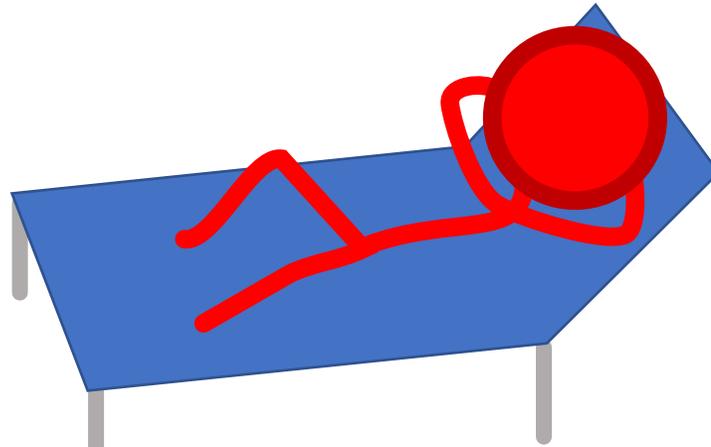
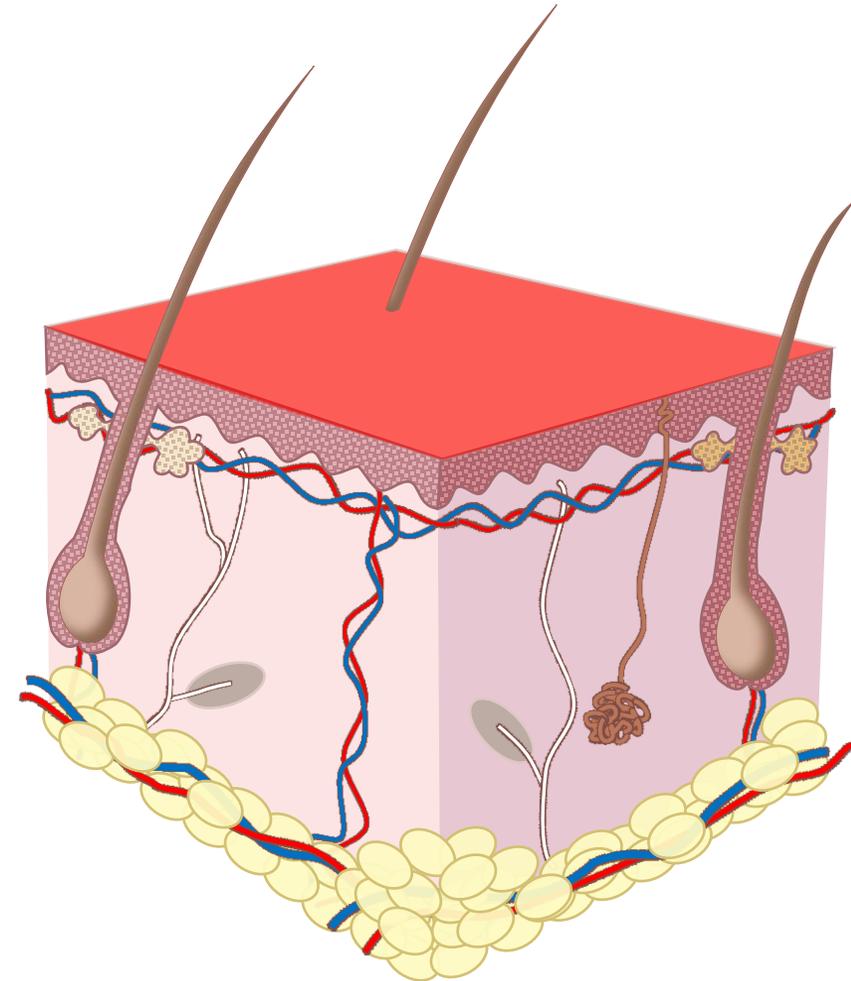


Image Source: U.S. Army Medical Department Center and School Fort Sam Houston, TX 78234-6100 Wound Care Subcourse MD0576

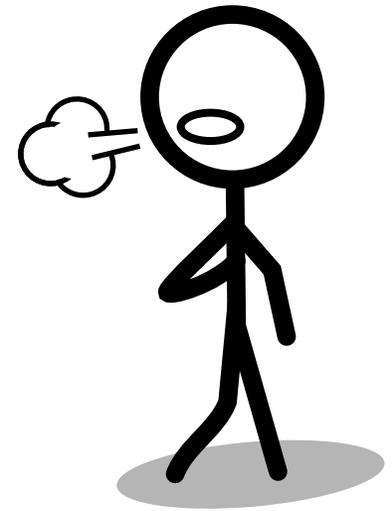


2019 First-Aid Merit Badge Pamphlet Page 56

Hyperventilation

Hyperventilation

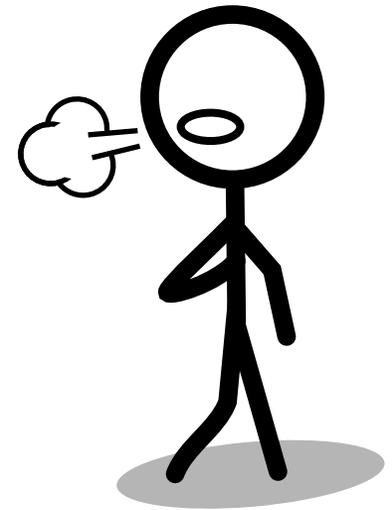
- Hyperventilating is when your body breathes at a very fast rate



Hyperventilation

Hyperventilation

- **Involuntary Hyperventilation** can be caused by:
 - Severe pain
 - Infection
 - Severe bleeding
 - Heart attack
 - Cold water immersion
 - Diabetic coma
 - Poisoning
 - Conditions such as anxiety attacks





Hyperventilation

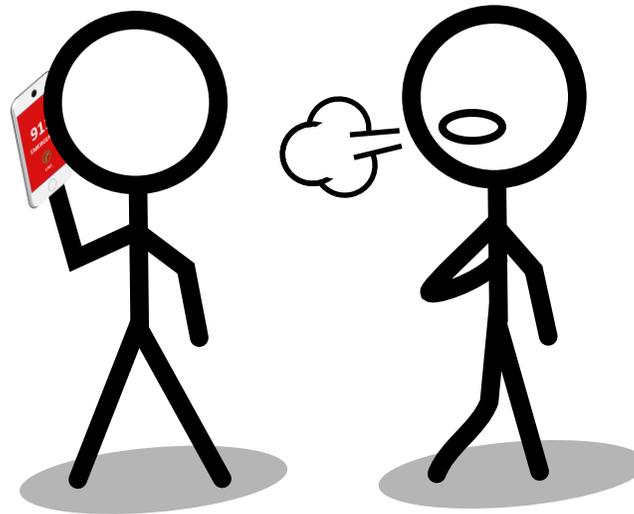
Hyperventilation

- **Voluntary Hyperventilation** is when you intentionally breathe fast
- Blunts breathing reflex
 - Causing you to pass out
- Very dangerous
 - If done while swimming, it can result in drowning

Hyperventilation

Hyperventilation

- **First-Aid**
 - Unless the victim is doing so voluntarily, Hyperventilation usually requires immediate medical care



Altitude Illness

Altitude Illness – Intro

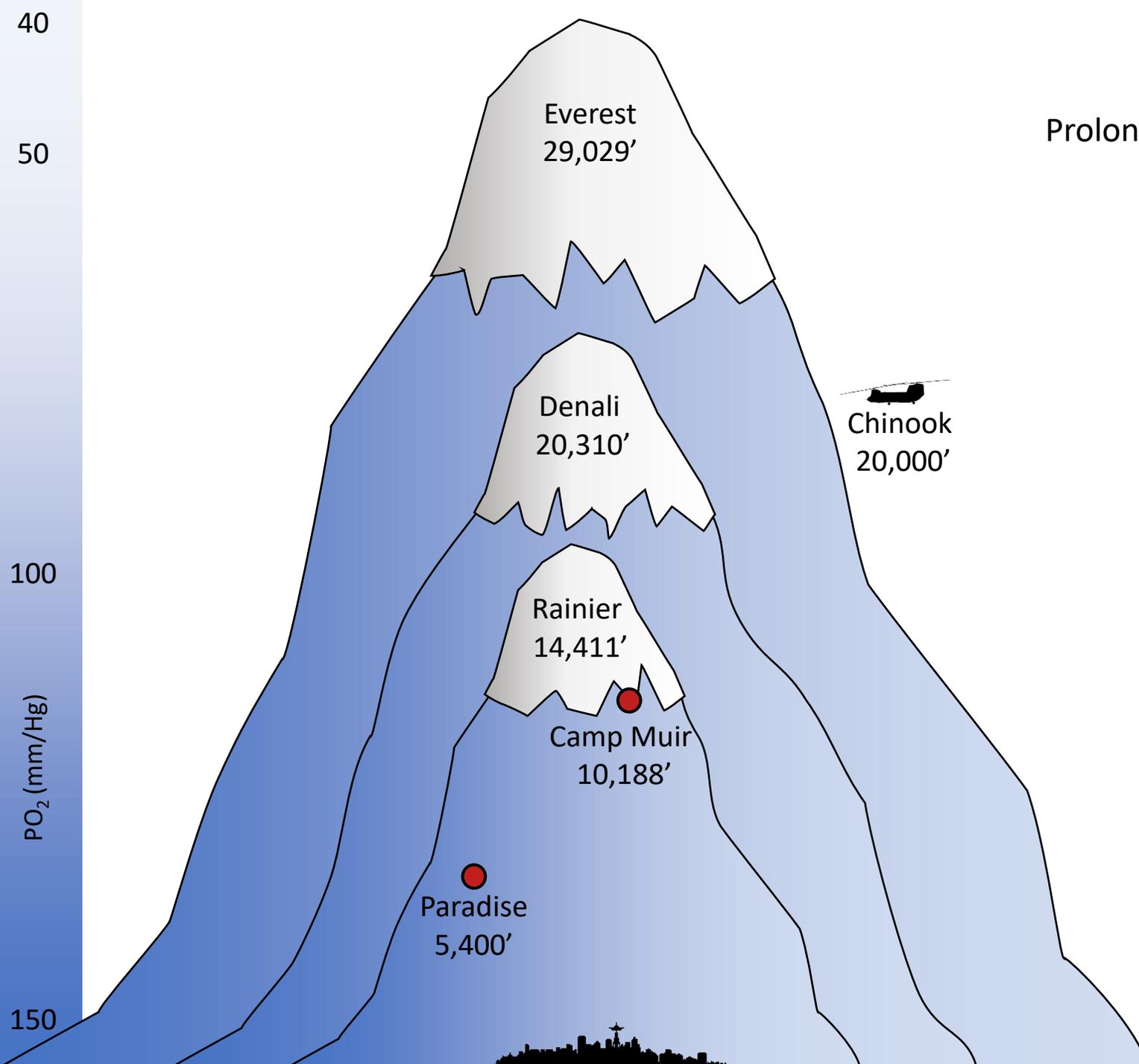
- At high altitude, climbers encounter hypobaric hypoxia
- The higher you ascend, the thinner the air becomes
- Your body can compensate for higher elevations, but this takes time
- As you ascend and as you work your body, you will eventually reach a point where there just isn't enough oxygen in the air to fuel your brain

- Physical fitness is **NOT** an indicator of how well you will acclimatize
- It's all about the genetic lottery

Altitude Illness

Altitude Illness

- High Altitude Illness comes in 3 basic flavors:
 - Acute Mountain Sickness (AMS)
 - High Altitude Cerebral Edema (HACE)
 - High Altitude Pulmonary Edema (HAPE)



Death Zone > 26,000'
 Acclimation considered \emptyset possible
 Prolonged exposure \emptyset O₂ = Coma then Death



Blood O₂
 Saturation

Extreme Altitude > 18,000'
 1/3 hallucinate > 24,000'
 MRI changes > 23,000'
 Memory retrieval impaired
 Abrupt ascent = High-Altitude Illness



58-75%

Very High Altitude > 11,500'
 Learning and spatial memory impaired
 Severe High-Altitude Illness common
 Abrupt ascent dangerous



75-85%

High Altitude > 4,900'
 Psychomotor impairment
 Complex reaction time slows
 AMS and HACE possible
 Aircraft pressurized to ~5,000-8,000'



90+%

Image Idea From: Wilson MH, Newman S, Imray CH. [The cerebral effects of ascent to high altitudes. Lancet Neurol. 2009 Feb;8\(2\):175-91.](#)

Hackett, PH, Roach, RC. High-Altitude Medicine. In: Wilderness Medicine, 5th ed, Auerbach, PS (Ed), Mosby, Philadelphia 2007 [UpToDate](#)

Altitude Illness

Altitude Illness – Symptoms

- Depending on what you have, symptoms vary
 - Headache
 - Lightheadedness
 - Nausea
 - Feeling Ill
 - Fatigue
 - Breathing issues

Altitude Illness

Altitude Illness – Treatment

You **Must HALT Ascent!**

Do NOT sleep at a higher altitude until symptoms resolve

Ascent, especially sleeping at higher altitude, places you are risk of HACE

Altitude Illness

Altitude Illness – Treatment

Descend

Descend

Descend

Altitude Illness

Altitude Illness – Treatment

- Descending to a lower altitude early will generally reverse symptoms
- Delay in descent can result in severe medical problems or death

Sprains and Strains



Sprains and Strains

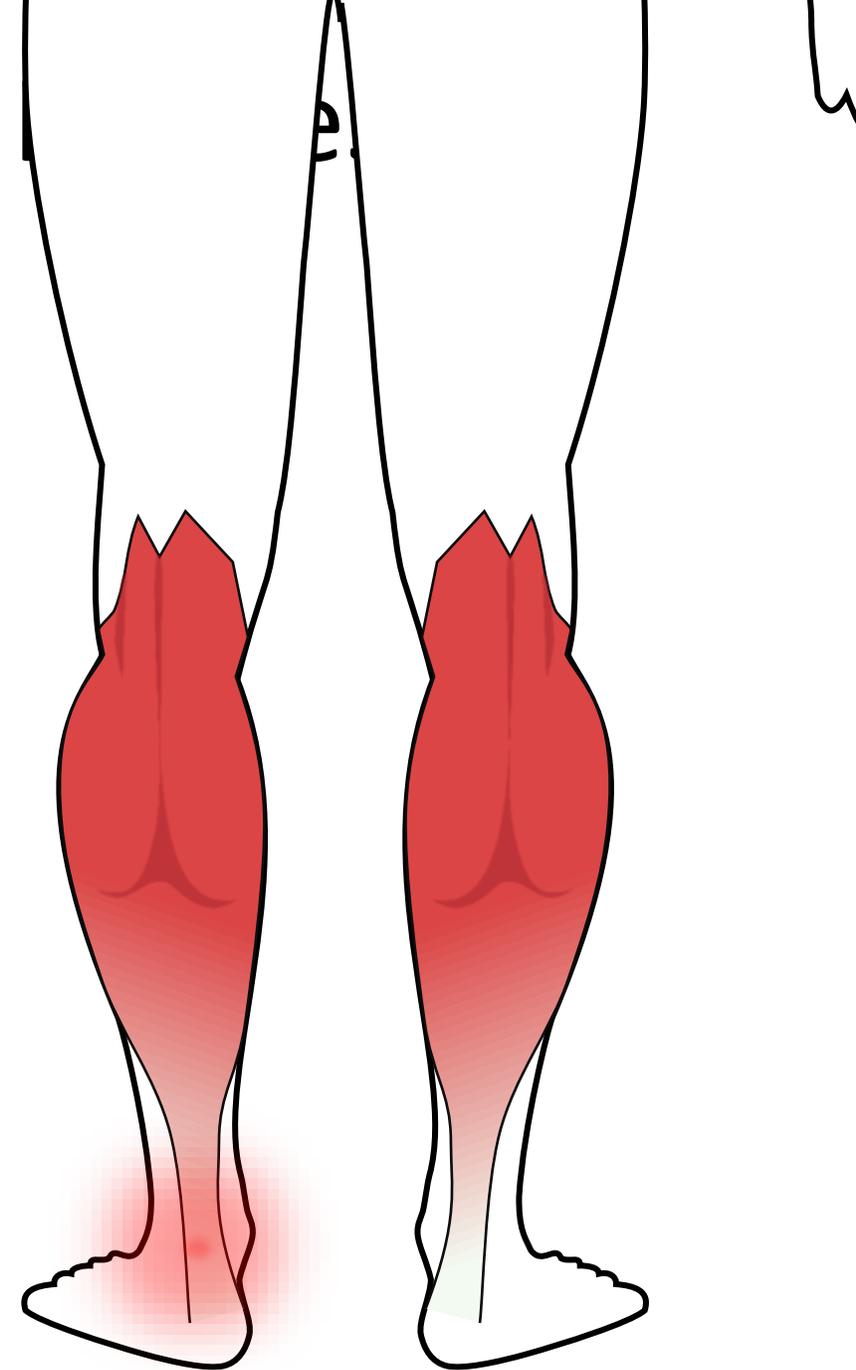
- **Sprains** are overstretched ligaments
 - bands that connect joints
 - Ankles
 - Wrists



Muscle, Joint and Bone

Sprains and Strains

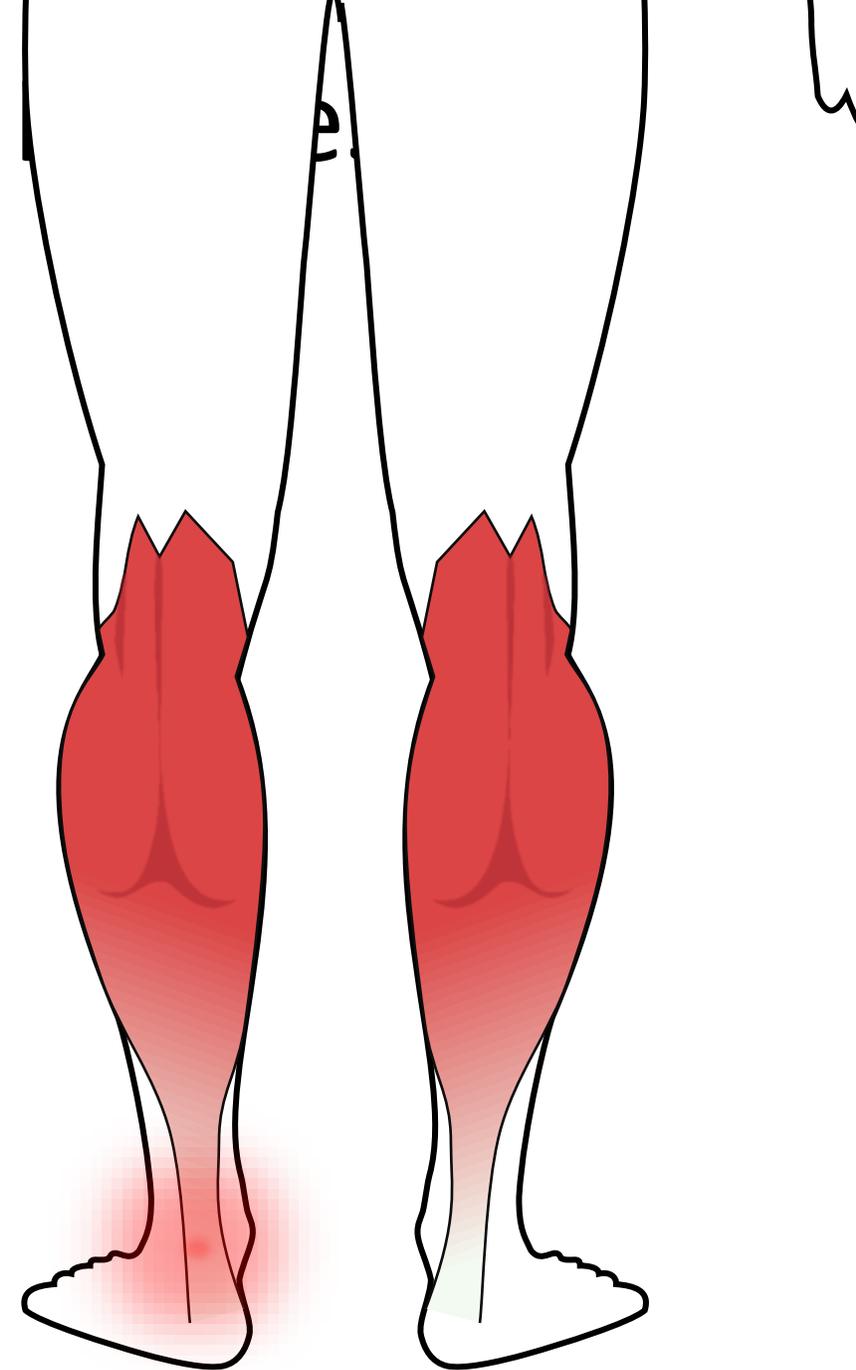
- **Strains** are overstretched tendons
 - bands that connect muscles
 - Lower back is a common site



Muscle, Joint and Bone

Sprains and Strains

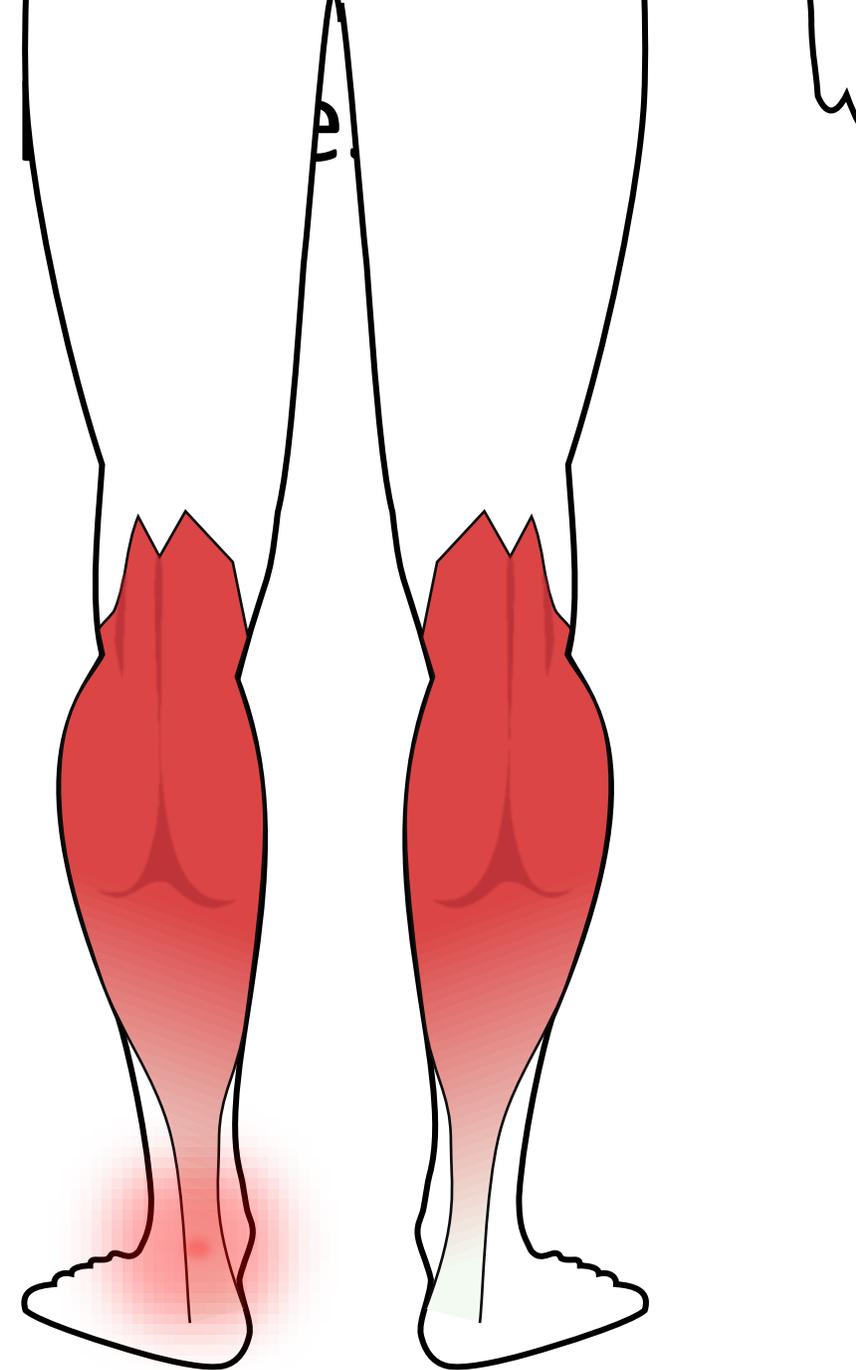
- Sprains and Strains are different
- but treated the same
- Minor injuries may only result in temporary mild discomfort
- More serious injuries may be disabling and may even need surgery



Muscle, Joint and Bone

Sprains and Strains

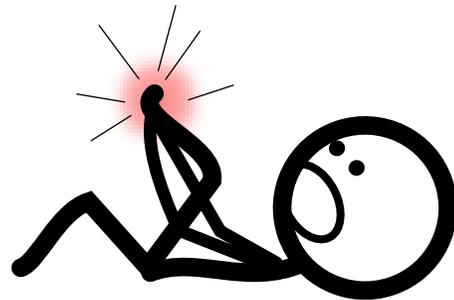
- **Prevention**
 - Avoid over twisting joints
 - Avoid over lifting



Muscle, Joint and Bone Injuries

Sprains and Strains

- **First-Aid**
 - Assume that any joint injury may also include a fracture
 - Take weight off the injured joint



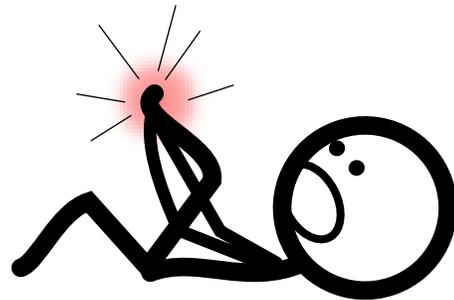
Muscle, Joint and Bone Injuries

Sprains and Strains

- **First-Aid**

- **RICE:**

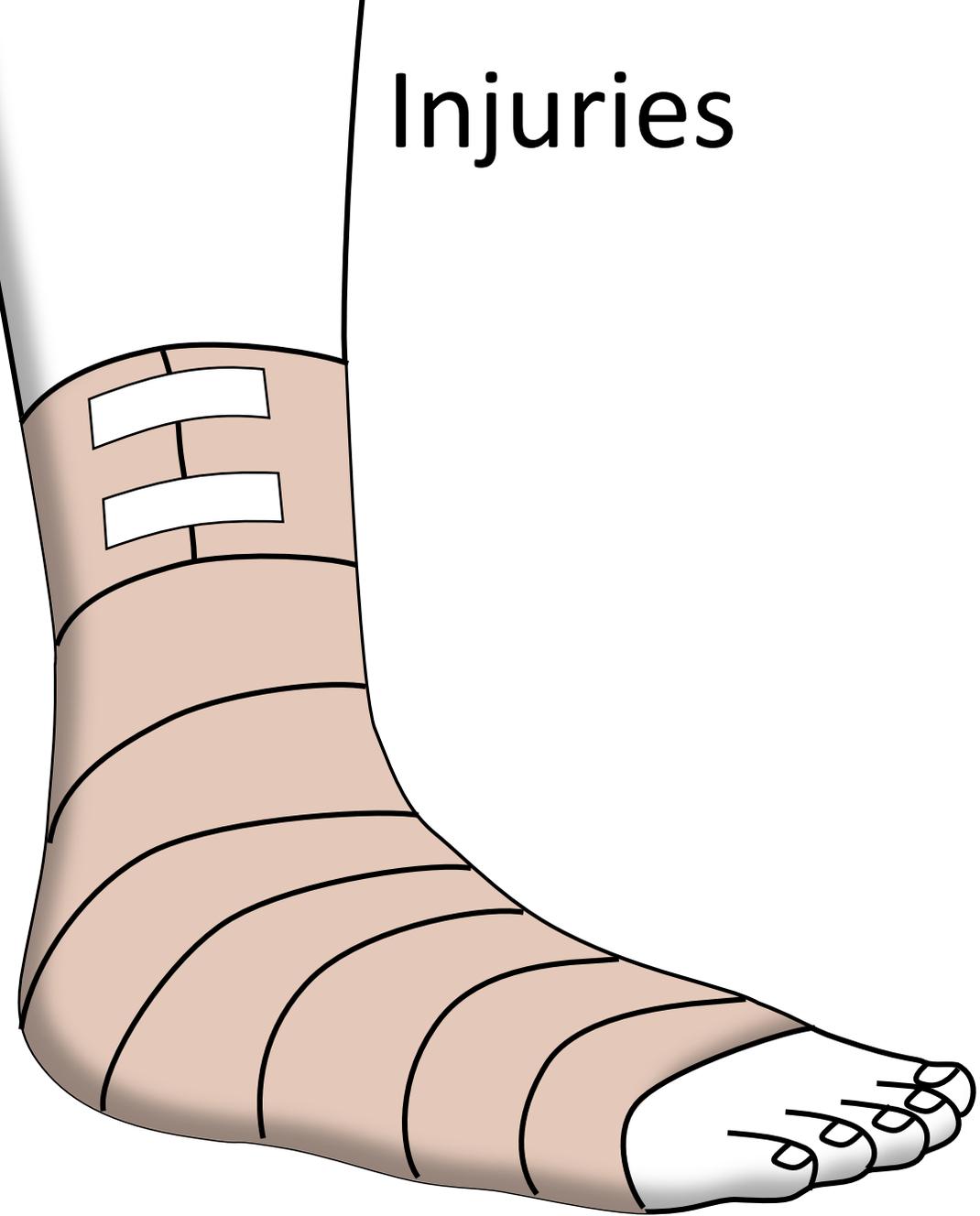
R	Rest	Stop or minimize use of joint
I	Ice	Use ice 20 minutes and repeat throughout day
C	Compression	Elastic bandage to reduce swelling
E	Elevation	Elevate injured area above level of heart if possible



Muscle, Joint and Injuries

Wrapping the Ankle

Demo or [Video](#)





Fast-food for lunch?



Bites and Stings

Bites of Ticks

- Tick bites are irritating and can transmit diseases



Bites and Stings

Bites of Ticks

- **Prevention**
 - Wear pants and long-sleeved shirts in tick infested areas
 - Button up collar
 - Tuck pants in boots or socks



Bites and Stings

Bites of Ticks

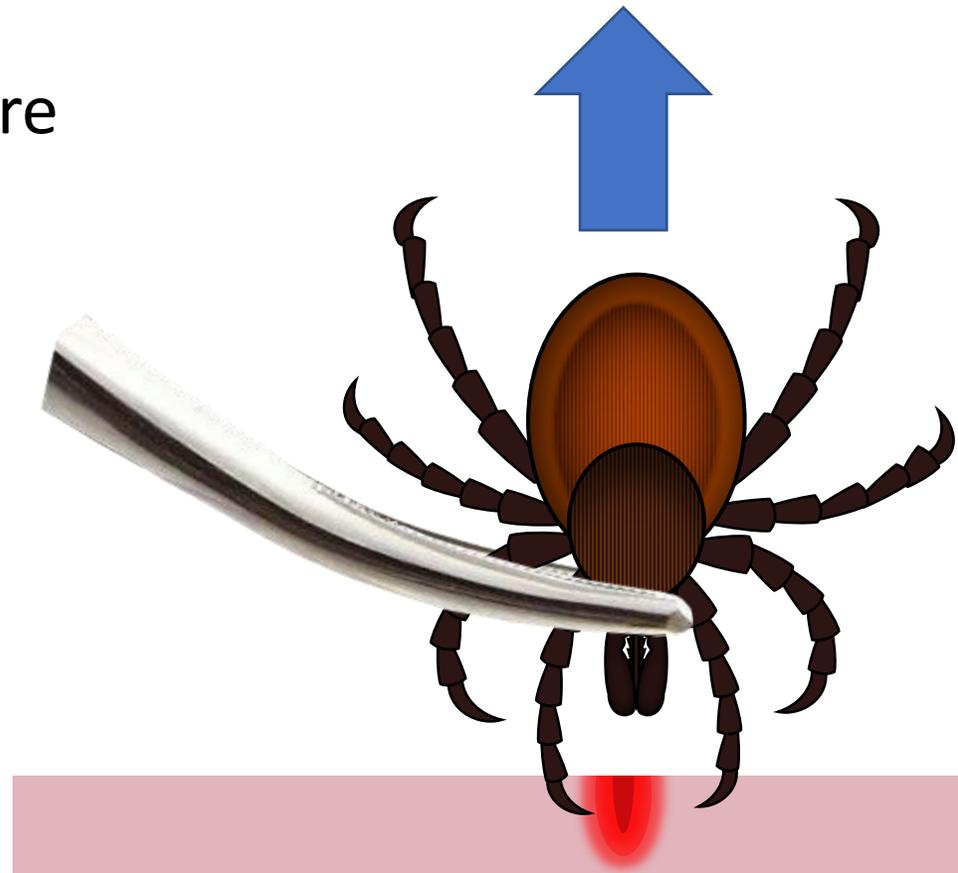
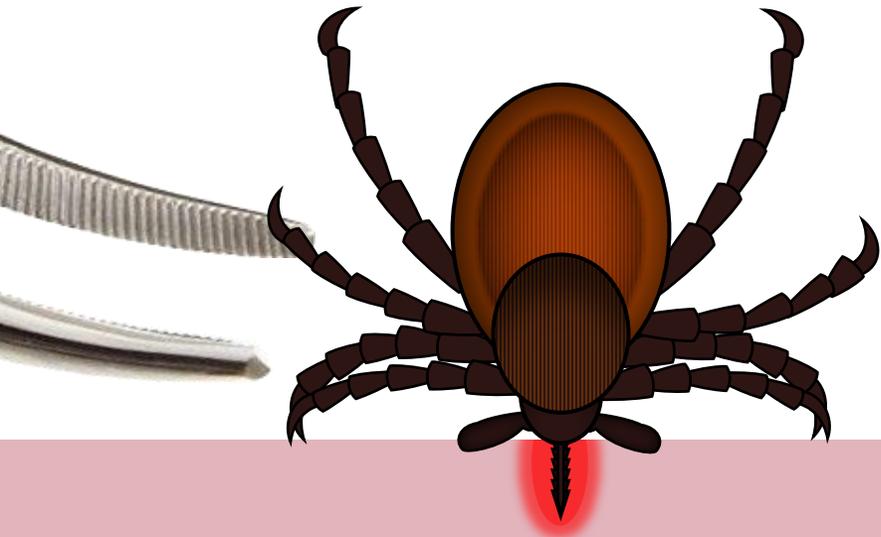
- **First-Aid**
 - Inspect self daily
 - Remove ticks as soon as you find them
 - Wash wound with soap and water
 - Seek medical care if you become sick or develop a rash after bite

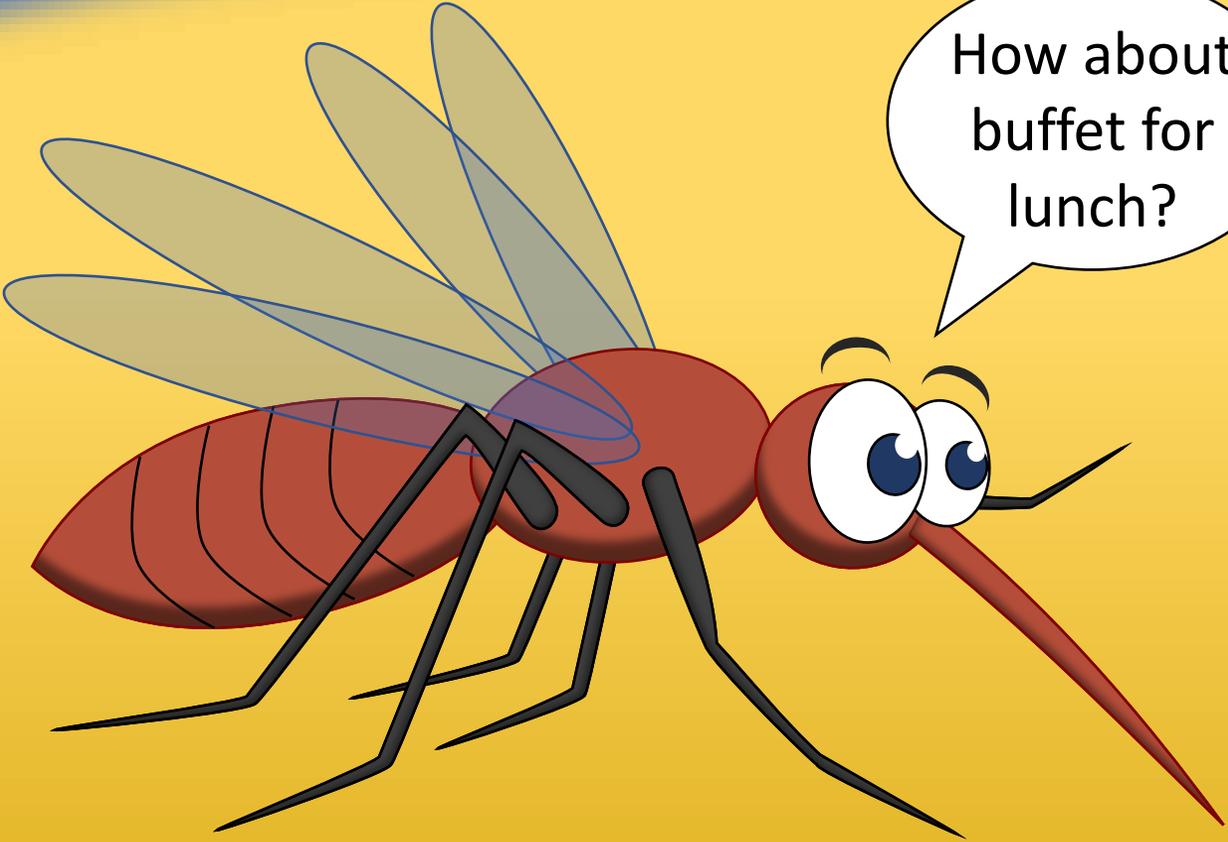


Bites and Stings

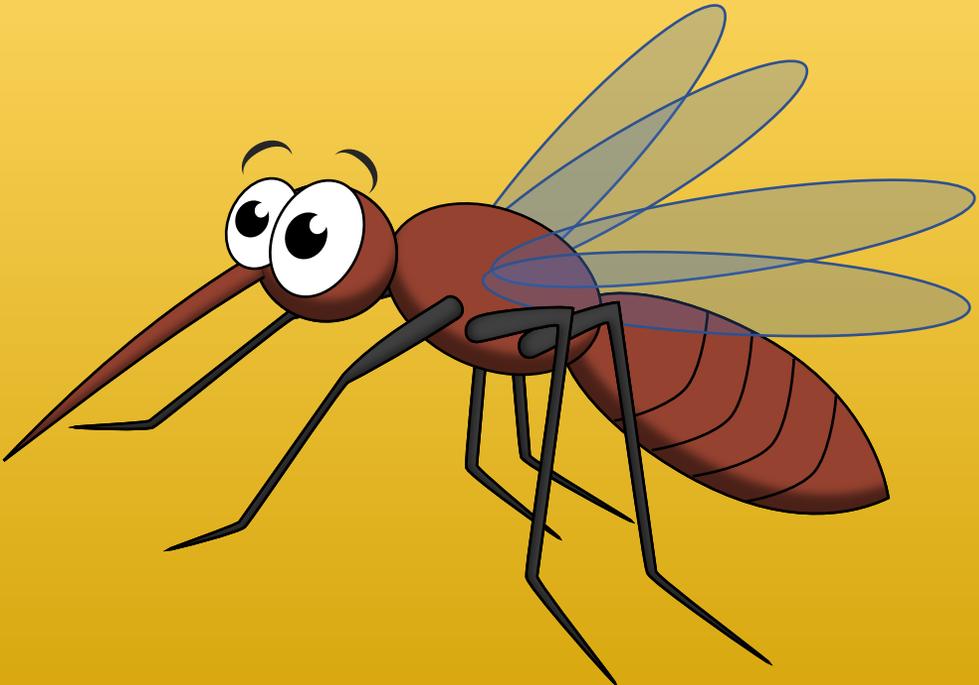
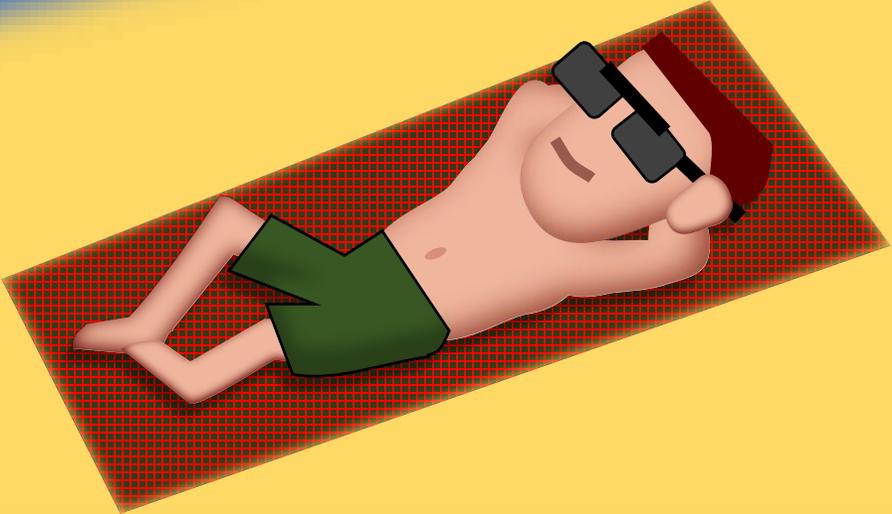
Ticks – Removal – Tweezers

- Use fine-tipped tweezers to grasp the tick close to the skin's surface
- Don't squeeze body
- Pull upward with steady, even pressure
- Don't twist or jerk the tick or the mouth-parts may break off





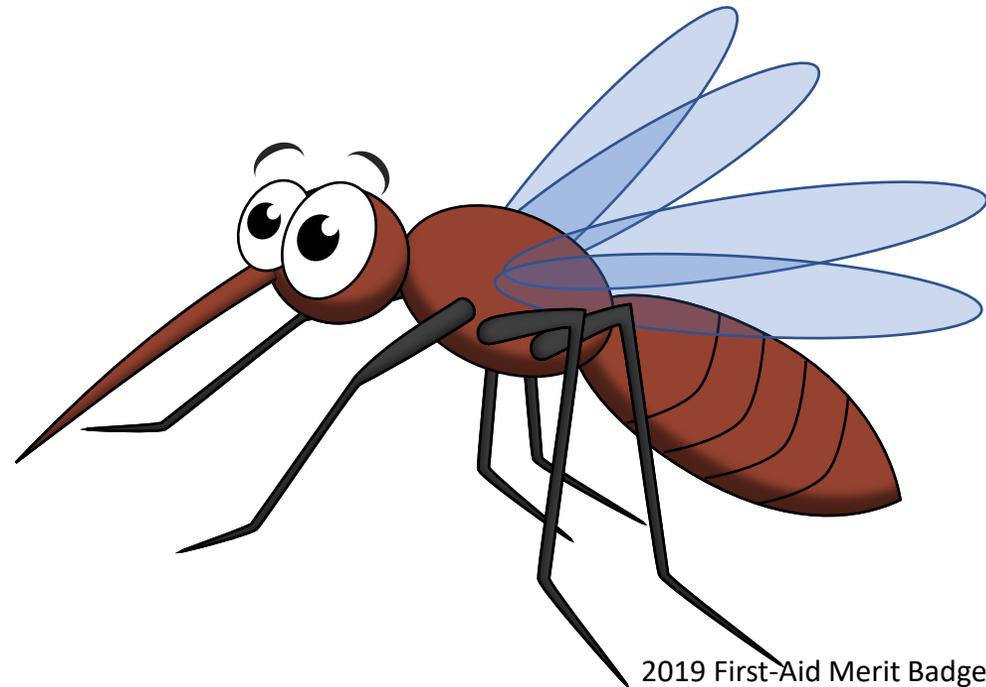
How about buffet for lunch?



Bites and Stings

Bites or Stings of Insects & Things with > 4 Legs

- Bites can itch and irritate
- Some bug bites include venom which cause other problems





Fire Ants in the US



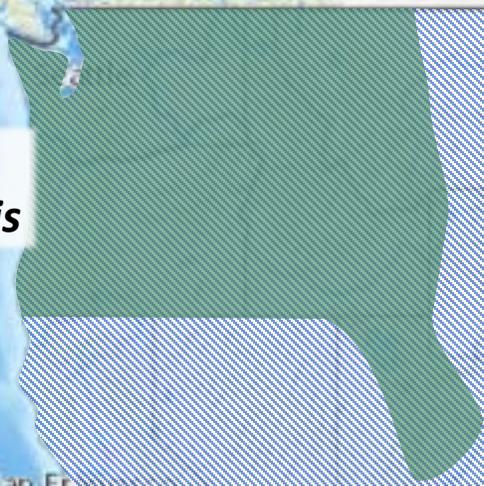
Image Sources:
[cdc.gov/niosh/topics/insects/fireants.html](https://www.cdc.gov/niosh/topics/insects/fireants.html)

USGS Public Domain viewer.nationalmap.gov/advanced-viewer



Dangerous Spiders in the US

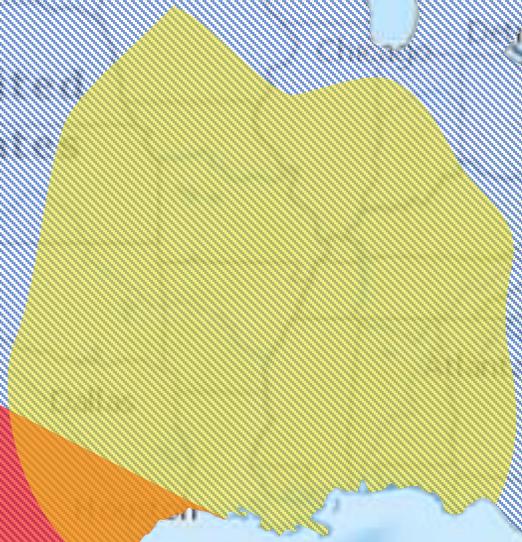
Hobo Spiders
Tegenaria agrestis



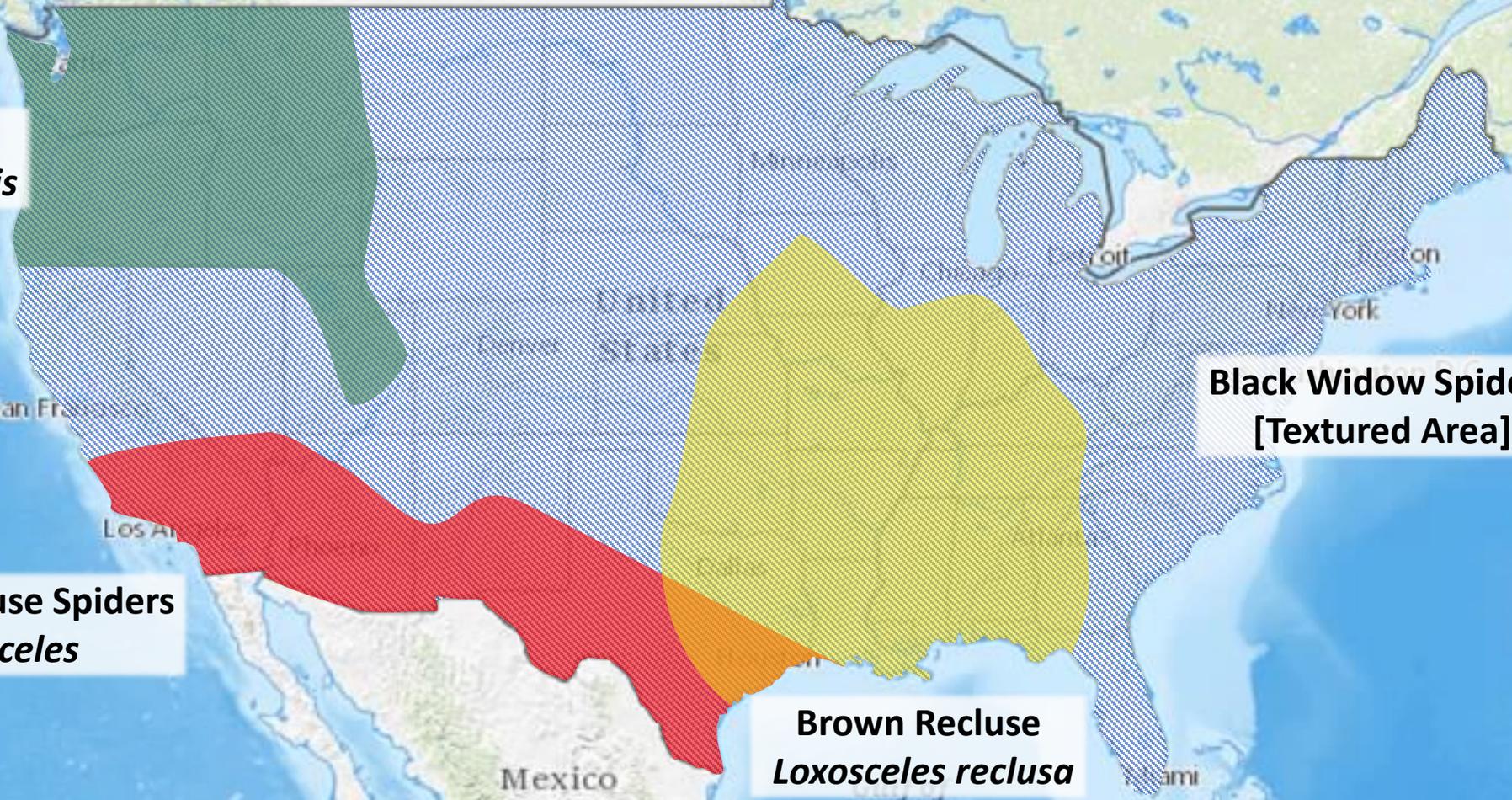
Other Recluse Spiders
Loxosceles



Brown Recluse
Loxosceles reclusa

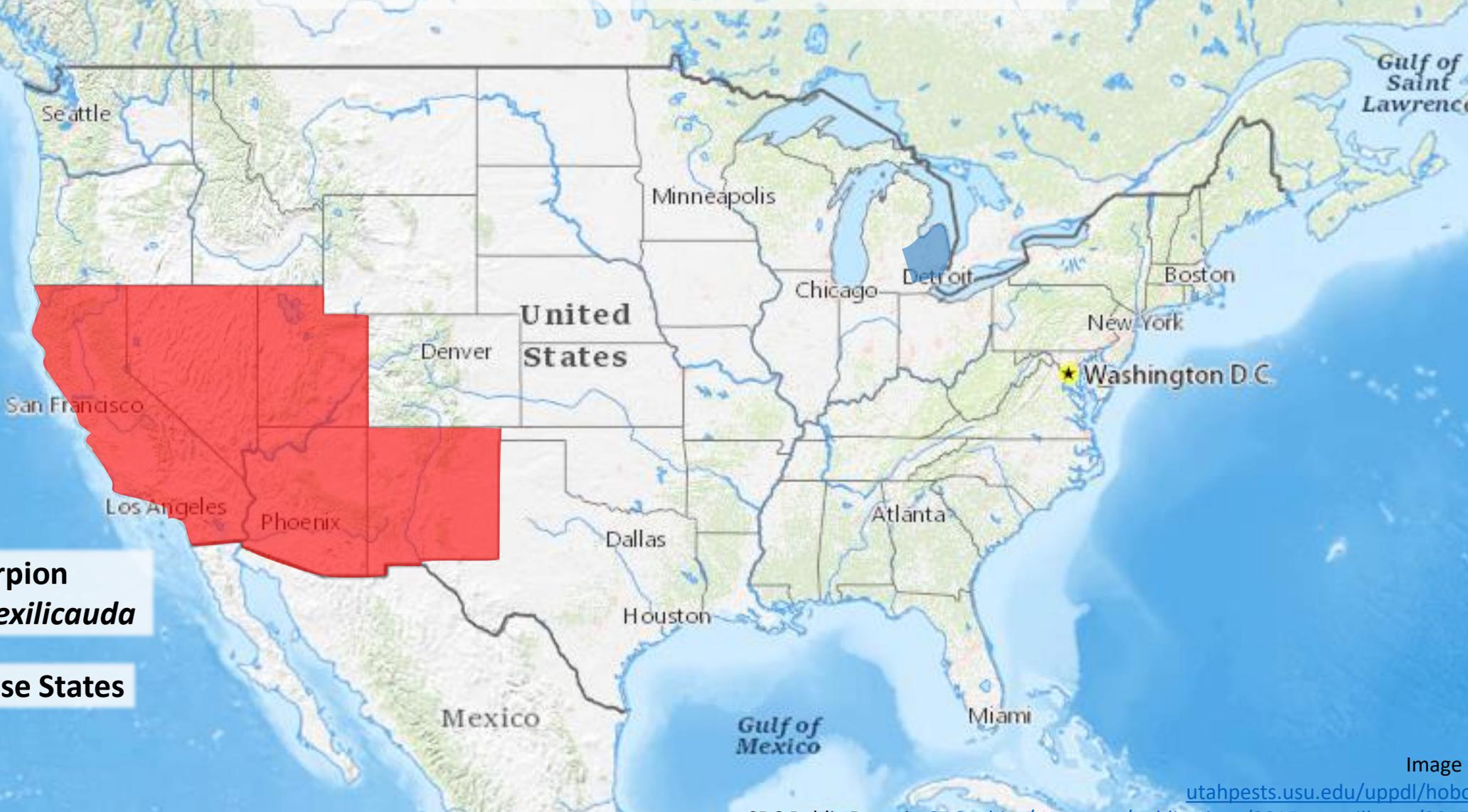


Black Widow Spiders
[Textured Area]





Bark Scorpion in the US

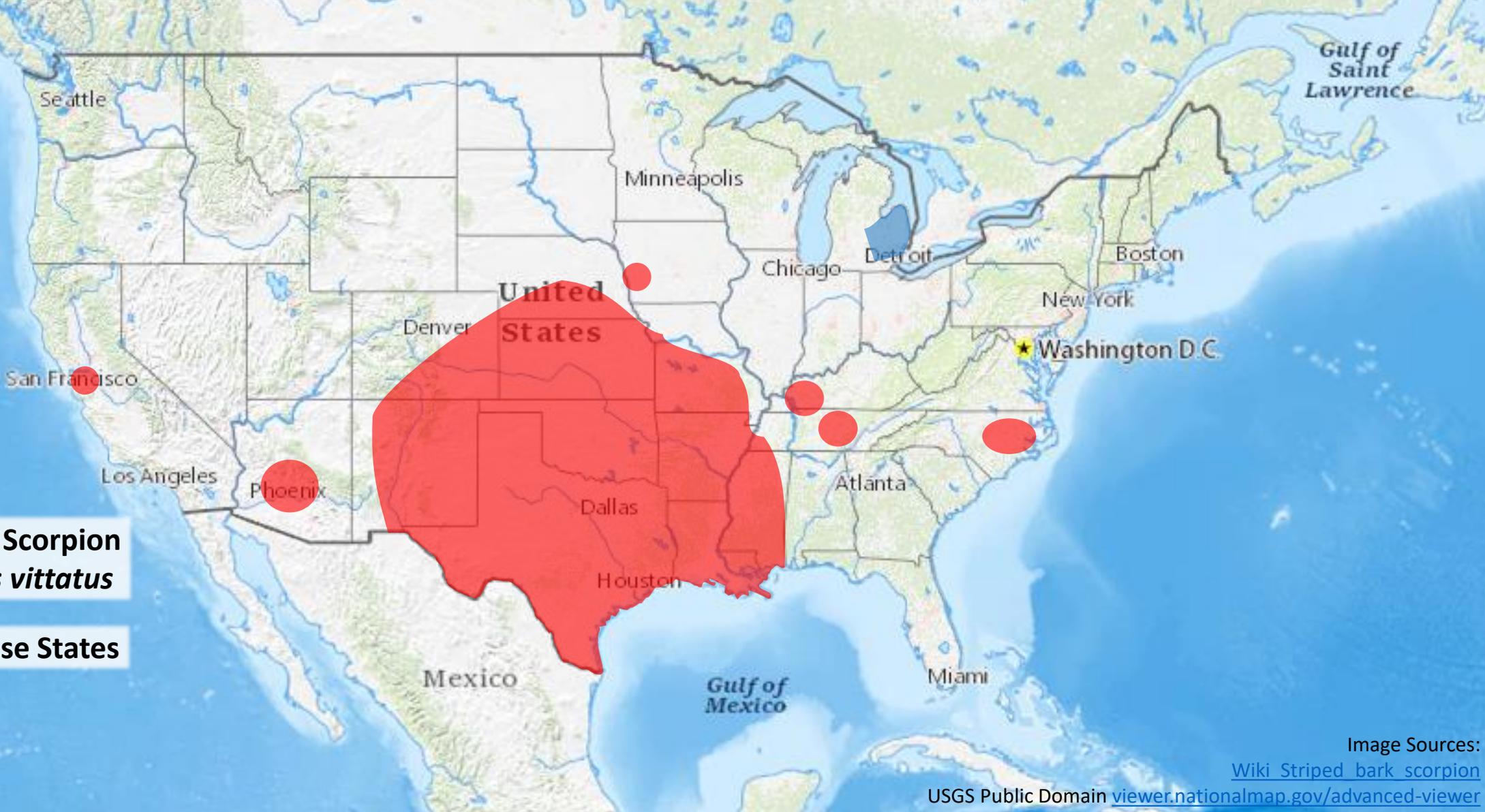


Bark Scorpion
Centruroides exilicauda

Found in these States



Stripped Bark Scorpion in the US



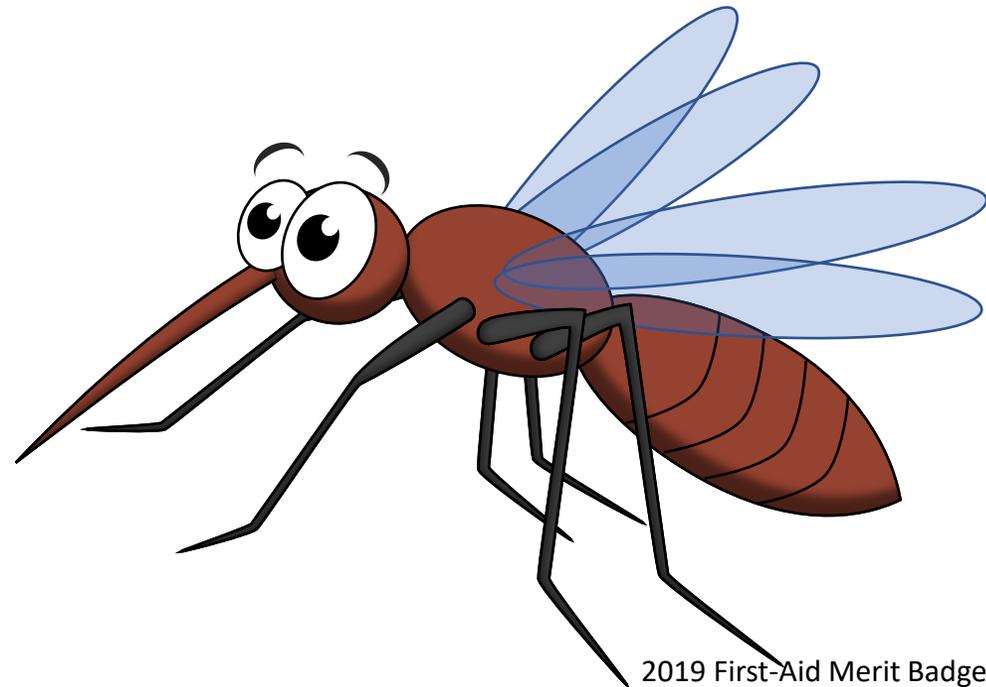
Striped Bark Scorpion
Centruroides vittatus

Found in these States

Bites and Stings

Bites or Stings of Insects & Things with > 4 Legs

- **First-Aid**
 - Wash area with soap and water
 - Watch and treat for Anaphylaxis (discussed later)
 - Avoid scratching bite area
 - Seek medical attention if:
 - Become ill
 - Difficulty breathing
 - Severe pain and swelling



Bites and Stings

Bites or Stings of Insects - Bees

- Bees leave a venom sac behind
- Wasps and hornets can inject venom multiple times
- All REALLY hurt!





Africanized Honey Bees in the US



Bites and Stings

Bites or Stings of Insects - Bees

- **First-Aid**
 - If stinger is left behind, brush off with flat-surfaced object
 - Wash area with soap and water
 - Watch and treat for Anaphylaxis (discussed later)
 - An ice pack is nice



Bites and Stings

Bite of a Suspected Rabid Animal

- Any bite from an animal will place you at risk of infection
- Some mammals carry Rabies – a lethal disease
- Unprovoked attacks from mammals suggests Rabies



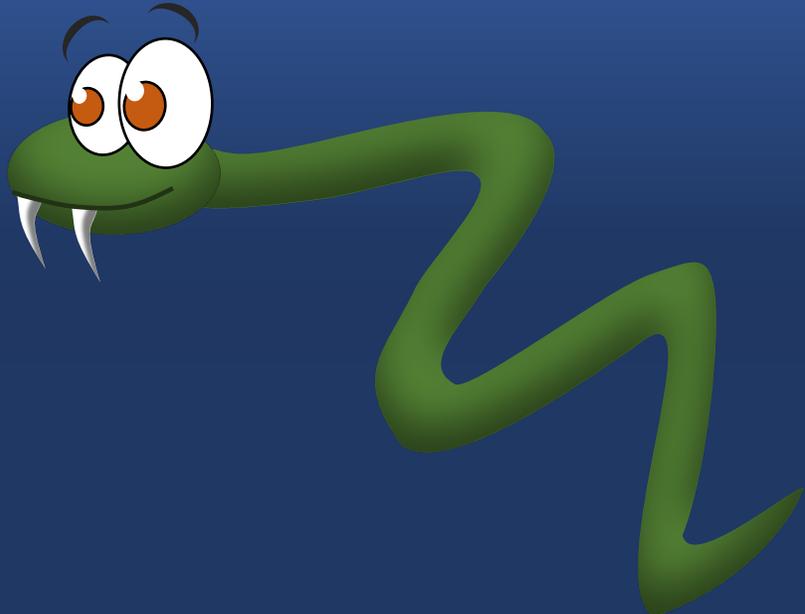
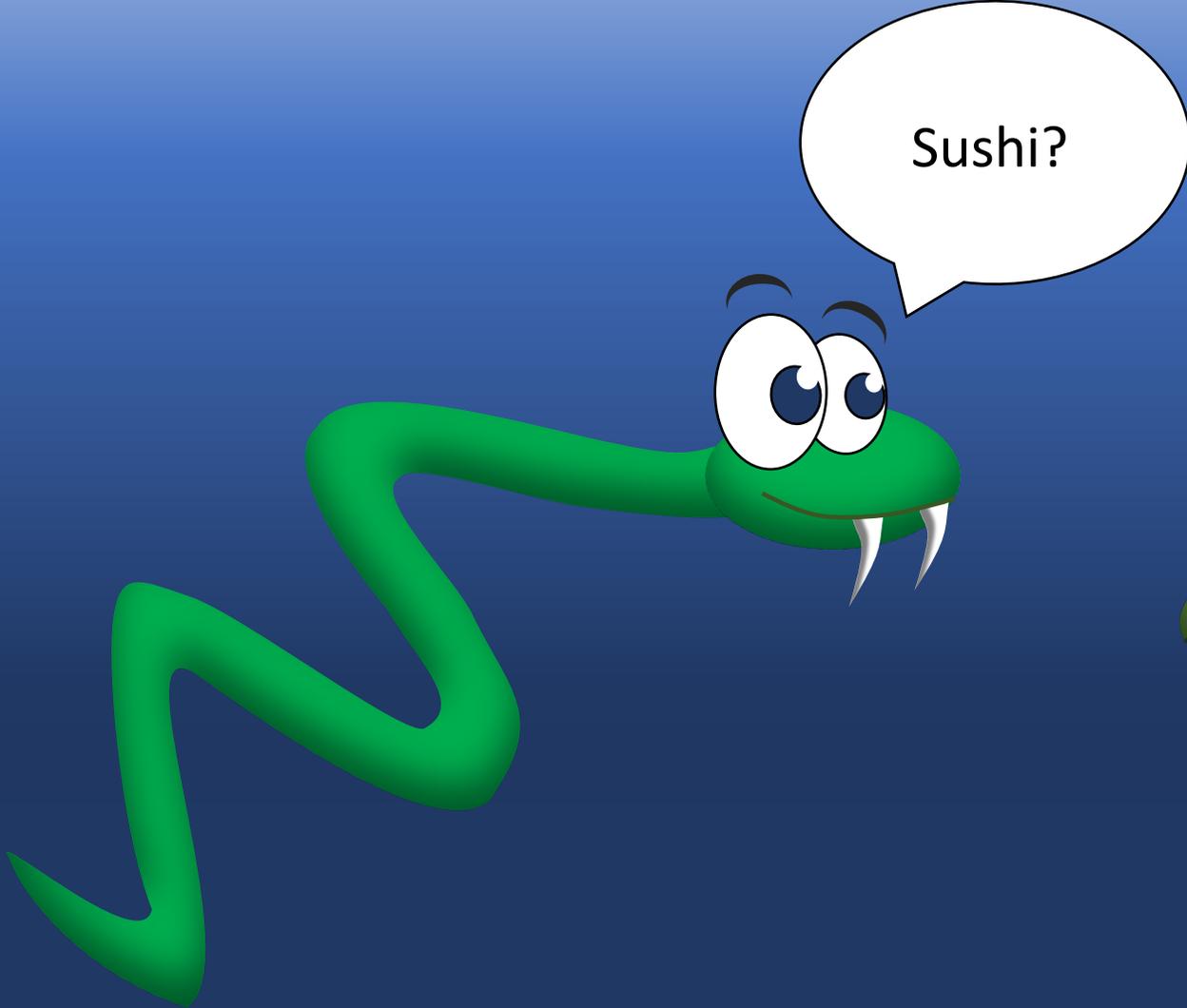
Rabies in the US



Bites and Stings

Bite of a Suspected Rabid Animal

- **First-Aid**
 - Animal needs to be tested for Rabies
 - Report animal bites to police, rangers or animal control
 - Don't try to catch animal yourself, you'll just get bit
 - Scrub area with soap and water for 5 minutes
 - Cover with sterile dressing and bandage
 - Seek medical care to determine if Rabies treatment is needed



Bites and Stings

Venomous Snakebite

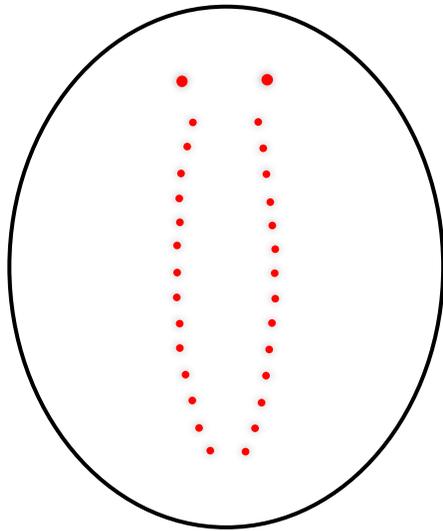
- Venomous snakes in the US come in three basic forms:
 - Pit Vipers
 - Coral Snakes
 - Exotic pet snakes



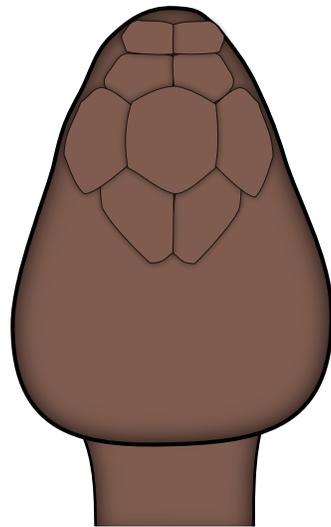
Bites and Stings

Venomous Snakebite – Pit Vipers

- Pit Vipers include:
 - Rattlesnakes
 - Copperheads
 - Cottonmouths



Bite Pattern



Triangular
Head

commons.wikimedia.org Cottonmouth

commons.wikimedia.org Copperhead

commons.wikimedia.org Crotalus cerastes

Image Source: NAVEDTRA 14295 Hospital Corpsman

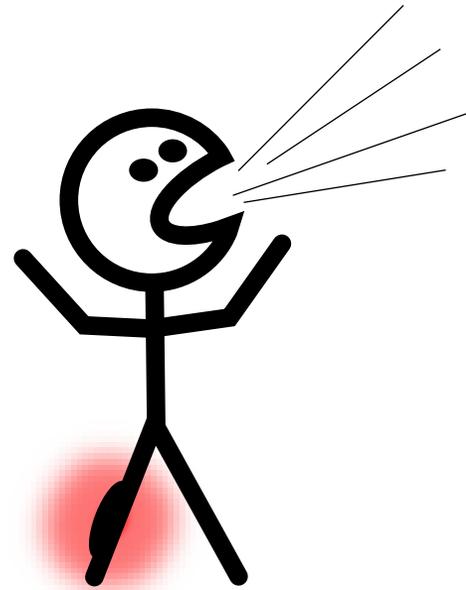
FM 21-11 1988 First Aid

2019 First-Aid Merit Badge Pamphlet Page 77

Bites and Stings

Venomous Snakebite – Pit Vipers

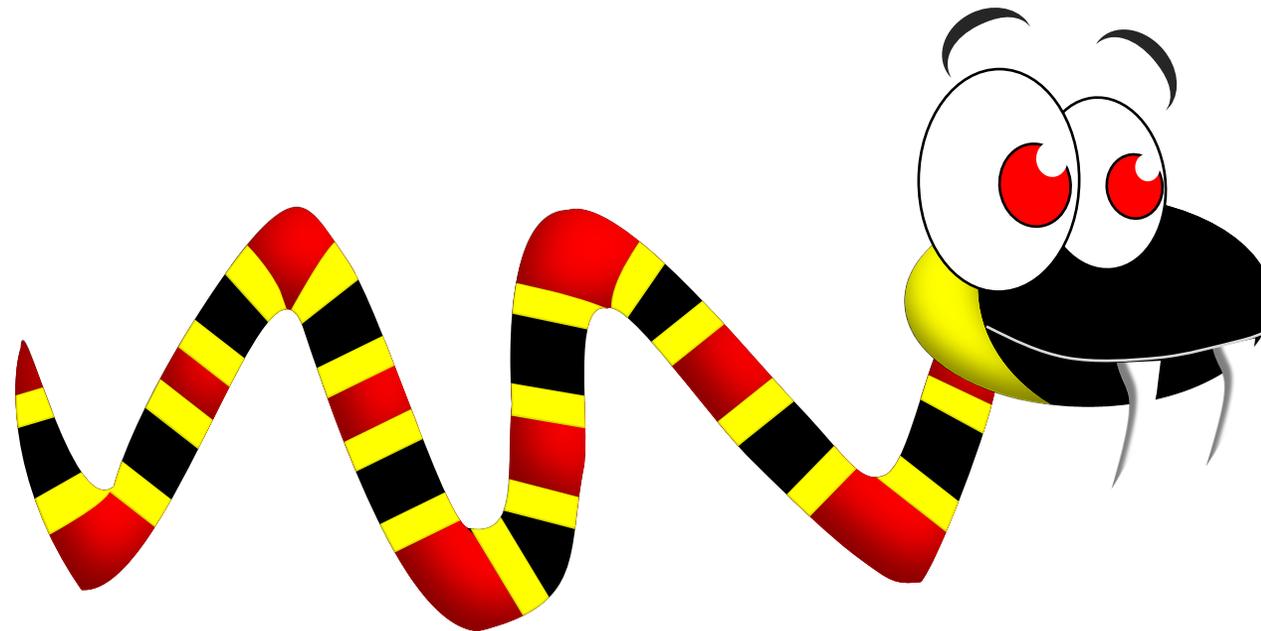
- They inject high volumes of venom that can cause:
 - Extreme pain
 - Swelling
 - Skin discoloration
 - Shock – deadly if not treated



Bites and Stings

Venomous Snakebite – Coral Snake

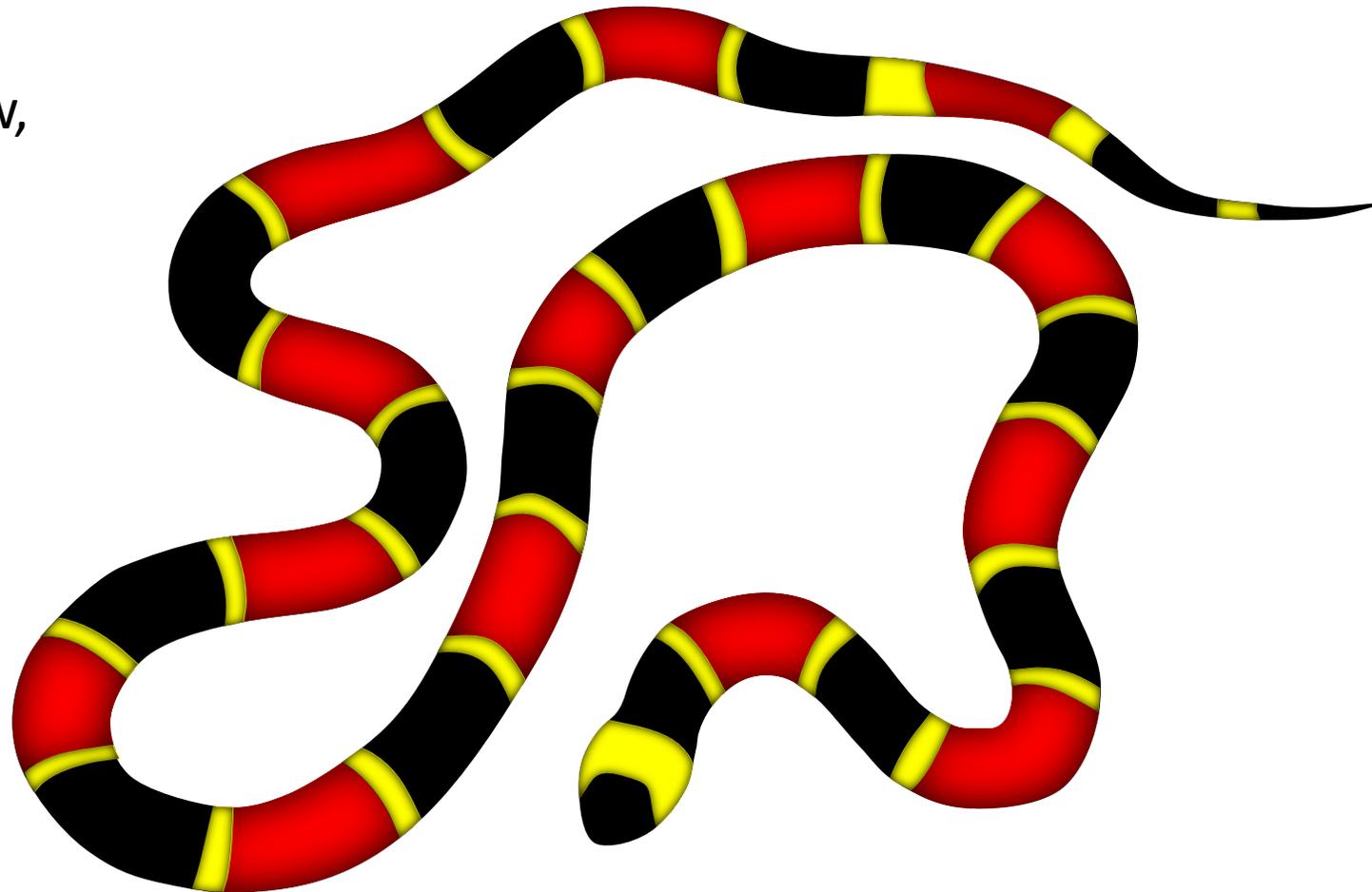
- Coral Snakes are different from Pit Vipers
 - Look very different
 - Smaller with small round head
 - Very colorful – Red, Black and Yellow bands



Bites and Stings

Venomous Snakes – Coral Snakes

Red Touch Yellow,
Kills a Fellow



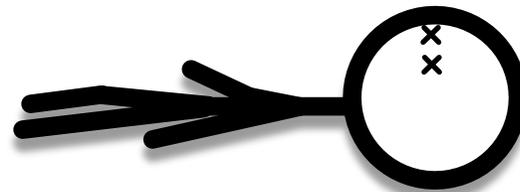
Red Touch Black,
Friend of Jack
(US only!)

Color intensity and banding patterns are variable, even in the US.
In other parts of the Americas, colors can be reversed (red bands adjacent to black bands)!

Bites and Stings

Venomous Snakebite – Coral Snake

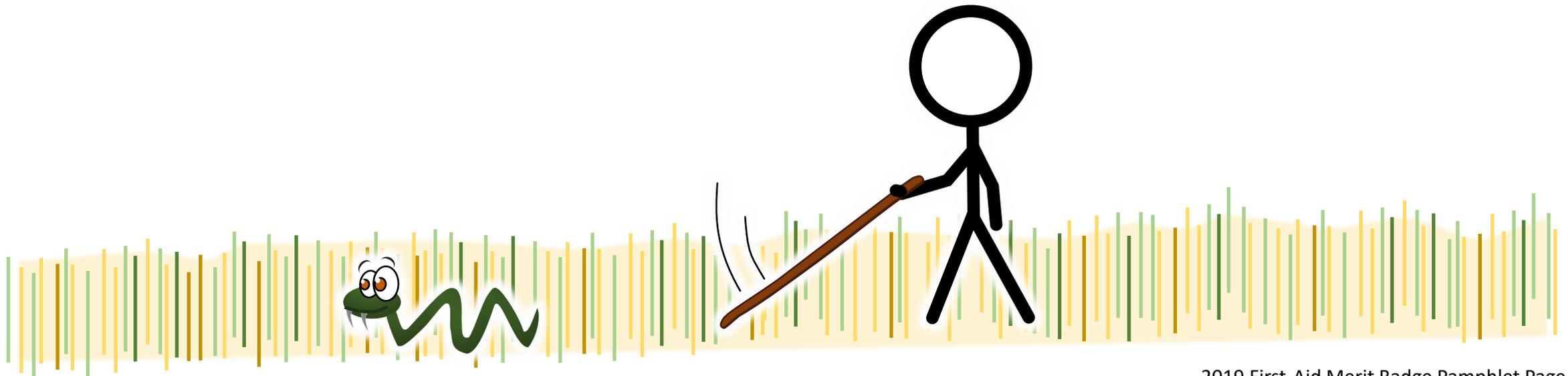
- Coral Snakes are different from Pit Vipers
 - Inject a very different venom
 - Slows physical and mental reactions
 - Sleepiness
 - Nausea
 - Shortness of breath
 - Convulsions
 - Shock
 - Coma



Bites and Stings

Venomous Snakebite – Avoidance

- It is better to avoid getting bitten than to deal with a bite
 - Use hiking stick to poke stones and brush ahead of you
 - Watch hands as you collect firewood or climb over rocks



Bites and Stings

Venomous Snakebite – First-Aid

- Basics of Snakebite First-Aid

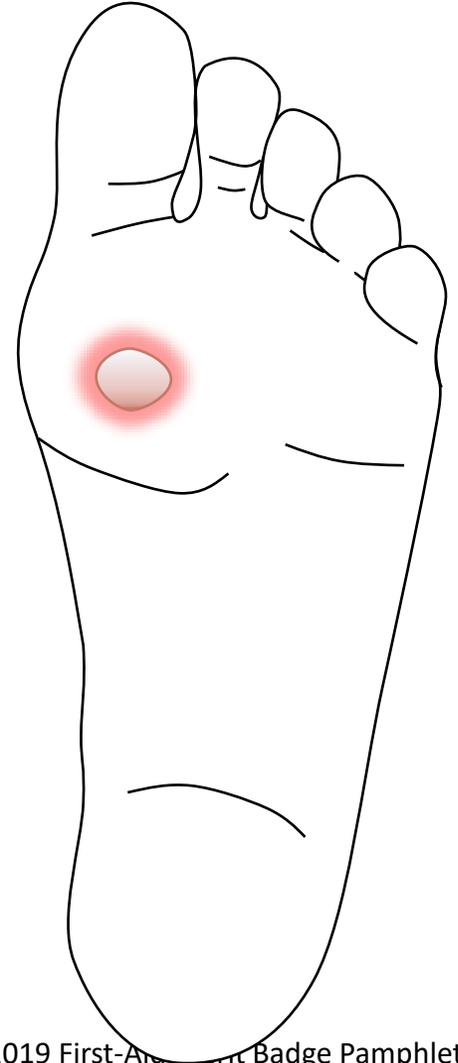
- Step 1** Get victim to hospital AS SOON AS POSSIBLE
Victim may need antivenom
- Step 2** Remove rings and constrictive jewelry
- Step 3** If you are forced to wait for medical care to arrive
the go ahead and wash the wound
- Step 4** Have victim lie down
Position injured area below level of heart
Keep victim calm
- Step 5** Treat for shock



Minor Wounds and Injuries

Blisters on the Hand and Foot

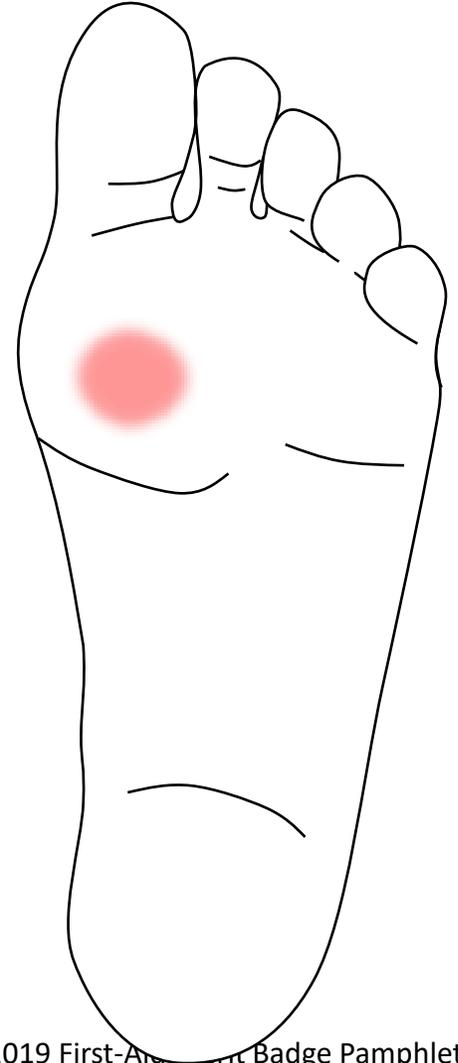
- Often referred to as “Friction Blisters”
- Blisters may form on hands if doing heavy or repetitive work
- Foot blisters are a common backpacking injury



Minor Wounds and Injuries

Blisters on the Hand and Foot – Hot Spot

- **Hot Spot** – tender area before blister begins to form
 - Stop immediately!
 - Treat this before it becomes a blister



Minor Wounds and Injuries

Blisters on the Hand and Foot – Hot Spot

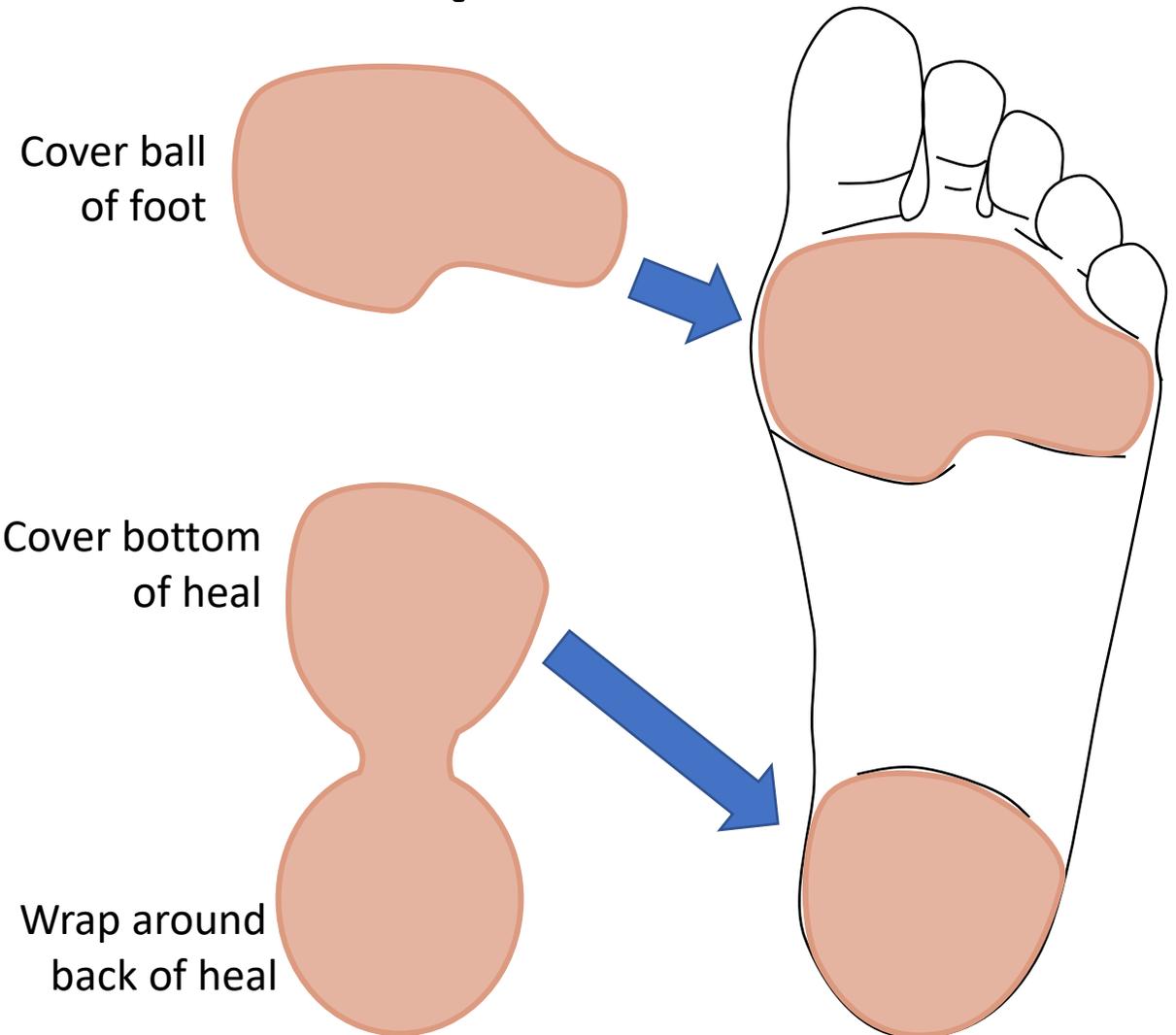
- **Hot Spot First-Aid**

Know your feet

Know your Hot Spots

Moleskin **BEFORE**
and prevent blisters

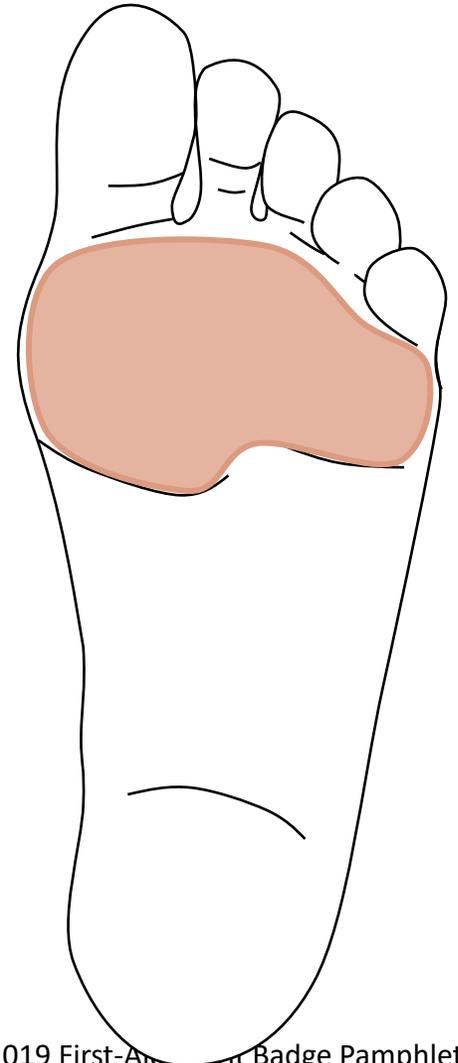
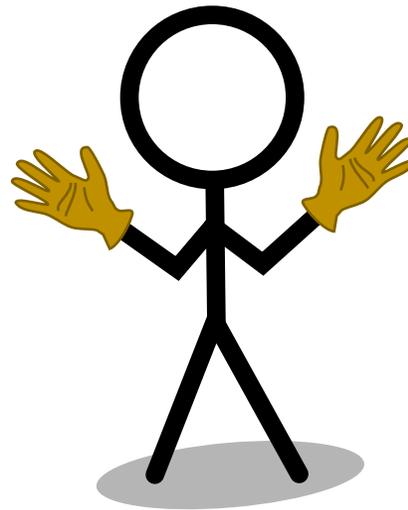
No Wrinkles!



Minor Wounds and Injuries

Blisters on the Hand and Foot

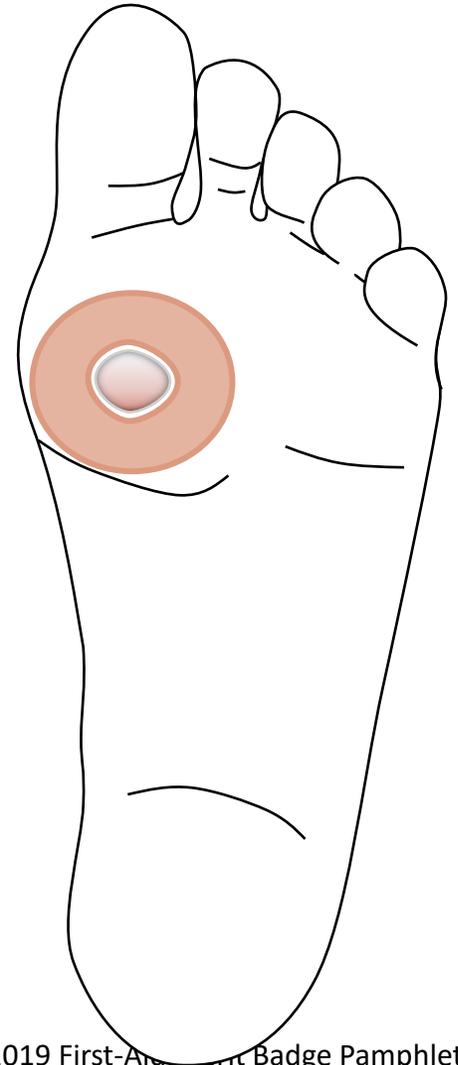
- **Prevention - Hand**
 - Wear gloves when working
- **Prevention - Foot**
 - Wear shoes or boots that fit
 - Change socks if become wet or sweaty
 - Treat Hot Spots early



Minor Wounds and Injuries

Blisters on the Hand and Foot

- **First-Aid**
 - Moleskin donut around blister
 - This reduces pressure on blister
 - Special blister products can help
 - SecondSkin
 - Blist-O-Ban





Minor Wounds and Injuries

Blisters on the Hand and Foot - Special

- **Expanding Blister**
 - If you must continue to walk with a blister, it may expand or rupture
 - At times, it will be better to preemptively drain it
 - This needs to be done as cleanly as possible
 - There is still a risk of infection as drainage creates an entrance through the skin

Minor Wounds and Injuries

Blisters – Drainage

- Clean, Decompress and Dress

Clean Area

- Soap and water is fine
- Betadine is better
- Wipe with alcohol

Sterilize Needle

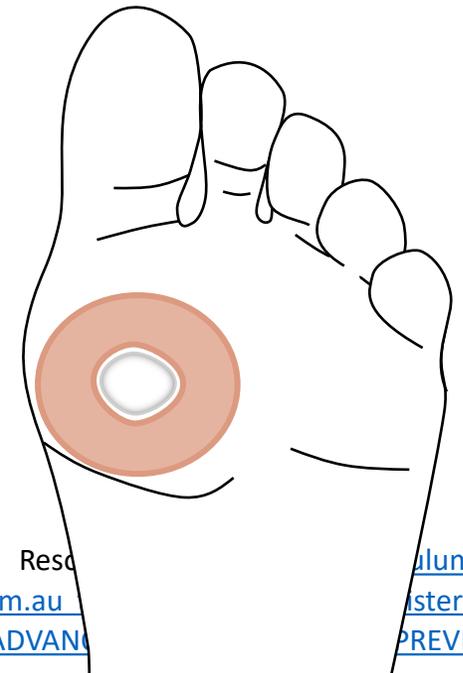
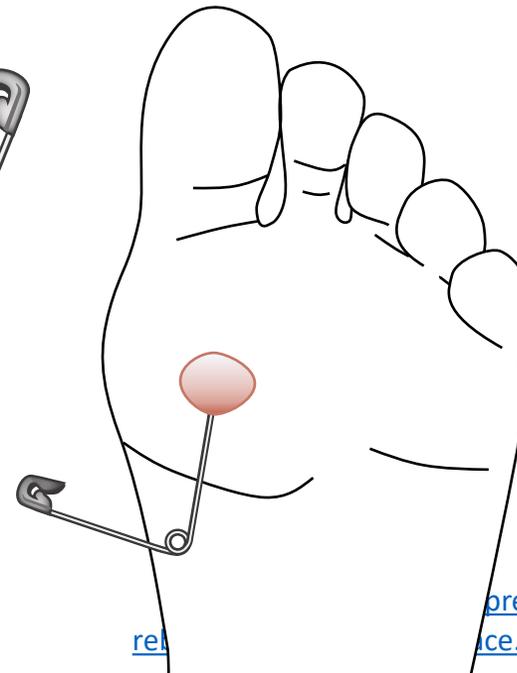
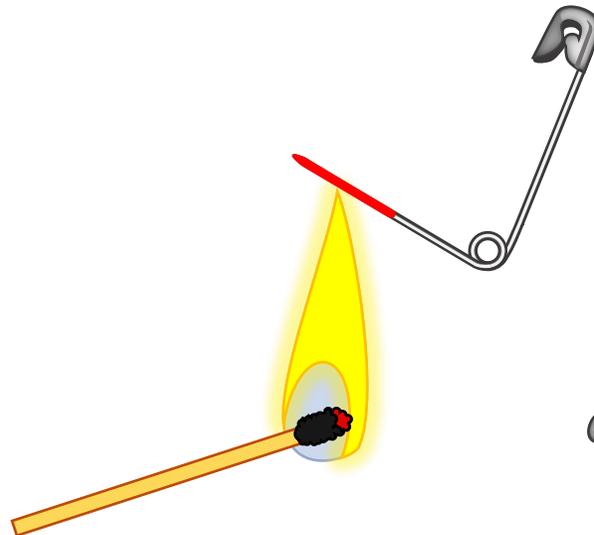
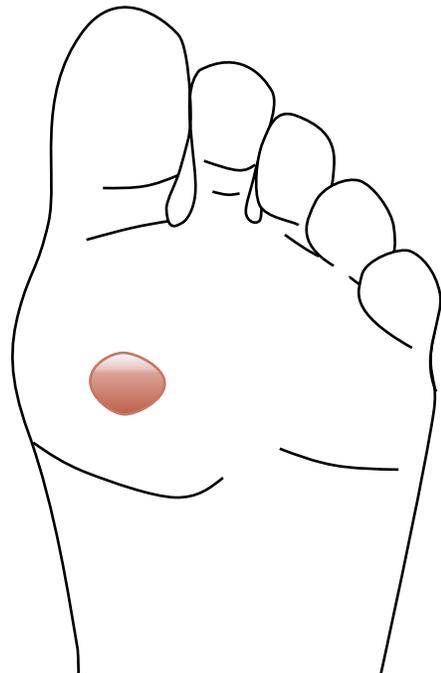
- Heat until red
(and allow to cool)
- or Use rubbing alcohol

Pierce Blister

- Pierce base of blister
- Make one or more holes
- Avoid Cutting with knife

Cover Blister

- Ideally first use Paper Tape
- then Tincture of Benzoin
- then Moleskin or Flex Tape

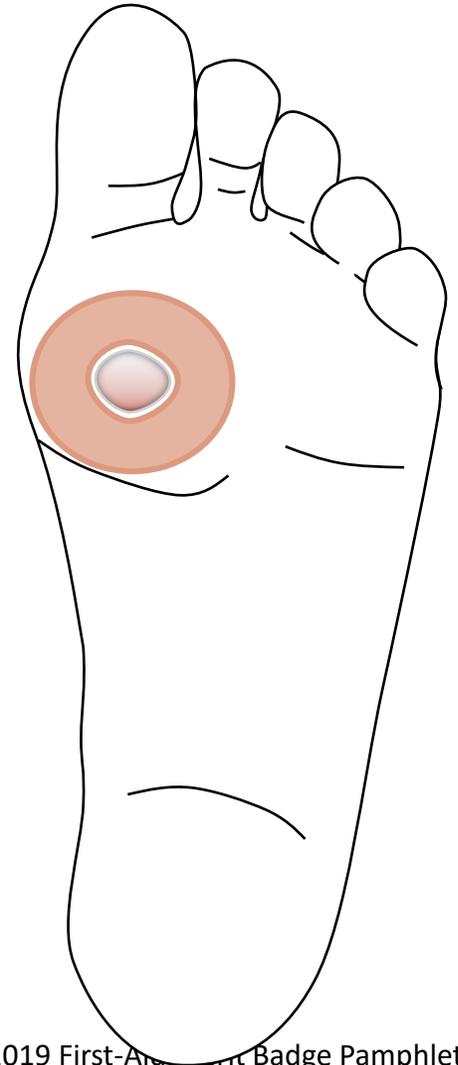




Minor Wounds and Injuries

Blisters on the Hand and Foot - Special

- **Ruptured Blisters**
 - Blisters should be kept intact if possible
 - Ruptured blisters are at high risk of infections
 - **First-Aid** – keep them clean and treat as a cut





Minor Wounds and Injuries

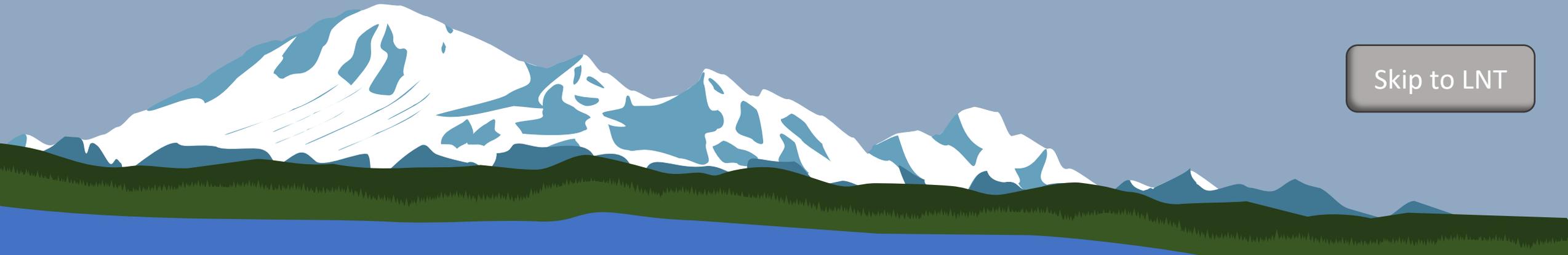
Blisters on the Hand and Foot - Special

- **Blister or open wound of foot and Diabetes**
 - People with diabetes are at risk of severe complications
 - They should follow up with a medical provider if they have a wound on their foot

1. Hiking Merit Badge Requirements	11. Leave No Trace
2. Backpacking Merit Badge Requirements	12. Hiking Philosophy
3. Camping Merit Badge Requirements	13. Preparation
4. Merit Badge Intro	14. Hiking - Getting Out There
5. Hazards	15. Backpacking - Getting Out There
6. First Aid	16. Camping - Getting Out There
7. Gear	17. Final Thoughts
8. Water	18. Resources
9. Food	19. Instructor's Corner
10. Navigation	



Gear



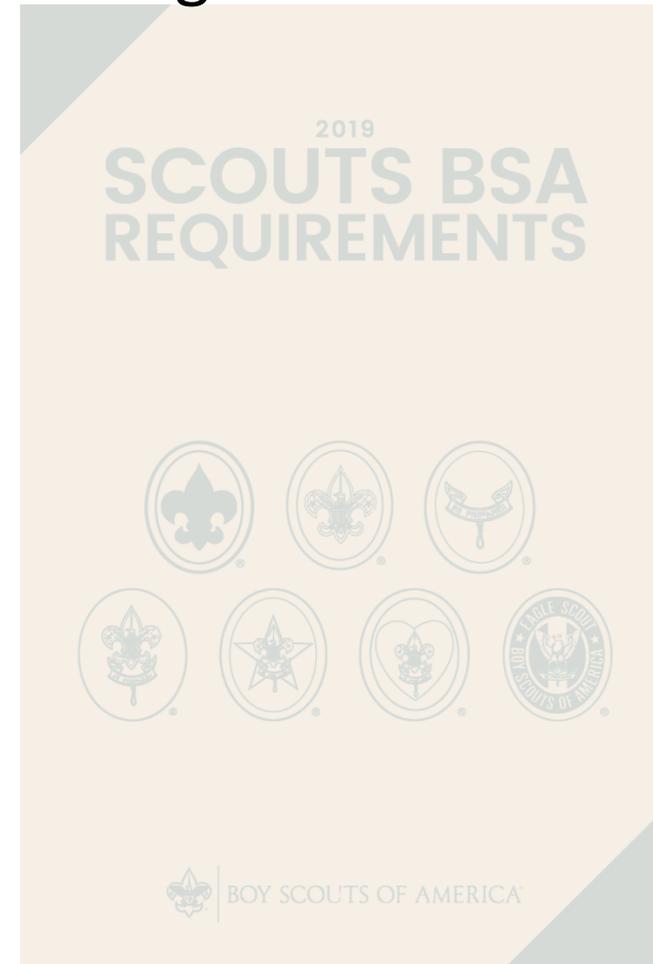
Skip to LNT

Gear

Requirement B2a – Outdoor 10-Essentials

List 10 items that are essential to be carried on any backpacking trek and explain why each item is necessary.

Complete and Fill out Workbook

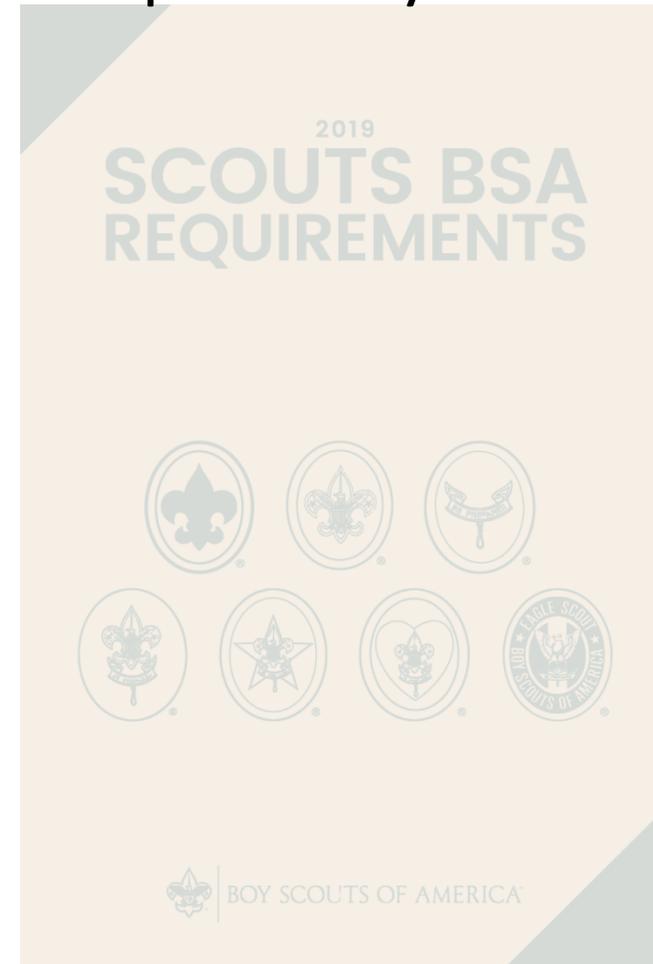


2018 Requirements

Requirement C4d – Gear – Outdoor 10-Essentials

List the outdoor essentials necessary for any campout, and explain why each item is needed.

Complete and Fill out Workbook



Gear

Outdoor 10-Essentials

- Several different versions
- We use the BSA version

Gear

Outdoor 10-Essentials

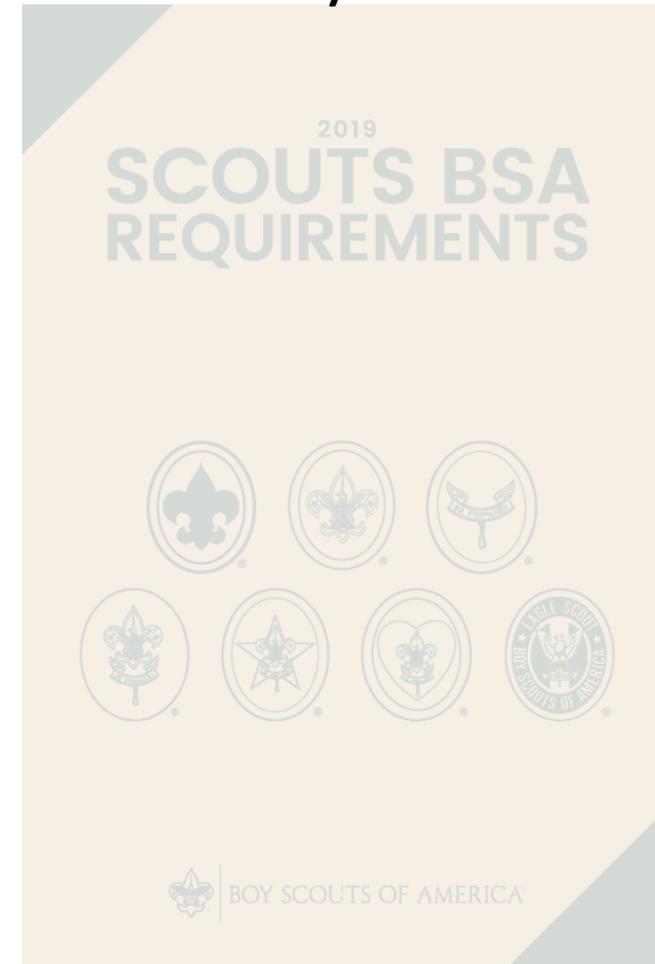
- Pocketknife
- First-Aid Kit
- Extra Clothing
- Rain Gear
- Water Bottle
- Flashlight
- Trail Food
- Matches and Fire Starters
- Sun Protection
- Map and Compass

Gear

Requirement B2b – How/What to Pack

Describe 10 ways you can limit the weight and bulk to be carried in your pack without jeopardizing your health or safety.

Complete and Fill out Workbook



Gear

What/How to Pack

- Consider what you need
 - Backpack
 - Sleep System
 - Sleeping Pad
 - Shelter
 - Clothing
 - Food and Cooking gear
 - Other gear
 - Toiletry Kit

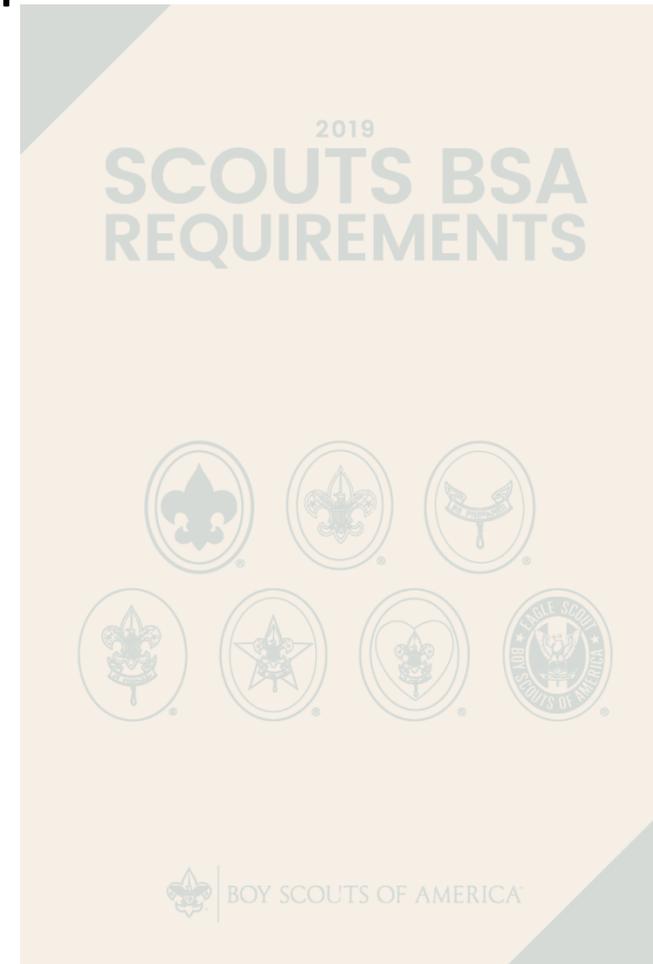
Gear

Requirement C6d – Backpacks

Tell the difference between internal- and external-frame packs.

Discuss the advantages and disadvantages of each.

Complete and Fill out Workbook



Gear

What/How to Pack – Backpack

- Backpack
 - Needs to carry all of your gear
 - Needs to fit you
 - It doesn't matter how cool it is if it doesn't fit
 - Various types
 - Internal Frame
 - External Frame
 - Trailers and carts
 - Pulk
 - Travois

Gear

What/How to Pack – Backpack

- Backpack – External Frame
 - Comfortably carries heavy loads
 - Lot of pockets
 - Pack stuff outside of pack
 - Can be damaged if thrown
 - Care when unloading gear
 - Checked luggage?
 - Needs special protection



Gear

What/How to Pack – Backpack

- Backpack – Internal Frame
 - Uses frame built into pack
 - Easy to pack
 - In a canoe
 - Checked luggage is fine
 - Just protect straps
 - Hugs body – better balance
 - Mountaineering
 - Skiing



Gear

What/How to Pack – Backpack

- Backpack weatherproofing
 - Most are not waterproof
 - Use rain cover or
 - Trash bag inside to waterproof gear

Gear

What/How to Pack – Backpack

- Backpack Size
 - 2,500-3,000 Cubic Inches
 - Large Daypack
 - Overnight for warm weather
 - 3,000-4,500 Cubic Inches
 - 3 season
 - 2–3-day trip
 - 4,500-6,000 Cubic Inches
 - Trips lasting several days or more

Gear

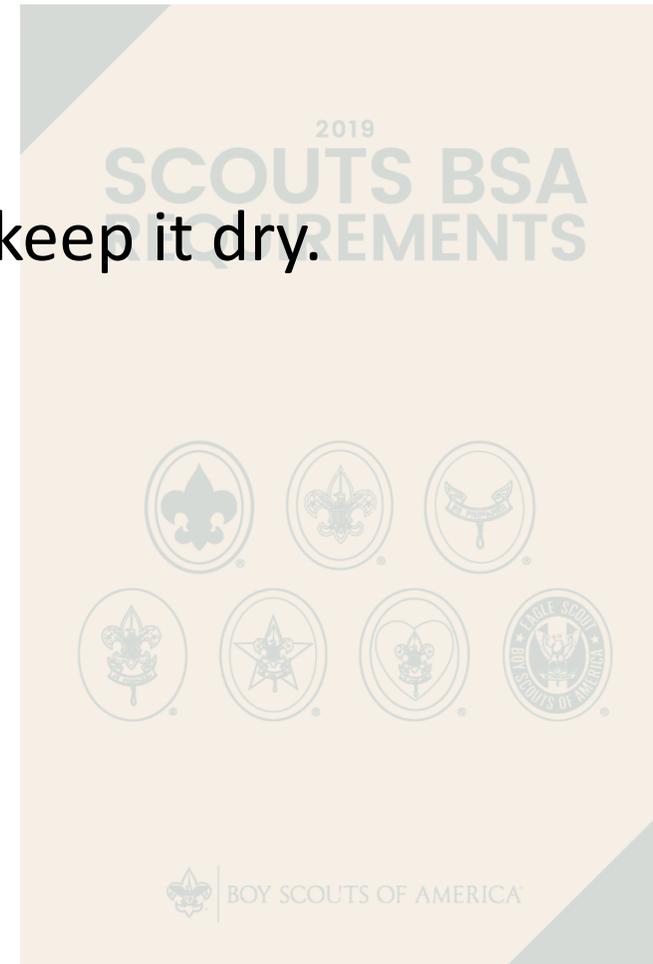
Requirement C6e – Sleeping Bag

Discuss the types of sleeping bags and what kind would be suitable for different conditions.

Explain the proper care of your sleeping bag and how to keep it dry.

Make a comfortable ground bed.

Complete and Fill out Workbook



Gear

What/How to Pack – Sleep System

- Sleep System
 - Determined by
 - Temperatures
 - Wetness
 - How you like to sleep

Gear

What/How to Pack – Sleep System

- Sleep System - Fill
 - Fill and construction will determine temperature rating
 - Rating system is NOT universal
 - **Down**
 - Lightest weight
 - Packs small
 - Expensive
 - Useless if wet
 - **Synthetic**
 - Retains some insulation when wet
 - Dries reasonably fast
 - Preferred in PNW

Gear

What/How to Pack – Sleep System – Protect it

- Sleep System - Protection
 - Your sleep system is vital for keeping you alive at night
 - You must protect your system for wetness
 - Waterproof
 - Ideally pack inside pack in a waterproof bag if possible
 - or line stuffsack with garbage bag if storing bag outside of pack



Gear

What/How to Pack – Sleep System

- Sleep System – Alternate
 - Non-sleeping bag systems are available
 - Quilt
 - Only insulated above body
 - Theory – fill under body is crushed and loses insulation value
 - Must be used with sleeping pad
 - Poncho liner or blanket
 - Option in environments that stay reasonable warm/hot at night

Gear

What/How to Pack – Sleeping Pad

- Sleeping Pad
 - Insulates you from cold ground
 - Protects you from rocks and bumps

Gear

What/How to Pack – Sleeping Pad

- Sleeping Pad - types
 - **Foam**
 - Can be a challenge to pack
 - Durable
 - Cheap
 - **Self-Inflating**
 - Maximum insulation per weight
 - Roll tight to squeeze out air and reduce packed size
 - Allow to self inflate when possible
 - Blowing in mat adds moisture = mildew
 - Can be damaged by sharp sticks
 - Pack an innertube repair kit

Gear

What/How to Pack – Sleeping Pad

- Sleeping Pad - Pillow
 - Stuff extra clothing in bag

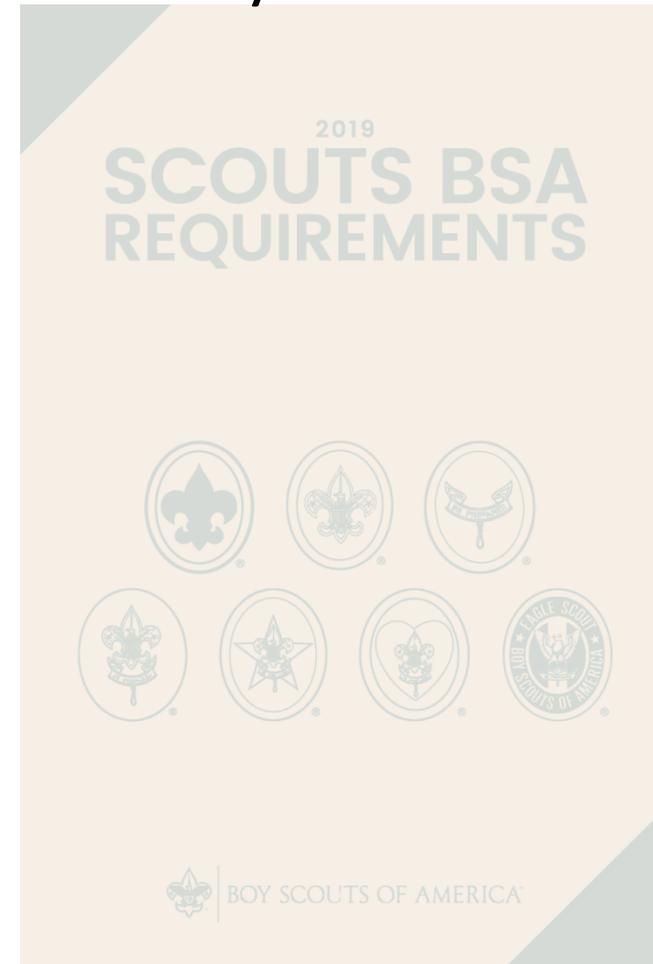
Gear

Requirement C6a - Tents

Describe the features of four types of tents, when and where they could be used, and how to care for tents.

Working with another Scout, pitch a tent.

Complete and Fill out Workbook



Gear

What/How to Pack – Shelter

- Shelter
 - Serves several functions
 - Protects you from wind
 - Protects you from rain and sun
 - Traps in warm air
 - Keeps gear cleaner
 - Privacy
 - Provides some sense of security for those who travel this way

Gear

What/How to Pack – Shelter

- Shelter - Types
 - **Tarp**
 - Lightweight and very packable
 - Requires skill to set up
 - **Tents**
 - Heaviest option
 - Generally most comfortable
 - **Snow Shelters**
 - Difficult to setup
 - Often warmest snow camp option
 - **Wilderness Shelters**
 - Requires resources, time and expertise to setup – results vary

Gear

What/How to Pack – Shelter

- Shelter - Tents
 - Tents are the most popular type of shelter
 - Quality and construction varies a LOT
 - Many are designed for car camping
 - Too heavy and bulky for backpacking
 - 3-season tents are usually lighter
 - Ventilated to reduce condensation
 - Cold in winter
 - 4- season tents are usually heavier
 - Better wind protection

Gear

Types of Tents

- Per the Camping Merit Badge Pamphlet
 - Tarps
 - A-Frames
 - Domes Tent
 - Hybrid Tent
 - Breathable Tents
 - Wall Tents

Gear

Types of Tents

- Per the Camping Merit Badge Pamphlet
 - **Tarps**
 - Very Lightweight
 - Multiple configurations
 - Drafty



Gear

Types of Tents

- Per the Camping Merit Badge Pamphlet
 - **A-Frames**
 - Simple Design
 - Easy to manufacture



Gear

Types of Tents

- Per the Camping Merit Badge Pamphlet
 - **Domes Tent**
 - Usually 2-walled construction



Main Dome



Rain Fly

Gear

Types of Tents

- Per the Camping Merit Badge Pamphlet
 - **Hybrid Tent**
 - Mix of styles



Gear

Types of Tents

- Per the Camping Merit Badge Pamphlet
 - **Breathable Tents**
 - Single walled
 - Special fabric
 - Expensive
 - Light weight
 - Stuffy



Gear

Types of Tents

- Per the Camping Merit Badge Pamphlet
 - **Walled Tents**
 - Large
 - Heavy
 - Option for groups



Gear

What/How to Pack – Clothing

- Pack for the weather
- Pack for night temperatures
 - Mountains and desert get cold at night!
 - Usually not active at night – so need more insulation
- Plan for rain – can be deadly if you are not prepared
 - Wetness can lead to hypothermia
- Synthetics shed water
- Pack layers
 - Several thinner layers are more useful than one heavy layer
 - Can adjust to changing temperature and activity level
- Cotton absorbs 25 times its weight in water
 - Potentially deadly in temperate and cold environments

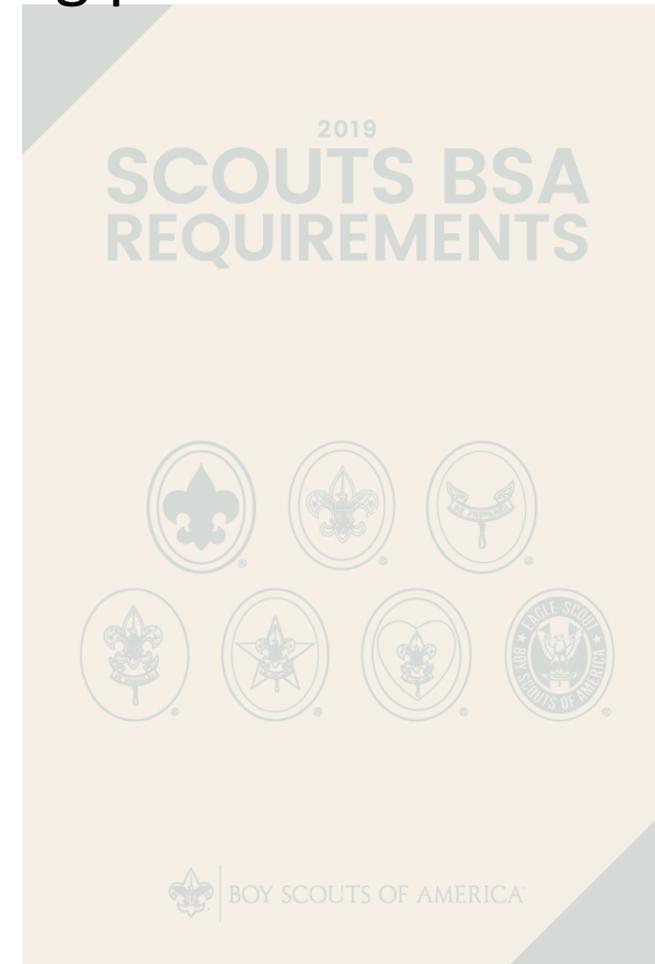
Gear

Requirement H2- Good Hiking Practices

Explain and, where possible, show the points of good hiking practices including:

- Proper outdoor ethics
- Hiking safety in the daytime and at night
- Courtesy to others
- Choice of footwear
- Proper care of feet and footwear

Complete and Fill out Workbook

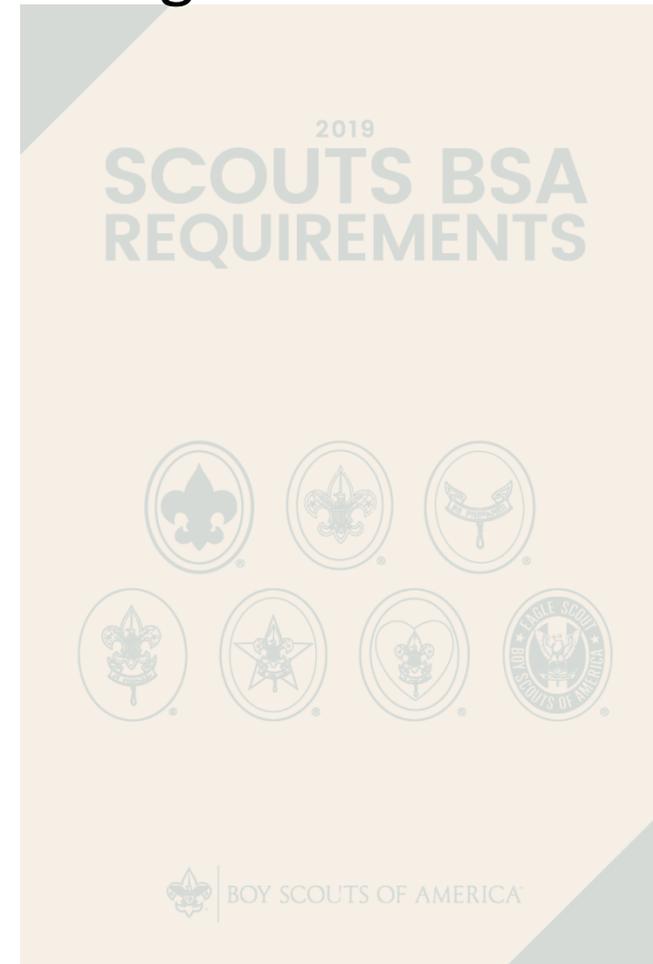


2018 Requirements

Requirement C4b – Gear – Footwear

Discuss footwear for different kinds of weather and how the right footwear is important for protecting your feet.

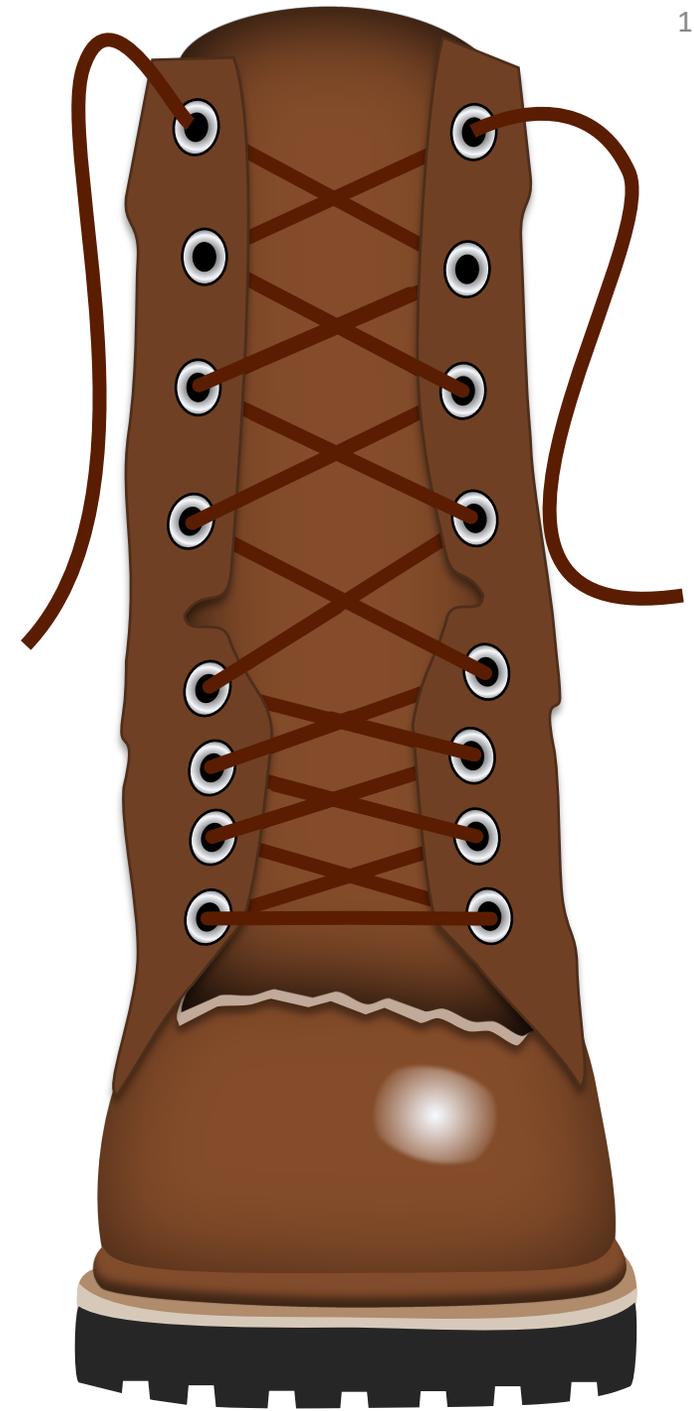
Complete and Fill out Workbook



Gear

Good Hiking Practices – Footwear

- This is hugely important!



Gear

Good Hiking Practices – Footwear – Fit

- Footwear MUST FIT!
- If a shoe doesn't fit, you will get blisters or worse
- The FIT:
 - No slip in heel when walking
 - Wiggle room for toes in shoe
 - Feet should not slide in shoe
 - Must be broken in
- Testing shoe fit:
 - Try on with hiking socks
 - Walk around store floor and ideally uneven terrain

Gear

Good Hiking Practices – Footwear – Type

- If they truly fit, that's the most important thing
- Next comes type:

Sandals

Poor choice
Risk of puncture or other injury to foot

Trail Runners

Basically running shoes with trail sole
Great option

Hiking boots

Little extra protection to ankle and from puddles
Probably more than needed for hiking

Mountaineering Boots

More protection against rocks when climbing
Heavier than what you need

Winter Boots

Great for deep snow
Too heavy and hot for general use

Military or Logging Boots

Great protection if breaking trail or logging
Way too heavy for general use

Gear

Good Hiking Practices – Footwear – Socks

- Quality socks can have a huge impact on how your feet do
- Choose:
 - High density wool sock designed for backpacking
 - Quality synthetic sock designed for backpacking
- Avoid:
 - Anything cotton
 - No show socks
 - Super thin socks (unless used as a sock liner)

Gear

Good Hiking Practices – Footwear – Maintenance

- Take care of your footwear
 - Allow them to dry out
 - Remove dirt and grime
- Leather needs special care
 - Treat with leather conditioners
 - Beeswax, silicone, natural oils, or other leather conditioners
 - Do not overheat next to a fire

Gear

Good Hiking Practices – Feet – Maintenance

- Take care of your Feet
 - Allow them to dry out
 - If you get a hot spot – STOP and treat it
 - Don't wear wet or dirty socks to bed
 - Antifungal powder is great
 - Use at night to help dry out feet and kill fungus

Gear

What/How to Pack – Food and Cooking gear

- Food and Cooking gear
 - Food is vital for energy, health and moral
 - You have many choices in what you carry
 - Consider:
 - Easy of use
 - Total weight of food/cooking/fuel combo
 - Packability
 - Cost
 - Brand name, dehydrated meals 3 times a day gets expensive
 - Further discussion in [Food Section](#)

Gear

What/How to Pack – Food and Cooking gear

- Water
 - Water is vital to life
 - Further discussion in [Water Section](#)

Gear

What/How to Pack – Toiletry Kit

- Toiletry Kit
 - Toothbrush
 - Toothpaste
 - Dental floss
 - Biodegradable soap
 - Waterless hand cleanser
 - Small towel
 - Toilet paper or wet wipes and
 - Trowel or
 - Resealable plastic bag or
 - Poop tube

Gear

What/How to Pack – Other Gear

- Other Gear
 - Paracord
 - Insect repellent
 - Notebook and Pen
 - Repair Kit
 - Duct tape
 - Needle and Thread (or dental floss)
 - Trekking poles
 - Whistle
 - Camera
 - Optics
 - Field and scout guides

Gear

What/ How to Pack – How to Pack Gear

- Weight distribution
 - Pack heavy stuff higher
 - Center of gravity should be high and close to back
- What will you need quick access to
 - Pack items you need on go so they are easy to get to
 - In outside pockets
 - High in pack
 - This includes
 - Rain gear
 - Water and snacks
 - First-aid kit
 - Pack camp items lower



Gear

What/ How to Pack – What do you really need?

- Be prepared
 - Not being prepared in the wilderness can be deadly
 - Know what to bring
 - Don't fool around

Gear

What/ How to Pack – What do you really need?

- You don't need 120 pounds of gear
 - If so, you need an alternate way of transporting it

Gear

What/ How to Pack – What do you really need?

- Ultralight-weight backpacking?
 - Option for very experienced backpackers
 - May lead to a miserable night or trip if weather turns
 - May be miserable even if weather is ideal
 - Dangerous technique for those who aren't experienced in technique
 - Must know the minimum you need to stay alive
 - Must know when to cancel trip or turn back
 - Must know wilderness survival techniques
 - Your life may depend on it

Gear

What/ How to Pack – What do you really need?

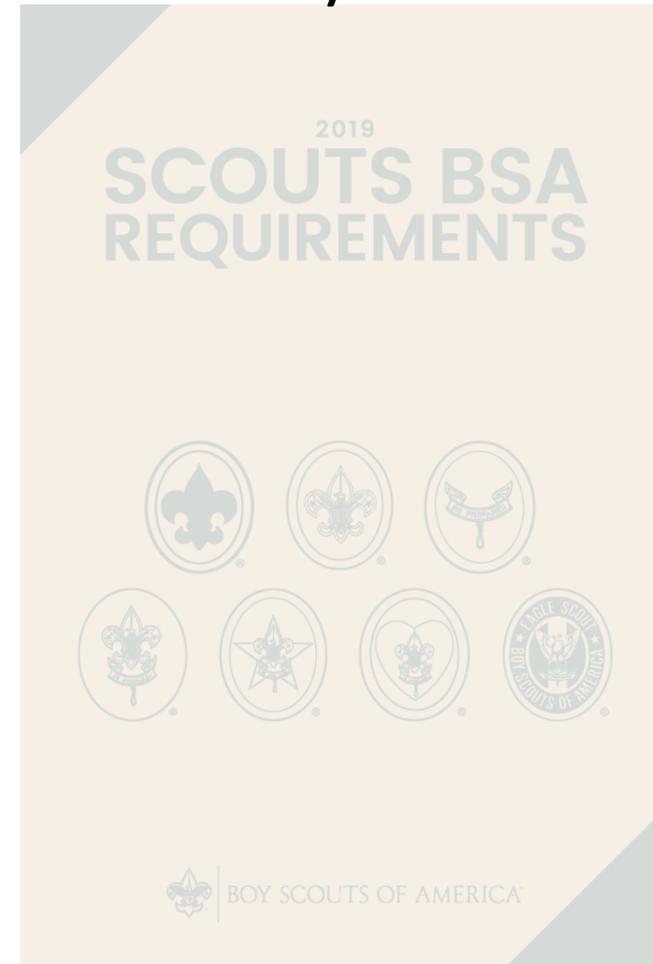
- You need a balance
 - Figure out what you really need
 - Lay it out
 - Can you safely go lighter?
 - Lay it out
 - Have someone else double check it
 - Try it on a short overnight outing with an emergency backup plan
 - What did you learn?
 - Knowing what to pack comes from experience, not packing lists

Gear

Requirement B2b – How/What to Pack

Describe 10 ways you can limit the weight and bulk to be carried in your pack without jeopardizing your health or safety.

Complete and Fill out Workbook



Gear

What/ How to Pack – Ways to reduce bulk and weight

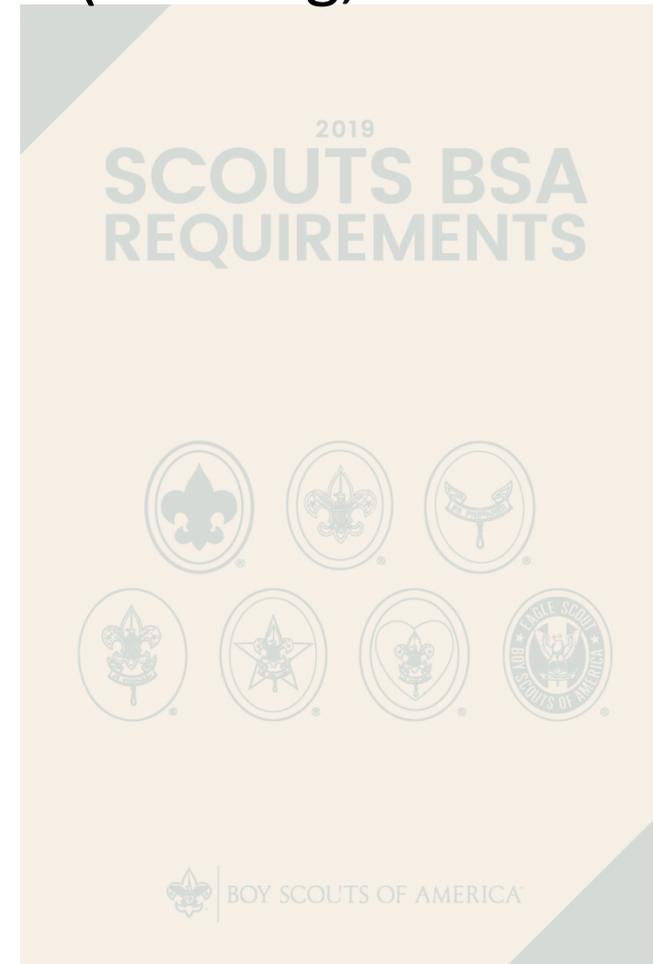
1. Use lightest weight tent for weather – or use a tarp
2. Use sleeping system rated for expected weather not the arctic
3. Limit clothing packed – you don't need clean clothes every day
4. Is there a better cook system option – are you carrying too much fuel?
5. Repackage food into ziplock bags – take only what you need
6. Do you need dishes and bowls – eat out of pot or bag
7. Plan to collect water along the way – don't pack water for entire trip
8. Don't pack books – if needed print only what you need
9. Do you need heavy duty boots? – wear what you really need
10. What didn't you use on your last trip – do you really need it next time?

Gear

Requirement C4c – Gear – Care of Gear

Explain the proper care and storage of camping equipment (clothing, footwear, bedding).

Complete and Fill out Workbook



Gear

Gear Storage – In your Pack

- Keep gear in good repair
- Be kind to your gear, you need it
- Waterproof gear
 - Line pack with garbage bag (3-5 mils is best)
 - Use large “Ziploc” Freezer Bags for Socks and small items
 - Sleeping gear should be protected with waterproof bag
- Avoid dangling gear on outside of pack

Gear

Gear Storage – At Camp

- Avoid spreading out everything Yard Sale style
 - Easy to lose stuff, especially in the dark
- Put stuff away and protect it from rain and critters
- Be kind to your camp gear
 - You need it for this trip
 - You'll need it for the next trip

Gear

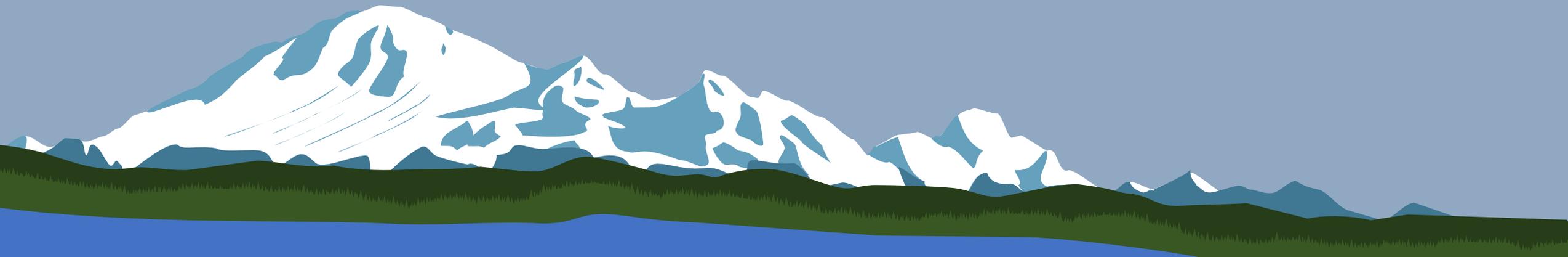
Gear Storage – At Home

- Gear should be cleaned and inspected prior to storage
 - Make sure everything is completely dried out before storage
 - Repair or replace gear so you are ready to go for your next trip

1. Hiking Merit Badge Requirements	11. Leave No Trace
2. Backpacking Merit Badge Requirements	12. Hiking Philosophy
3. Camping Merit Badge Requirements	13. Preparation
4. Merit Badge Intro	14. Hiking - Getting Out There
5. Hazards	15. Backpacking - Getting Out There
6. First Aid	16. Camping - Getting Out There
7. Gear	17. Final Thoughts
8. Water	18. Resources
9. Food	19. Instructor's Corner
10. Navigation	



Water

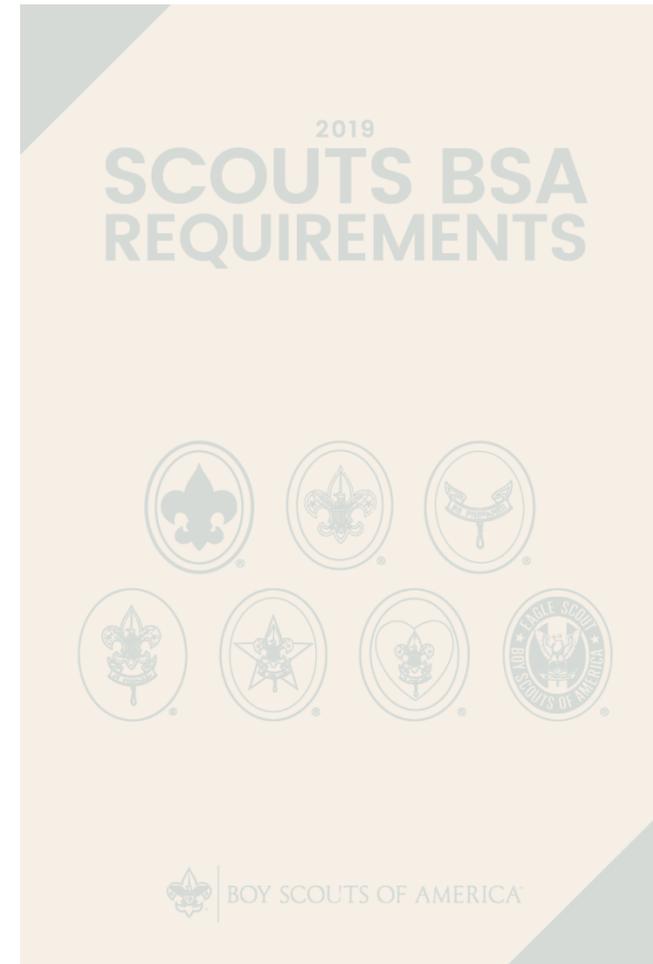


Water

Requirement B5a – Water Treatment

Demonstrate two ways to treat water and tell why water treatment is essential.

Complete and Fill out Workbook



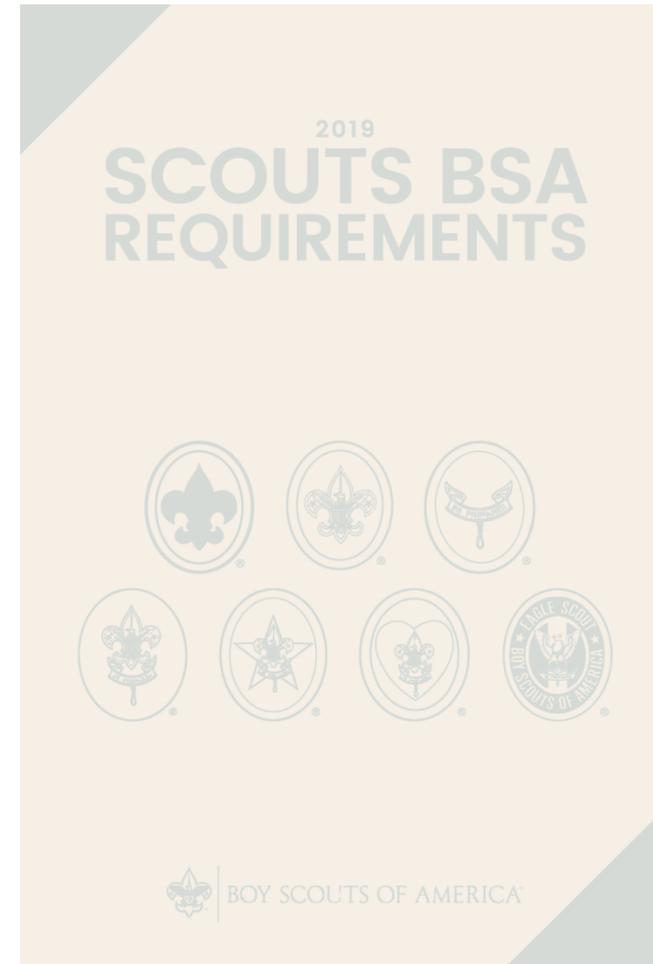
Water

Requirement C6b - Water

Discuss the importance of camp sanitation and tell why water treatment is essential.

Then demonstrate two ways to treat water.

Complete and Fill out Workbook



Water Procurement

Water Purification

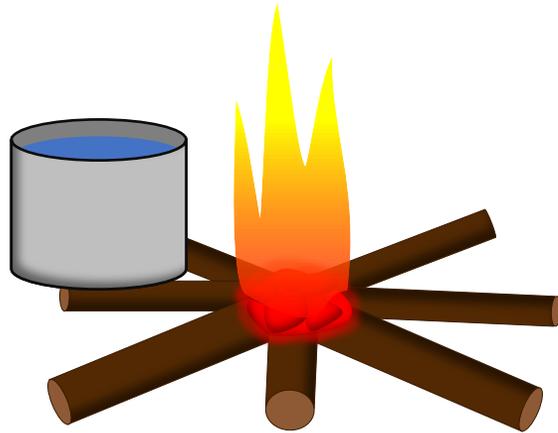
- Water in the Wilderness may be contaminated with:
 - Viruses
 - Bacteria
 - Protozoa
 - Flukes
 - Leaches

 - These can be Deadly!

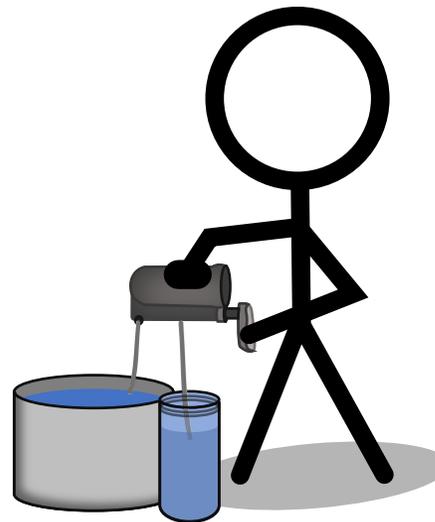
Water Procurement

Water Purification

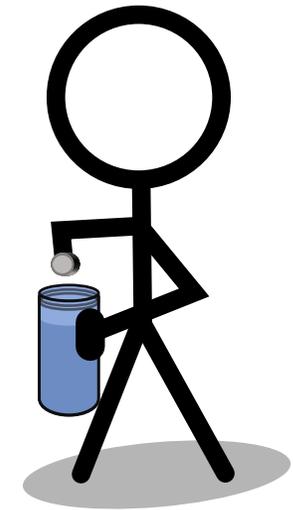
- There are several methods for treating water
 - Boiling
 - Filtering
 - Chemical Treatment



Boil



Filter



Chemical Tabs

Water Purification

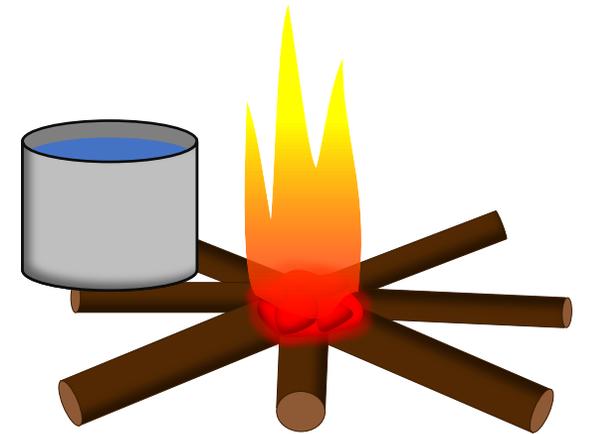
Water Purification

Organism	Boiling	Filtration	Iodine or Chlorine	Chlorine Dioxide	Filter AND Disinfection
<i>Cryptosporidium</i>	+++++	+++++ ≤1.0 Micron Filter	—	+ to ++	+++++ ≤1.0 Micron Filter
<i>Giardia</i>	+++++	+++++ ≤1.0 Micron Filter	+ to ++	+++	+++++ ≤1.0 Micron Filter
Bacteria	+++++	+++ ≤0.3 Micron Filter	+++	+++	+++ ≤0.3 Micron Filter
Viruses	+++++	—	+++	+++	+++

Water Purification

Water Purification – Boiling

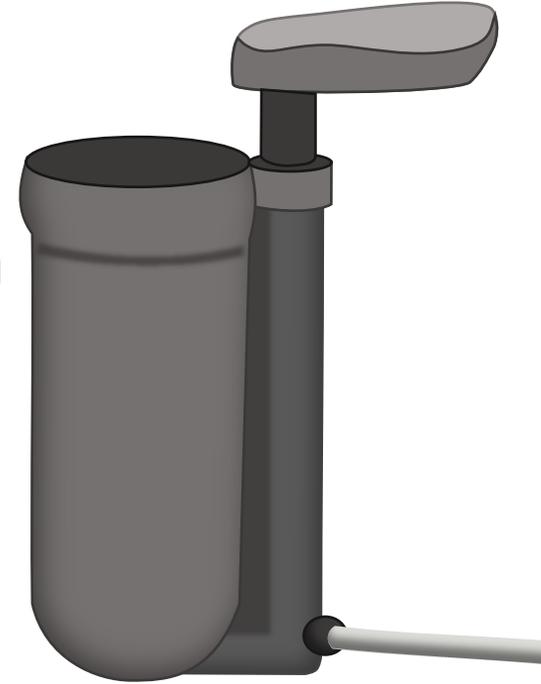
- Boiling is sufficient to kill pathogenic bacteria, viruses and protozoa
- At sea level, pure water boils at 212°F (100°C)
- Summit of Mount Everest, pure water boils at about 154°F (68°C)
- **Disinfection** (inactivate enteric pathogens):
 - Bring water to a rolling boil for at least 1 minute
 - Altitudes > 5,000 feet (1,000 meters), boil water for 3 minutes
- **Sterilization** (inactivate all heat resistant spores)
 - Boil for 10 minutes



Abdominal Problems

Water Purification – Filtration

- **High-quality*** water filtration units are effective for Giardia
- Most quality microfilters are effective for Bacteria
- Few Water filters can safely filter out Viruses
- Filters can clog and/or become contaminated
- Disinfectant treatment can be added to filtered water for better results



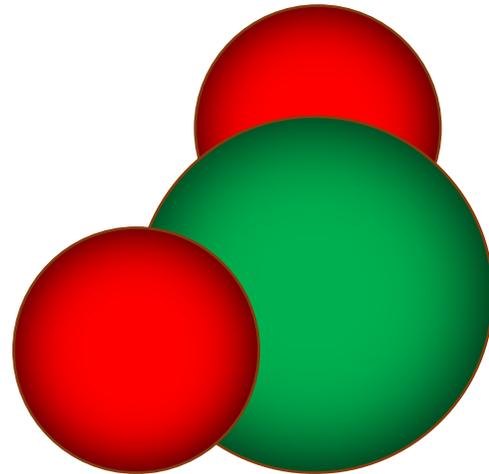
Organism	Examples	General Size	Filter Type	Particle Size Rating
Protozoa	<i>Giardia, Cryptosporidium</i>	5 microns or larger	Water filter	1.0–4.0 microns
Bacteria	<i>Cholera, E. coli, Salmonella</i>	0.2–0.5 microns	Microfilter	0.2–1.0 microns
Viruses	Hepatitis A, rotavirus, Norwalk virus	0.004 microns	Water purifier	to 0.004 microns

*many Tactical Survival Straws and other snazzy filters are garbage – despite claims they filter out viruses

Water Purification

Water Purification – Chlorine Dioxide

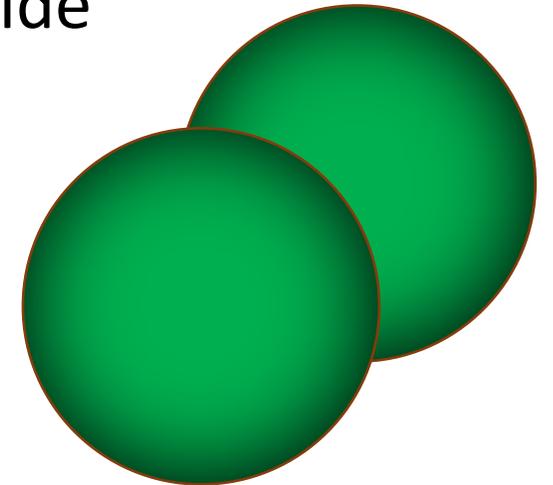
- More effective against viruses than chlorine
- As good or better against bacteria compared to chlorine
- Effective against *Cryptosporidium oocysts* (dose/time dependent)



Water Purification

Water Purification – Water Disinfection Tabs

- Chlorine, Iodine, Chlorine Dioxide, Others
- **Katadyn Micropur MP1** - Chlorine Dioxide
 - Bacteria 15min, Giardia in 30min and Cryptosporidium in 4hrs
- **Potable Aqua Chlorine Dioxide**
- **Aquamira Water Purifier Tablets** - Chlorine Dioxide (2-part drops)
- **Potable Aqua with PA+Plus** - Tetraglycine Hydroperiodide
 - NOT effective against Cryptosporidium
- **Aquatabs** - Sodium Dichlorisocyanurate
 - NOT effective against Cryptosporidium
- Follow manufacturer's instructions

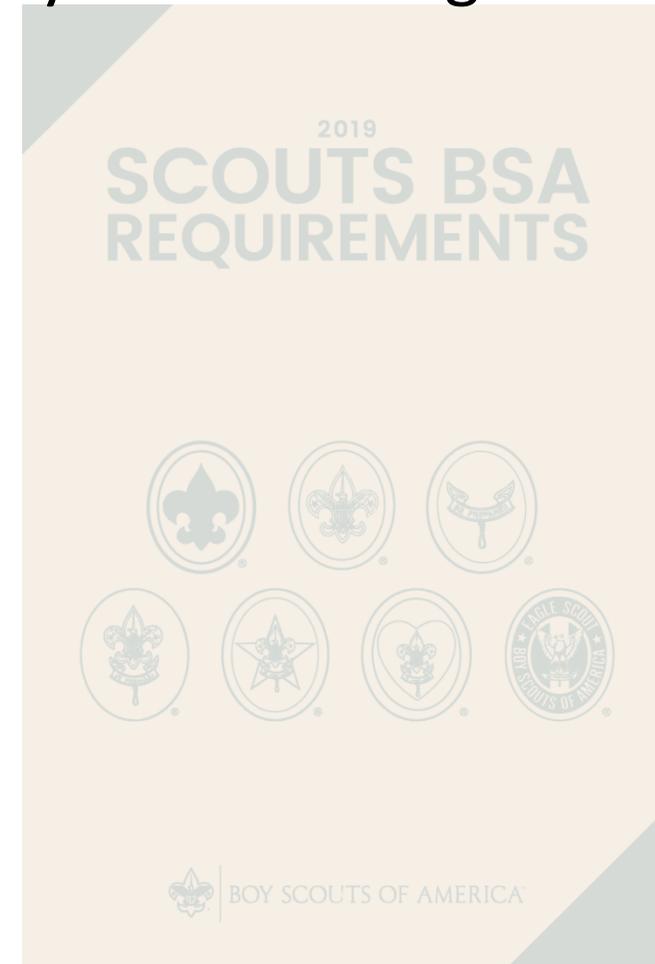


Water

Requirement B5b – Hydration

Explain to your counselor the importance of staying well hydrated during a trek.

Complete and Fill out Workbook



Water

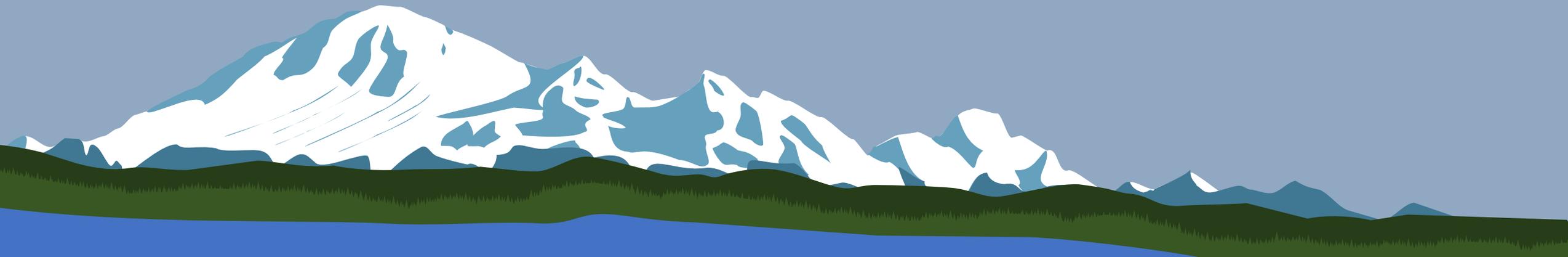
Hydration

- Don't get dehydrated
- Increase risk of cold and heat injuries
- Consciously remind yourself to drink water
 - Especially important in the cold
 - People forget to drink water when it is cold out and are not thirsty
- If your urine color is dark – you need to drink more water
 - Urine should be clear or very light straw colored

1. Hiking Merit Badge Requirements	11. Leave No Trace
2. Backpacking Merit Badge Requirements	12. Hiking Philosophy
3. Camping Merit Badge Requirements	13. Preparation
4. Merit Badge Intro	14. Hiking - Getting Out There
5. Hazards	15. Backpacking - Getting Out There
6. First Aid	16. Camping - Getting Out There
7. Gear	17. Final Thoughts
8. Water	18. Resources
9. Food	19. Instructor's Corner
10. Navigation	



Food



Food

Food

- Food vital on a backpacking trip
- Provides energy to complete trip
- Helps keep you healthy and alert – decreasing occurrence of accidents
- Moral booster
 - Some will have significantly reduced performance if eating poorly

Food

Food - Options

- Food options come in many varieties
 - Dry Foods
 - Fresh Foods
 - Canned Foods
 - Convenience Foods
 - Dehydrated Foods
 - Seasoning



Food

Food – Options - Dry Foods

- **Dry Foods**
 - Excellent bang for buck
 - Reasonable weight
 - Nuts
 - Pasta
 - Biscuit mix
 - Beans
 - Rice
 - Seeds
 - Powdered milk



Food

Food – Options - Fresh Foods

- **Fresh Foods**
 - Can be heavy
 - Use them early in trip before they spoil
 - Cheeses and Preserved Meats are excellent



Food

Food – Options - Canned Foods

- **Canned Foods**
 - Delicious meal options are available
 - Heavy
 - Some have astronomical amounts of sodium
 - Produces a lot of trash
 - Should be washed out, flattened and packed out



Food

Food – Options - Convenience Foods

- **Convenience Foods**
 - Instant meals in a bag
 - Pancake mixes
 - Jerky
 - Energy bars
 - Macaroni and cheese
 - Other mixes



Food

Food – Options - Dehydrated Foods

- **Dehydrated Foods**
 - Extremely light weight
 - Easy to prepare - just add water
 - Can be made at home
 - Backpack meals are be purchased – but are expensive



Food

Food – Options - Seasoning

- **Seasoning**
 - Don't forget your favorite seasoning
 - Turns any bland meal in to something delicious
 - Repack into small pill bottles



Food

Food – Repackaging

- Foods can be repackaged into small freezer bags
- Seals and protects food
- Reduces trash
- Can make meals easy if meals are packaged into individual bags

Food

Food - Cooking

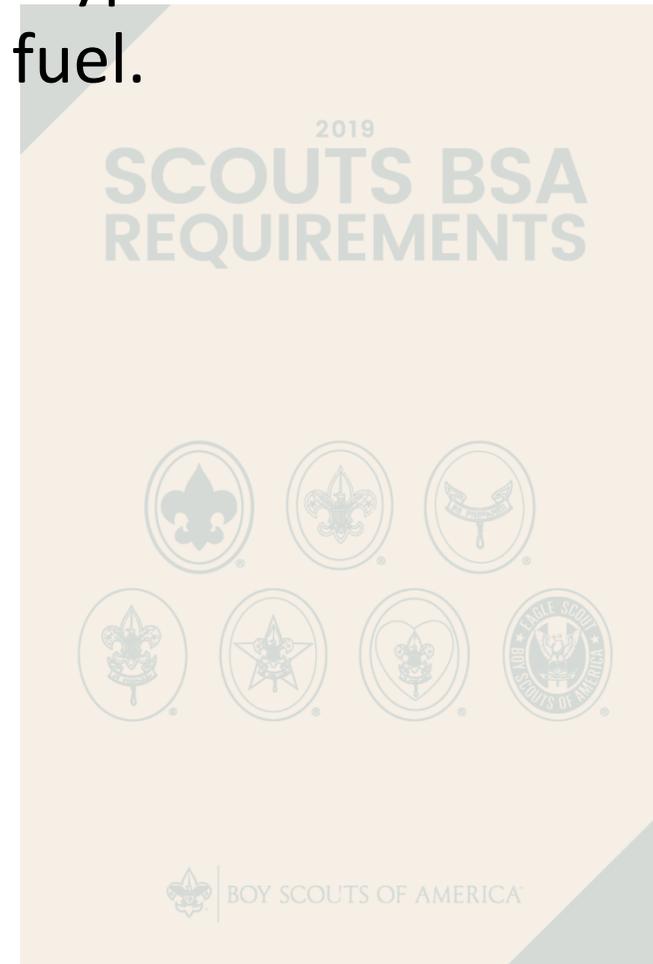
- Some foods **MUST** be cooked
- Other are **MUCH** better if cooked

Food

Requirement B8a - Stoves

Explain the advantages and disadvantages of the different types of backpacking stoves using at least three different types of fuel.

Complete and Fill out Workbook

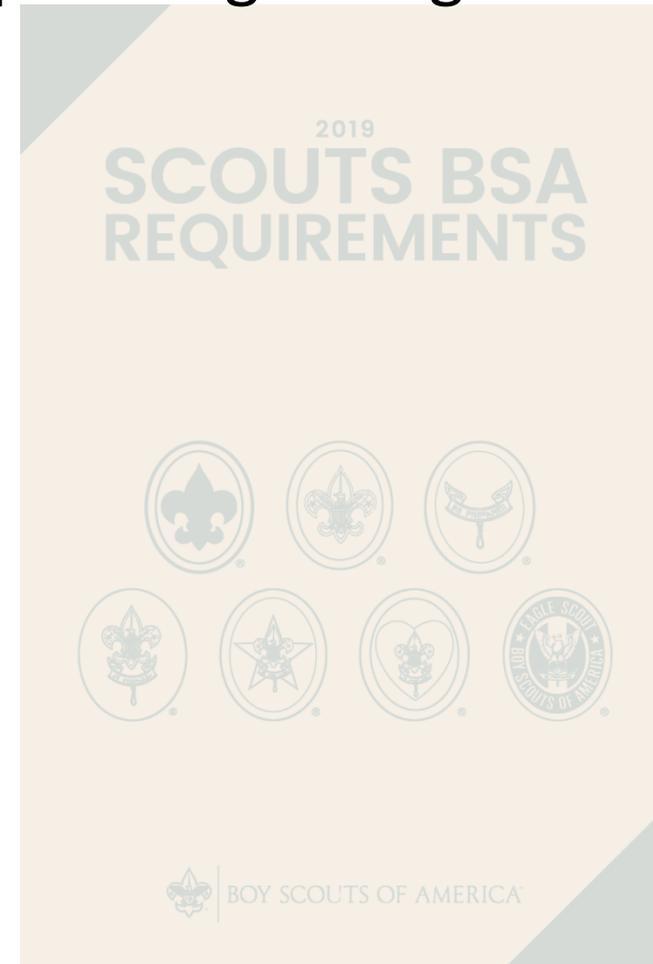


Food

Requirement C8b – Stove Comparison

Discuss the advantages and disadvantages of different types of lightweight cooking stoves.

Complete and Fill out Workbook



Food

Stoves – BSA Policy

- **Approved chemical-fueled equipment**
Commercially manufactured equipment, including stoves, grills, burners, heaters, and lanterns that are designed to be used with chemical fuels.
- **Prohibited chemical-fueled equipment**
Equipment that is handcrafted, homemade, modified, or installed beyond the manufacturer's stated design limitations or use. Examples include alcohol-burning "can" stoves, smudge pots, improperly installed heaters, and propane burners with their regulators removed.

Food

Backpacking Stoves – Nitty Gritty

- **Gas Stoves**
 - Easiest to use Stoves for Backpacking
- **Liquid Petroleum Stoves**
 - Most practical for extreme cold weather
- **Wood Stoves**
 - Great if you have available fuel
- **Alcohol Stoves**
 - Not recommended by BSA but used by many ULW backpackers
- **Chemical Fuel Tabs**
 - Light weight with low heat output

Food

Gas Stoves – Propane and Butane

- Very popular backpacking stove option
- Use canisters filled with liquified gasses



Food

Backpacking Stoves – Fuels – Gas

Fuel	Notes
Gas Fuels	Stoves are very easy to operate Can adjust output from minimal flame to blowtorch This allows for easy snow melt and simmering No flareups Affected by cold temperatures around or below freezing

Food

Backpacking Stoves – Fuels – Gas

Fuel	Notes
Gas Fuels	<p>Gas fuel needs to be stored in special canisters</p> <ul style="list-style-type: none">• Butane canisters can be expensive• Special blends of gas are even more expensive• Difficult to carry, “just enough” fuel<ul style="list-style-type: none">○ Instead – need to round up to next canister• Propane canisters are large and heavy• Canisters produce trash• Can be difficult to find Butane canisters in small towns

Food

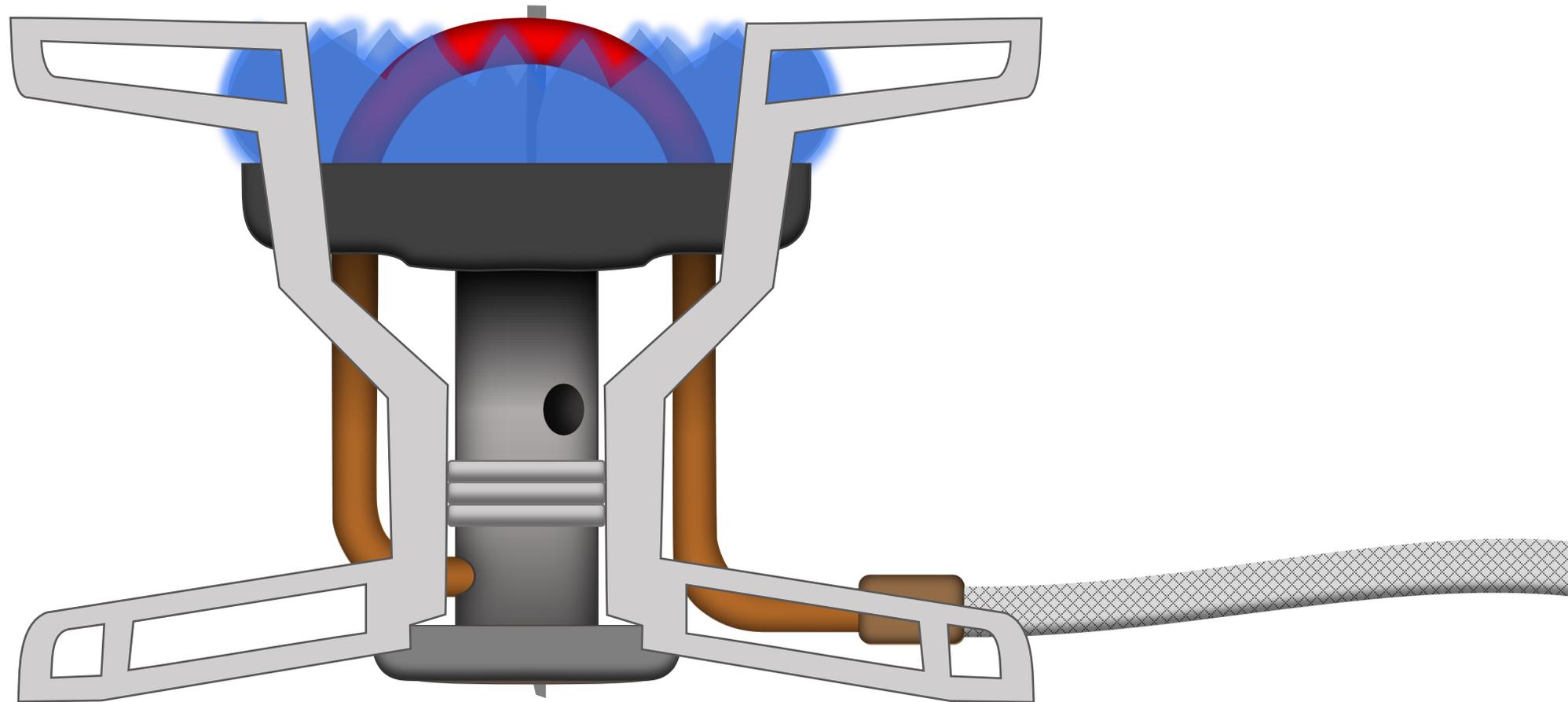
Backpacking Stoves – Fuels – Gas

Fuel	Notes
Propane	Vaporizes around -43°F (-40°C) at sea level Excellent cold weather fuel Great heat per weight ratio Canisters are large and heavy Stoves also tend to be large and heavy
Butane	Vaporizes around 31°F (-0.5°C) at sea level Use in cold weather requires special techniques Will completely fail to work in low temperatures
Isobutane	Vaporizes around 11°F (-12°C) at sea level Much better fuel for temps around freezing level

Food

Liquid Petrol Stoves

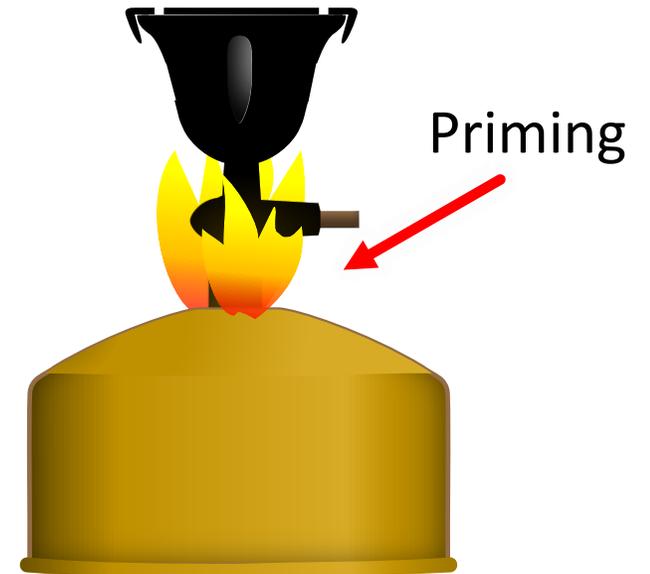
- High performance stoves use liquid petroleum fuels



Food

Liquid Petrol Stoves

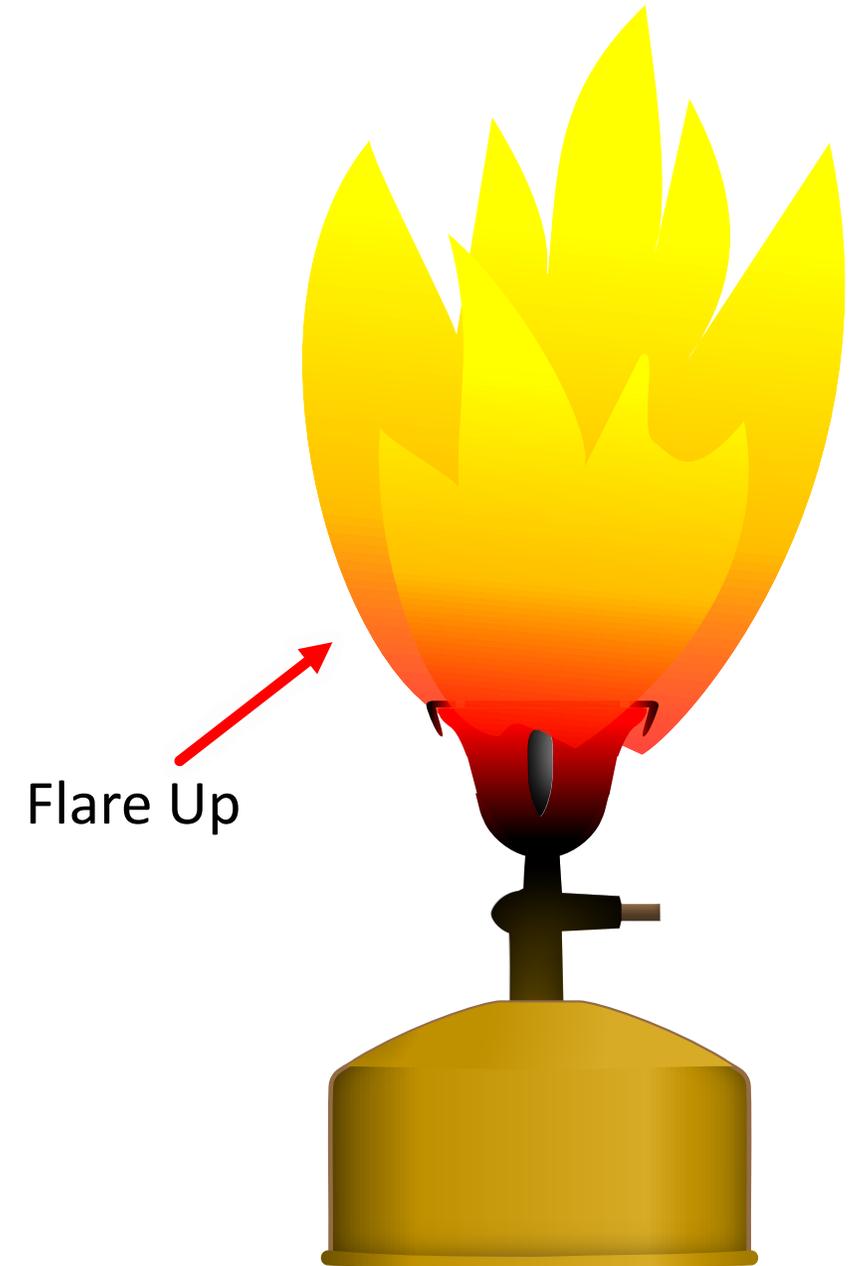
- Petrol stoves need to be primed
 - Priming preheats stove for use



Food

Liquid Petrol Stoves

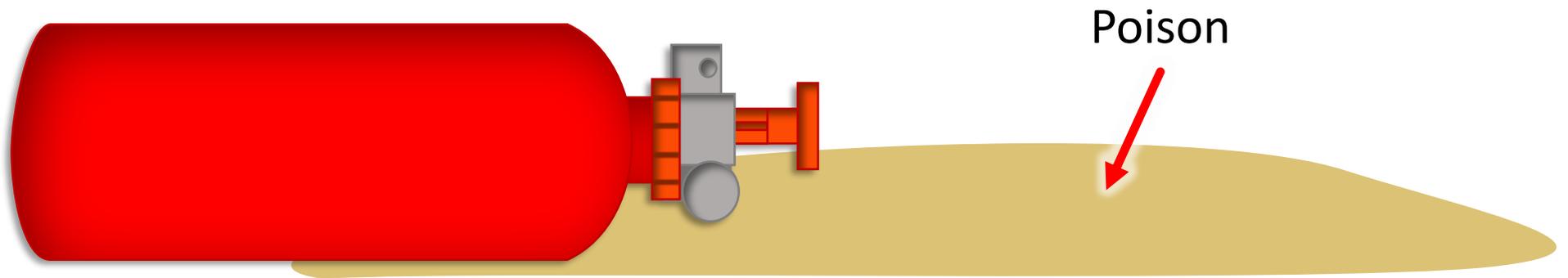
- These tend to flare up
 - Big eyebrow singeing flames
 - Especially as you start up the stove
 - If this happens in a tent, your tent can instantly catch fire



Food

Liquid Petrol Stoves – Fuel is Poisonous!

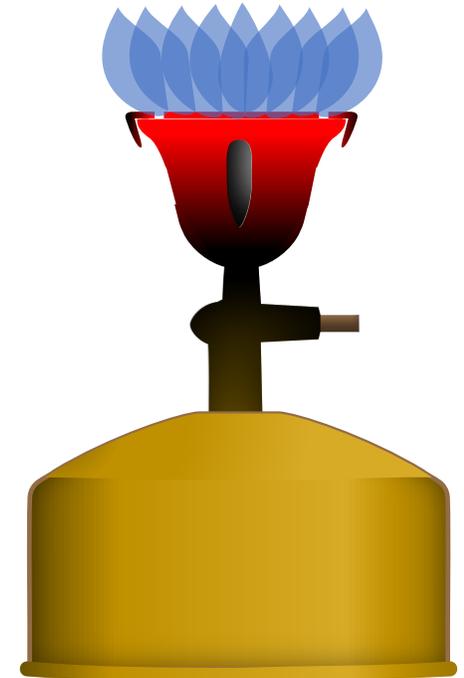
- Store food and fuel in separate places
 - If fuel leaks on food, you will not be able to eat it
 - If fuel leaks on all of your food, you lose all of your food!



Food

Liquid Petrol Stoves

- Proper use requires Adult Supervision



Food

Backpacking Stoves – Fuels – Petrol

Fuel	Notes
Petrol Fuels	<p>Great heat to weight ratio</p> <p>Can be used in extremely cold environments</p> <p>Requires knowhow to use</p> <p>Risk of flareups – extremely dangerous in tents!</p> <p>Stoves tend to clog over time and require maintenance</p> <p>Difficult to adjust output compared to gas</p> <p>Fuels smell</p> <p>Spilled fuel can damage gear and poison food</p> <p>Sounds like a roaring rocket (pro or con)</p>

Food

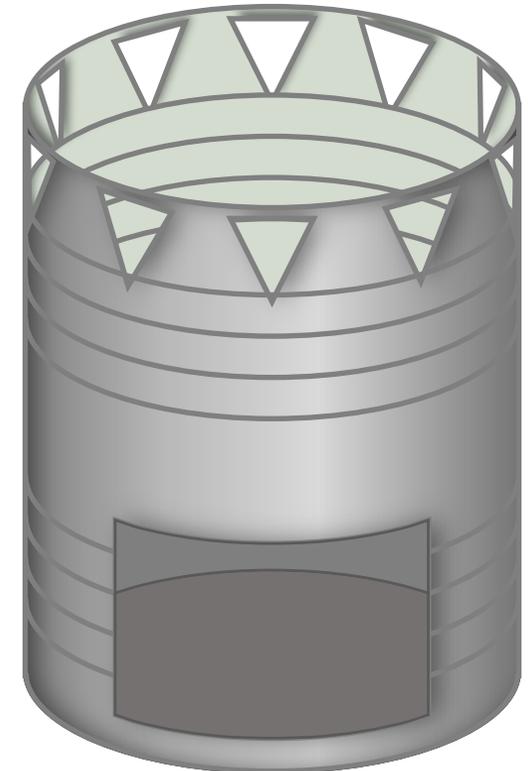
Backpacking Stoves – Fuels – Petrol

Fuel	Notes
White Gas/ Coleman Fuel	Cheap and available in many big stores Burns relatively clean for a petrol fuel
Kerosene	Available worldwide Smells Smoky
Gasoline	Easy to find worldwide Explosive Contains toxic additives – do not inhale burned fumes Not recommended for stove use by BSA

Food

Backpacking Stoves – Wood Stoves

- Wood stoves, small and large, increase efficiency of burning wood
- Compared to cooking with a Campfire:
 - Walls insulate and reflect heat back into fire to keep fuel hot
 - Protects fire from wind
 - Allows for better air flow
 - Allows for better gasification
 - Better ability to burn wet fuels
 - Uses much less fuel
 - Much better focus of heat
 - Faster and easier cooking



Hobo Stove

Food

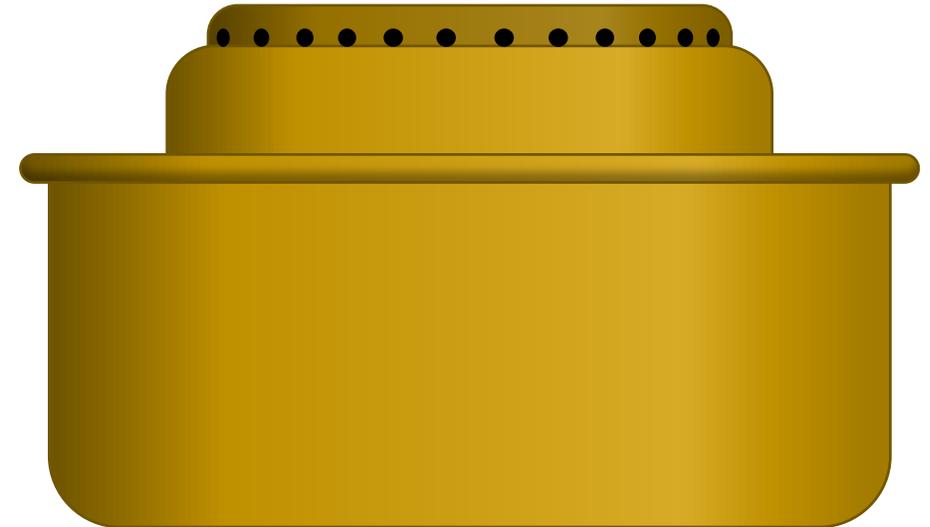
Backpacking Stoves – Fuels – Natural

Fuel	Notes
Wood	Variable availability -May have plenty -May have none May not be allowed to harvest In an emergency, you can cut up trees Fuel can be packed in, but will be heavy Subject to Burn Bans
Peat	May be available if you know where to look Ireland
Other biofuels	Grasses, pine needles, cow patties, etc.

Food

Alcohol Stoves

- Clean renewable fuel has benefits
- Used by military units in Europe
- Very light weight
- Can pack fuel in plastic bottle
- Examples:
 - Trangia Swedish Army Stove
 - Sterno
 - DIY stoves – **PROHIBITED by BSA**



Food

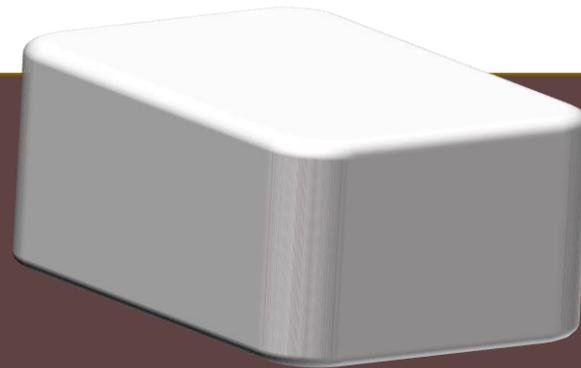
Backpacking Stoves – Fuels – Alcohol

Fuel	Notes
Alcohol	<p>Available in most hardware stores and some gas stations</p> <ul style="list-style-type: none">• Denatured alcohol – used as paint thinner• HEET antifreeze – yellow bottle is methanol• Rubbing alcohol – burns dirty in most stoves <p>Poor heat output to weight ratio</p> <p>Spills aren't nasty like petrol spills – but are a fire hazard</p> <p>Used by mushers in Iditarod</p>
Canned Heat	<p>Some have alcohol suspended in mineral matrix</p> <p>Some use a wick to control burn and use poisonous fuel</p> <p>LOW heat output</p>

Food

Solid Chemical Fuels

- Single use fuel tabs
- Simple to use
- Very light weight
- Pack what you need
- LOW heat output



Food

Backpacking Stoves – Fuels – Solid Chemical Fuels

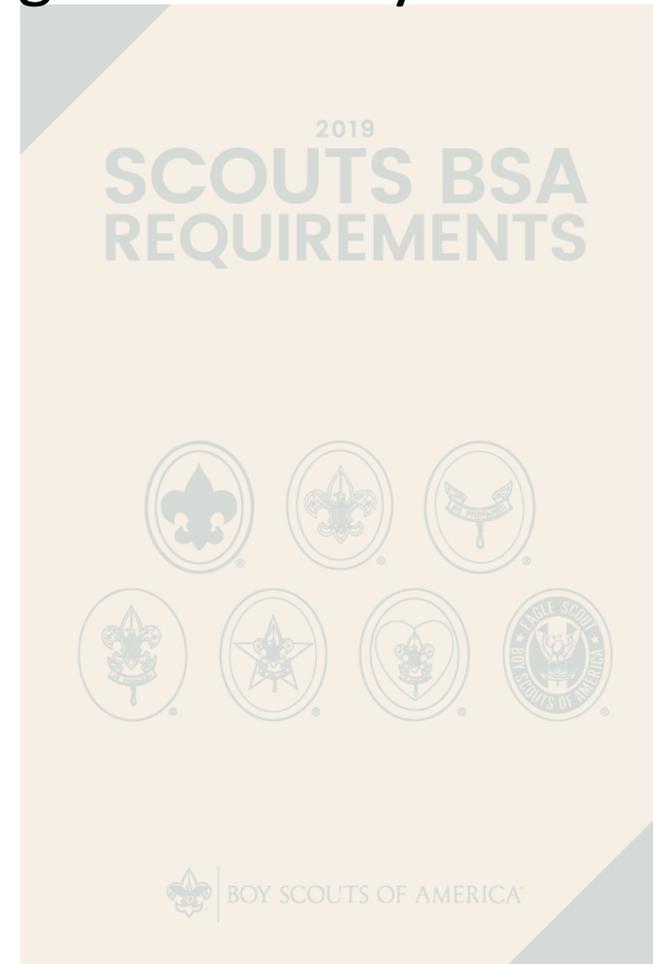
Fuel	Notes
Heat Tabs Esbit Hexamine	Found only in specialty stores Ultra light weight Simple to use – don't need a stove Low heat output Can be used safely as a Firestarter Smells like fish Blackens pots
Trioxane	Used by US military Don't touch with bare hands and then eat food Not as cheap as they used to be

Food

Requirement B8a – Using a Stove

Demonstrate that you know how to operate a backpacking stove safely and to handle liquid fuel safely.

Complete and Fill out Workbook



Food

Stoves – BSA Policy

- **An adult knowledgeable about chemical fuels and equipment should always supervise youths involved in the storage, handling, and use of chemical fuels and equipment.**
- **No flames in tents. This includes burning any solid, liquid, gel, or gas fuel—including tents or teepees that feature or support stoves or fires; and any chemical-fueled equipment or catalytic heaters.**

Food

Gas Stove Use – Butane

- Butane stoves are the most popular style of backpacking stove
- Easy to light, boil and simmer with
 - Hook up canister to stove
 - Open valve
 - Light
 - When done, close valve and remove canister





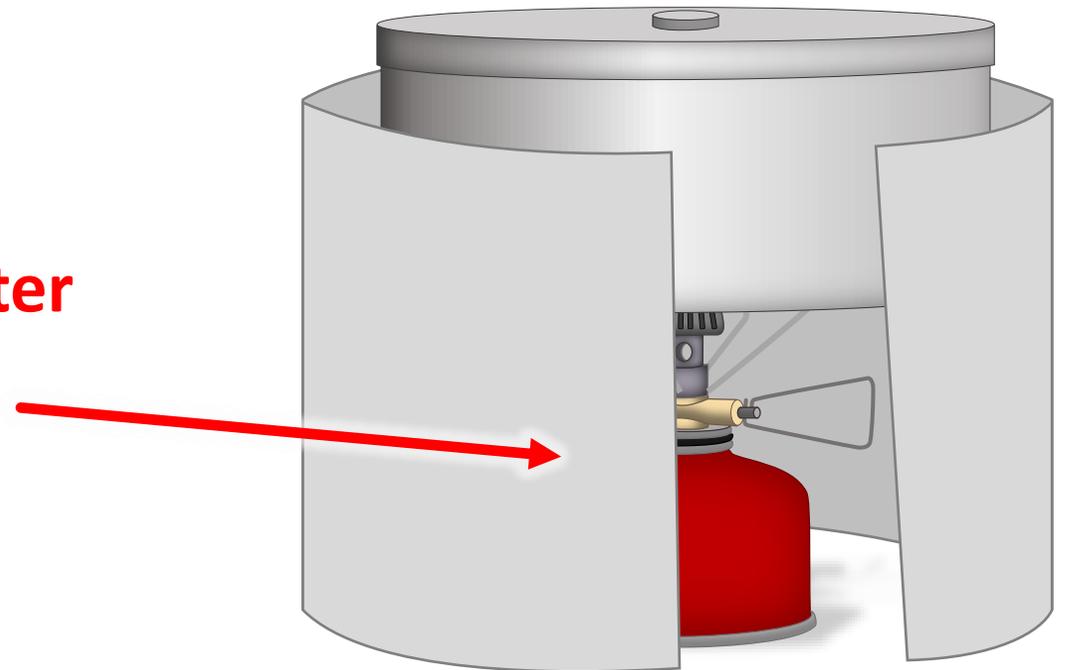
Food

Cold Weather Stoves – Gas Stove Overheating

- Most gas stoves are mounted over the fuel canister
- **Burner over canister stoves can overheat!**
 - **Do NOT use tight fitting windscreen around this type of stove!**
 - Overheating may result in an **EXPLOSION!**

**Heat is reflected
towards fuel canister
and is trapped**

Risk of Explosion!



Food

Gas Stove Use – Propane

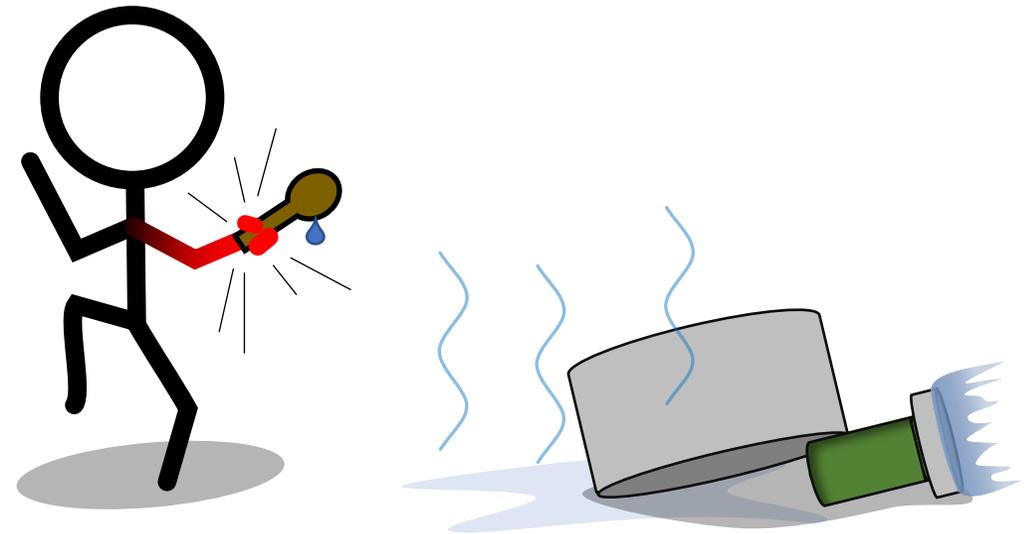
- Propane use is usually pretty straight forward
- Hook up stove to fuel canister
- Open valve
- Light with lighter
- Close valve when done
- Remove canister



Food

Gas Stove Use – Propane – Knock over Hazard

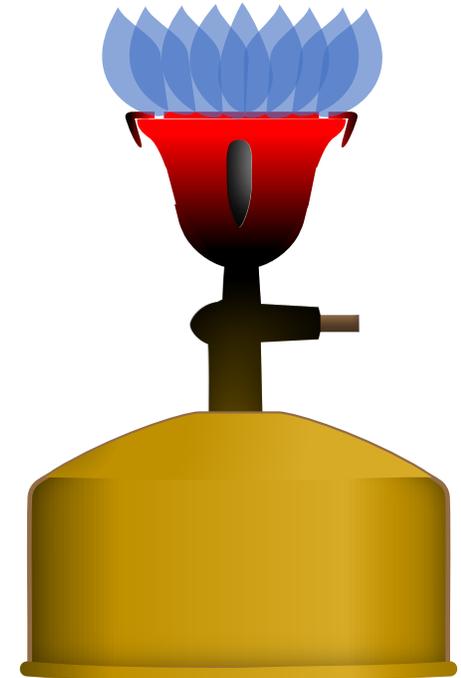
- Stove-over-canister designs are easy to knock over
 - Place on stable surface
 - Be careful to not knock over



Food

Liquid Petrol Stove Use

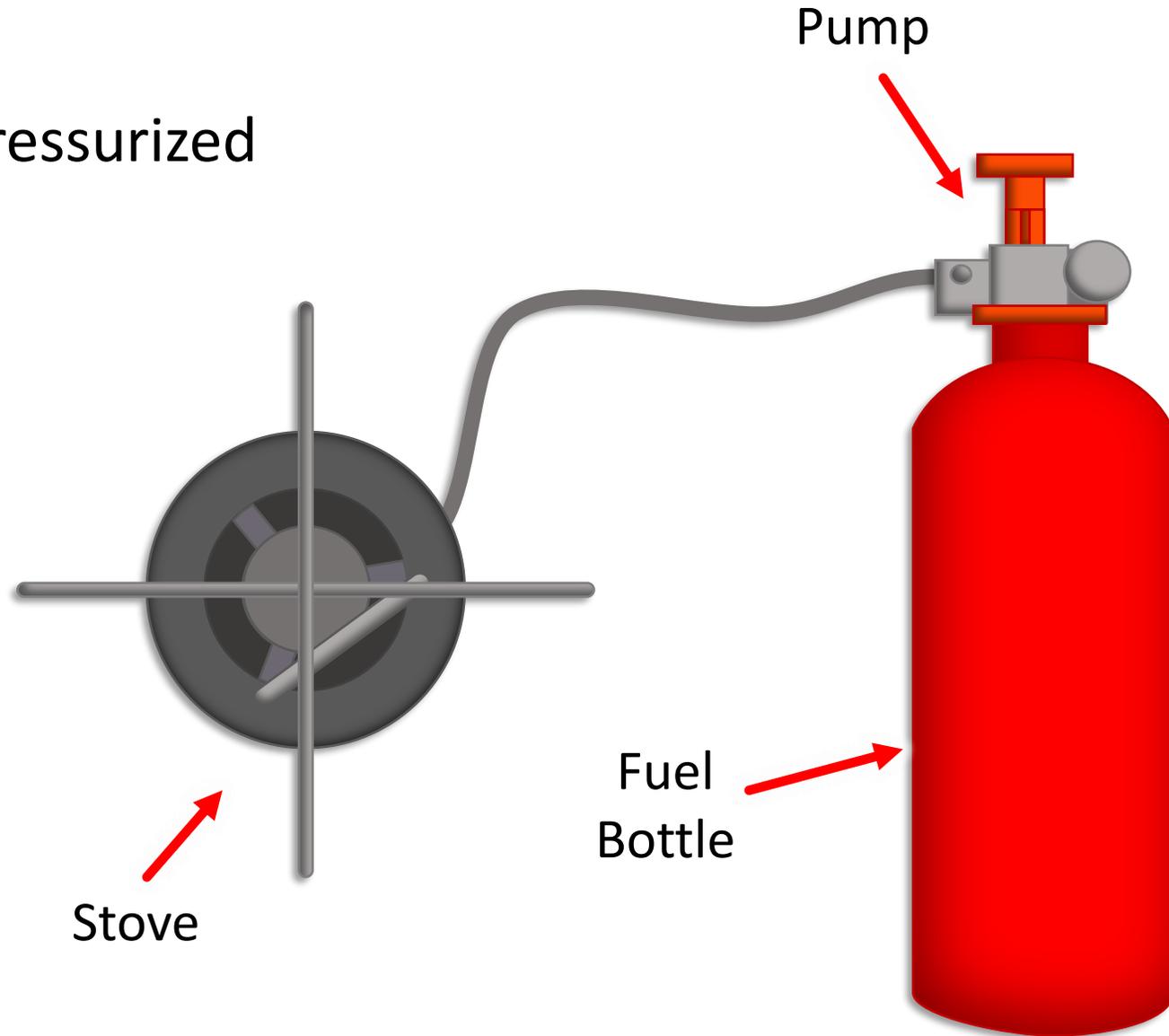
- Use is NOT intuitive
- **Scouts as well as adults need a hands-on class to understand use**
- **Use requires adult supervision**
- **Mistakes can lead to serious burns**



Food

Liquid Petrol Stove Use

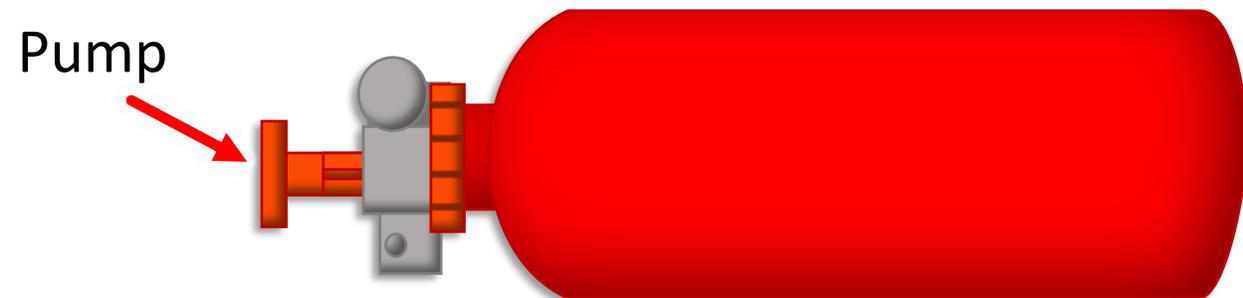
- Most petrol stoves need to be pressurized
 - Examples
 - MSR WhisperLite
 - MSR Dragonfly
 - MSR XGK
 - Primus OmniFuel
 - Optimus Polaris Optifuel



Food

Liquid Petrol Stove Use

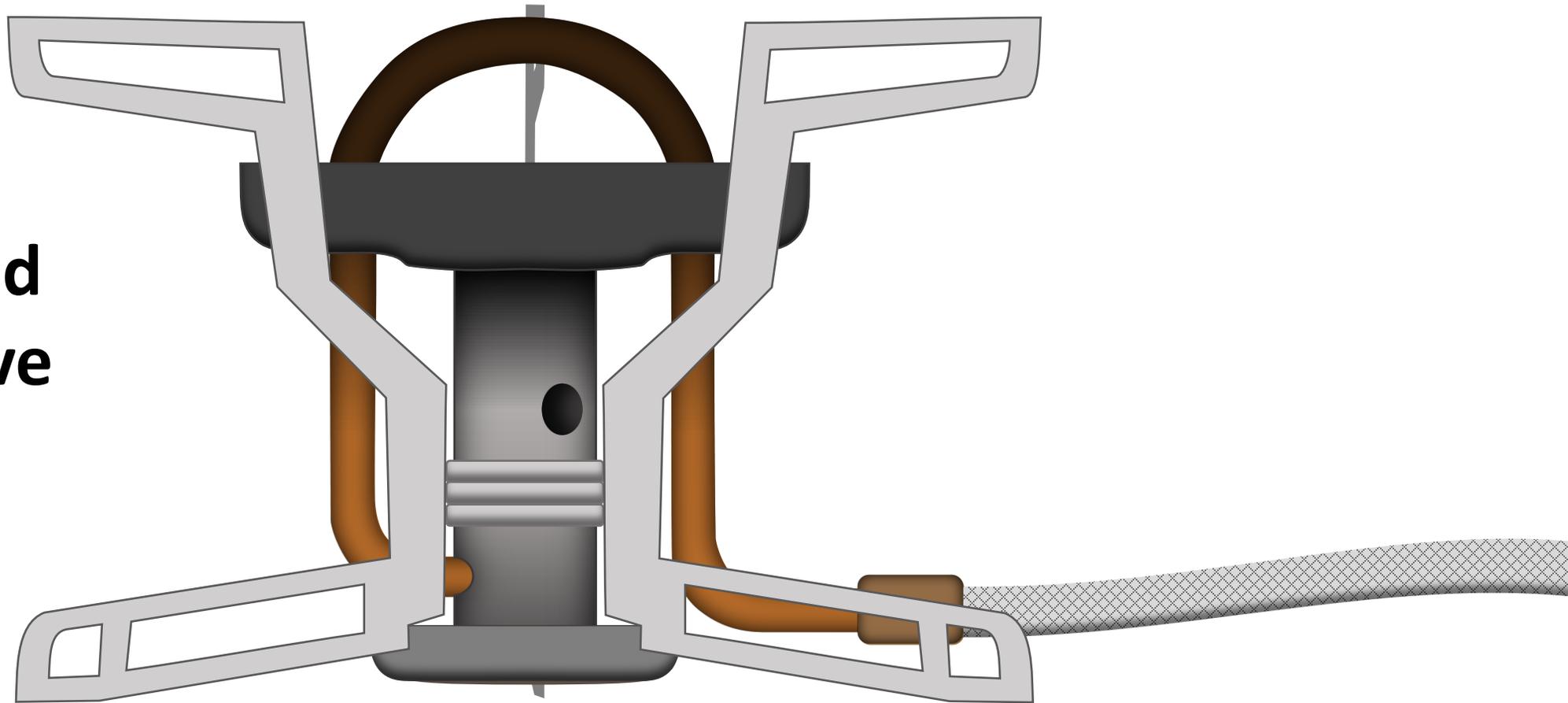
- Most petrol stoves need to be pressurized
 - Pumping pressurizes the fuel bottle
 - This forces liquid fuel in tank to move to generator tube and then jet
 - Fuel in generator tube is super heated
 - Vaporized fuel is shot through a jet into plate or other atomizer
 - Hot gasified fuel mixes with air and ignites



Food

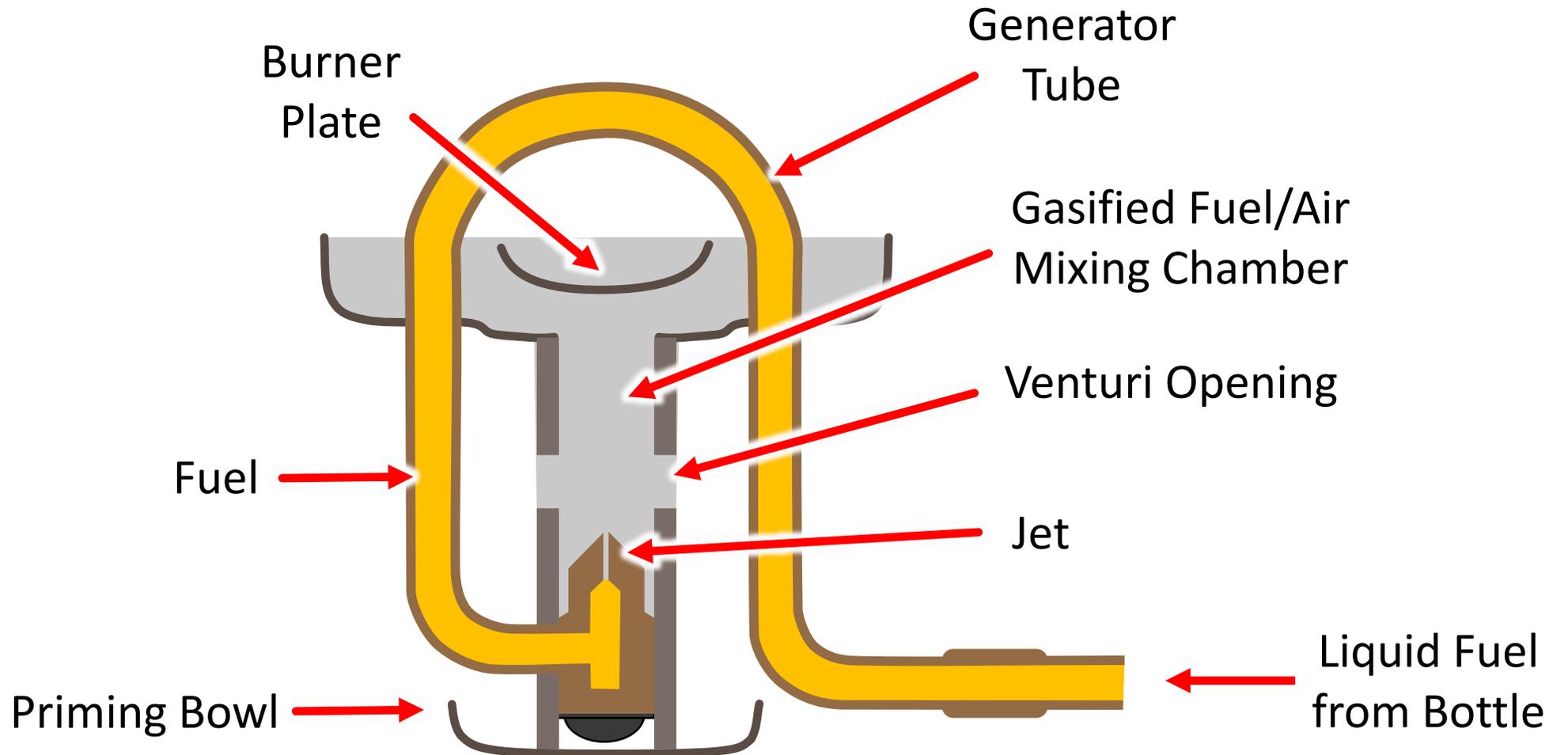
Liquid Petrol Stove Use

Pressurized Petrol Stove



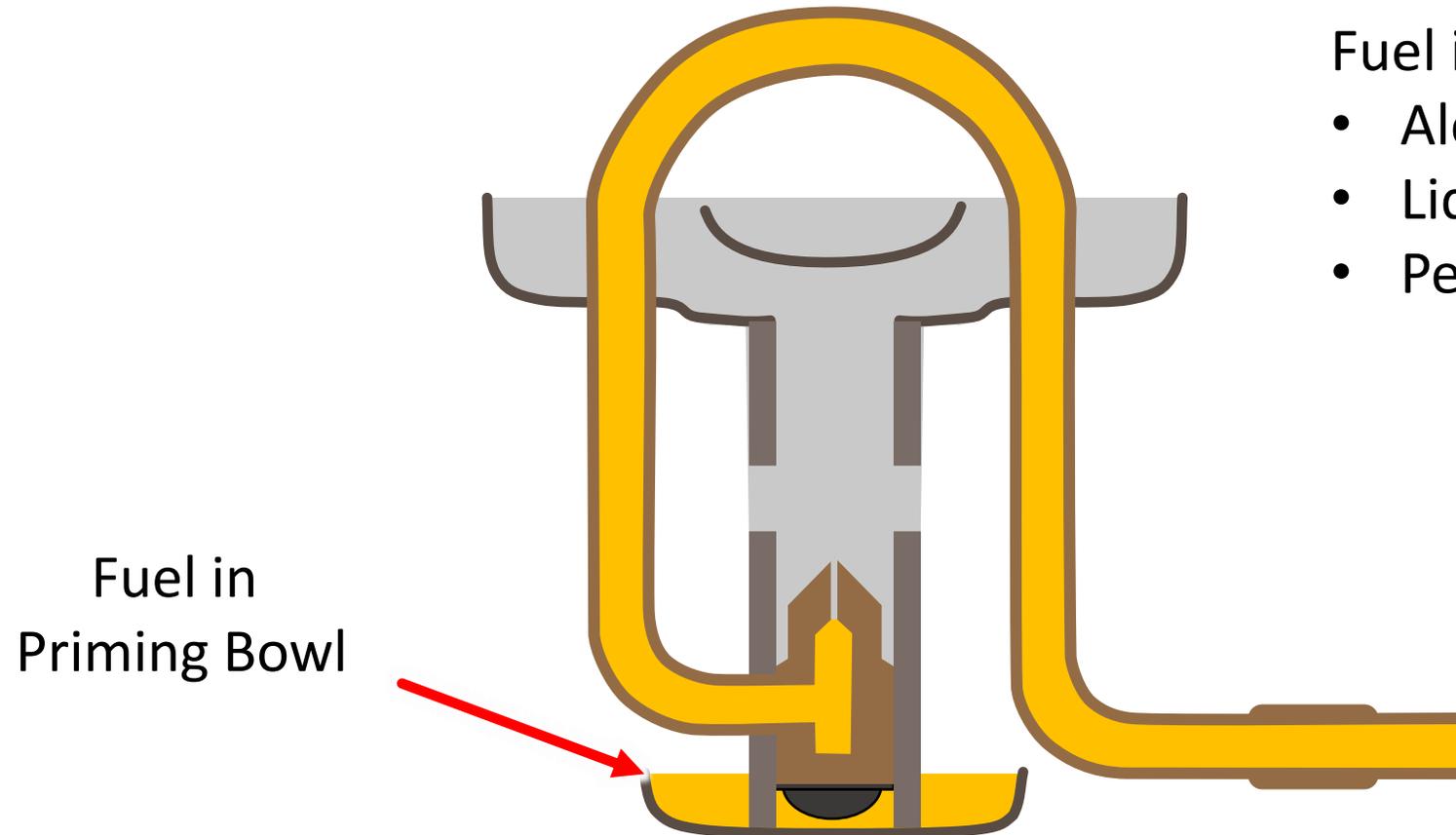
Food

Liquid Petrol Stove Use - Anatomy



Food

Liquid Petrol Stove Use - Priming

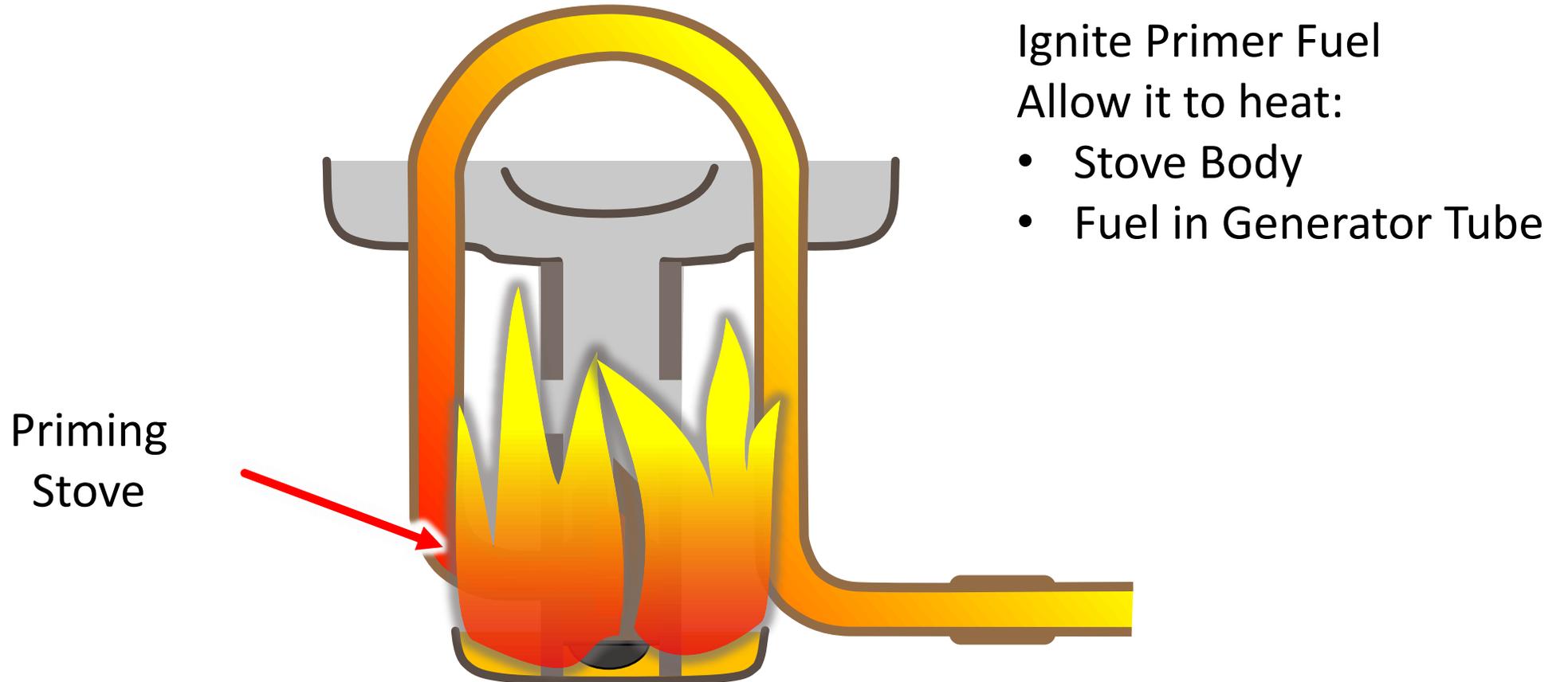


Fuel is added to primer bowl

- Alcohol Paste
- Liquid Alcohol or
- Petrol Fuel leaked from jet

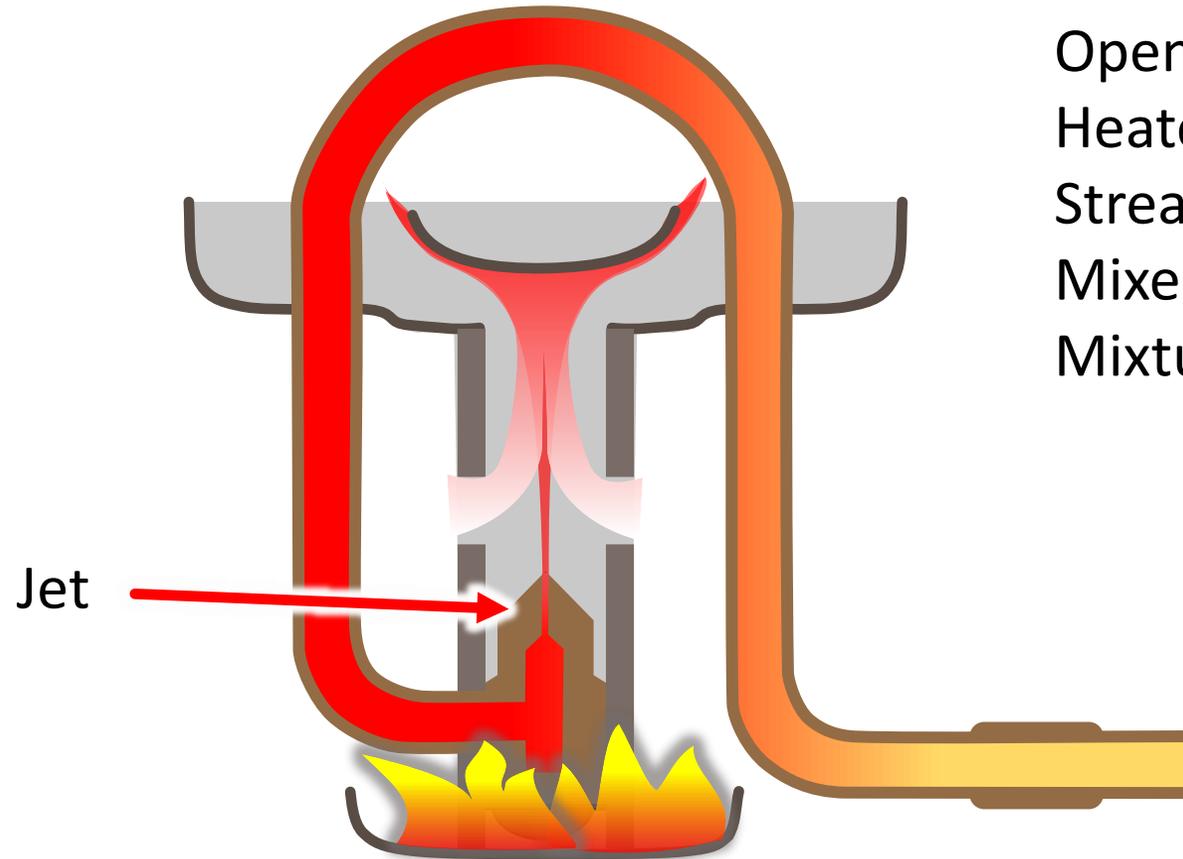
Food

Liquid Petrol Stove Use - Priming



Food

Liquid Petrol Stove Use – Operation



Open Jet

Heated fuel shoots out of jet

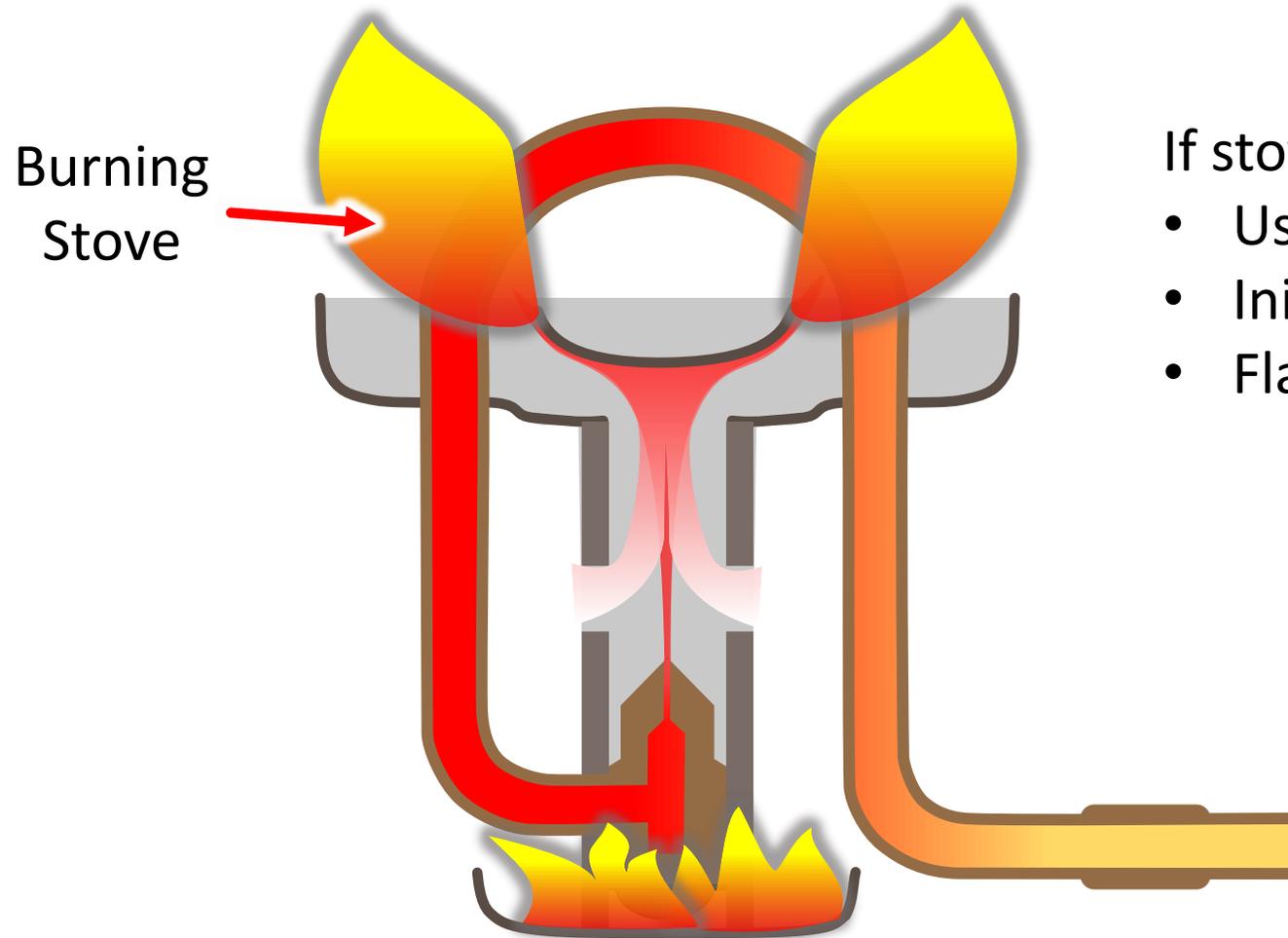
Stream of fuel draws in air

Mixed fuel/air hit burner plate

Mixture is atomized

Food

Liquid Petrol Stove Use – Operation

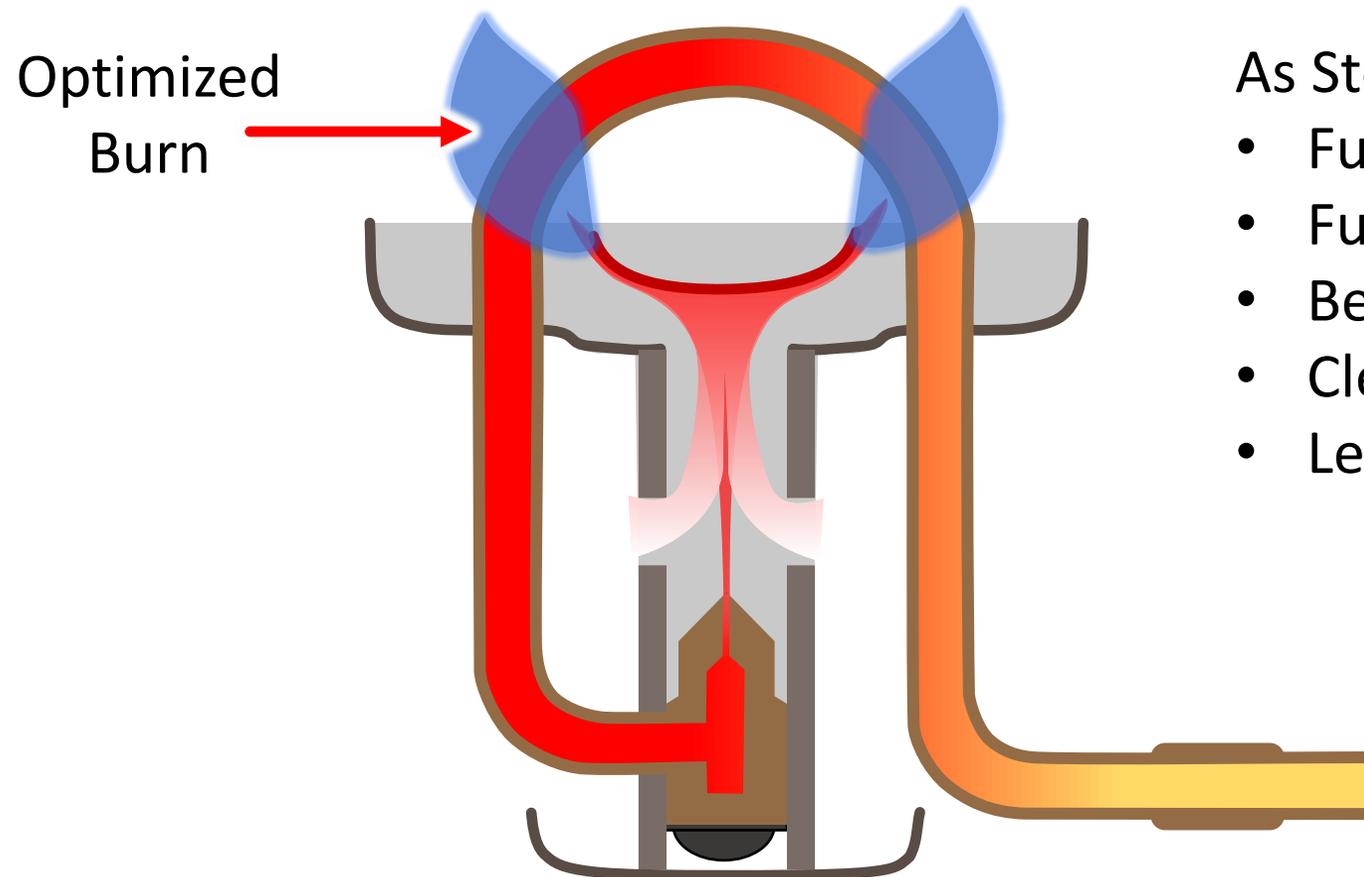


If stove doesn't self-ignite

- Use flame or spark to ignite
- Initial flame may be Yellow
- Flame may flair up a lot

Food

Liquid Petrol Stove Use – Operation



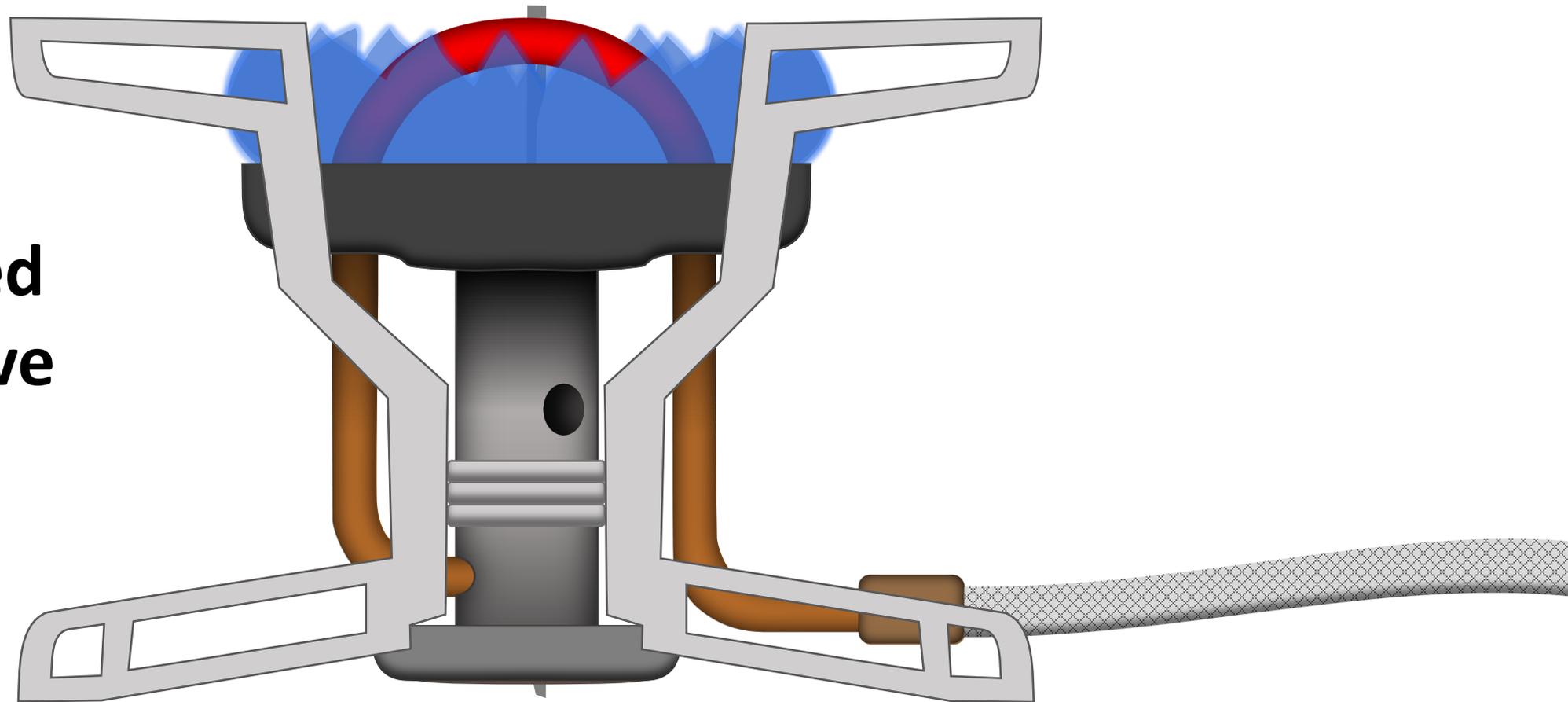
As Stove Heat up

- Fuel is heated in Tubes
- Fuel/Air mix improves
- Better atomization
- Cleaner burn
- Less flareups

Food

Liquid Petrol Stove Use

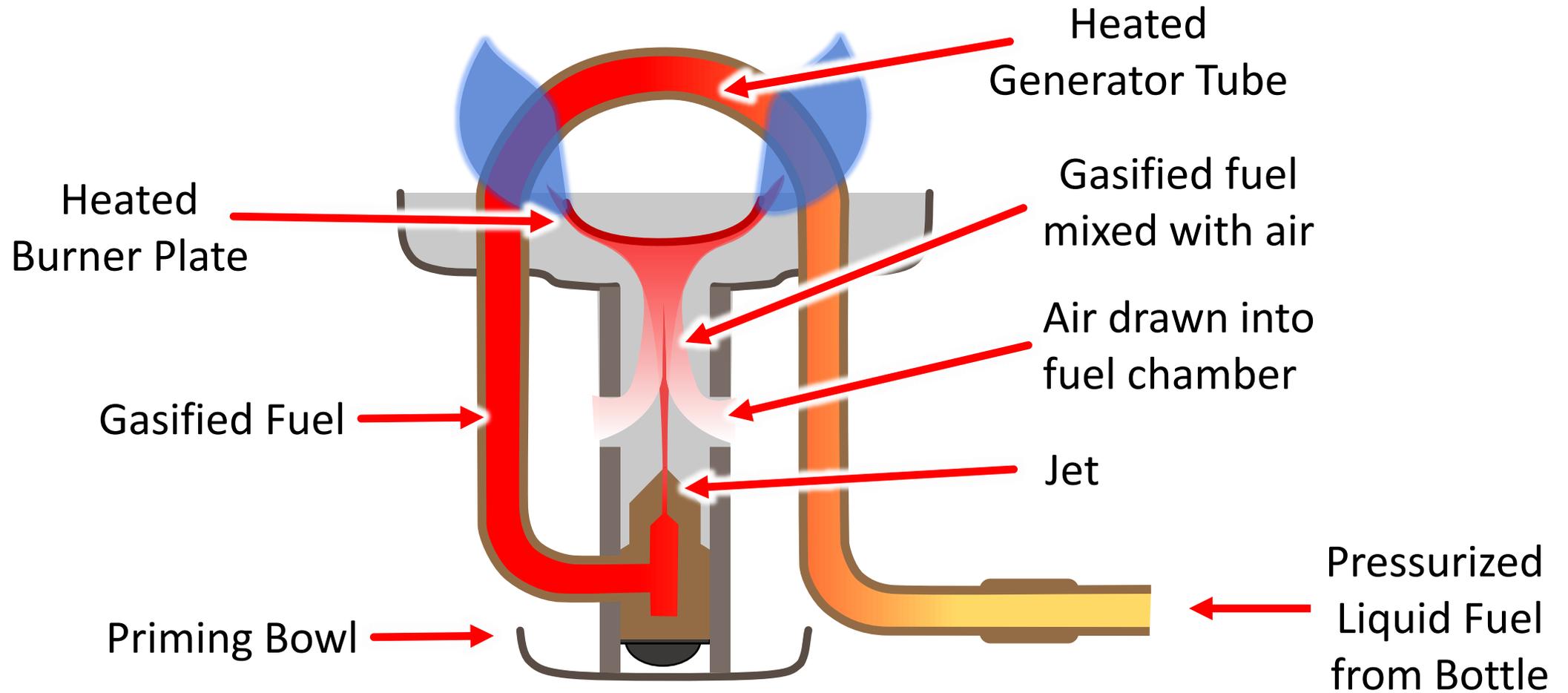
Pressurized Petrol Stove





Food

Liquid Petrol Stove Use - Anatomy





Food

Liquid Petrol Stove Use

- A few old school stoves “Self Pressurize”
 - Examples
 - Optimus Svea 123 and 8R
 - Swiss Borde Kocher

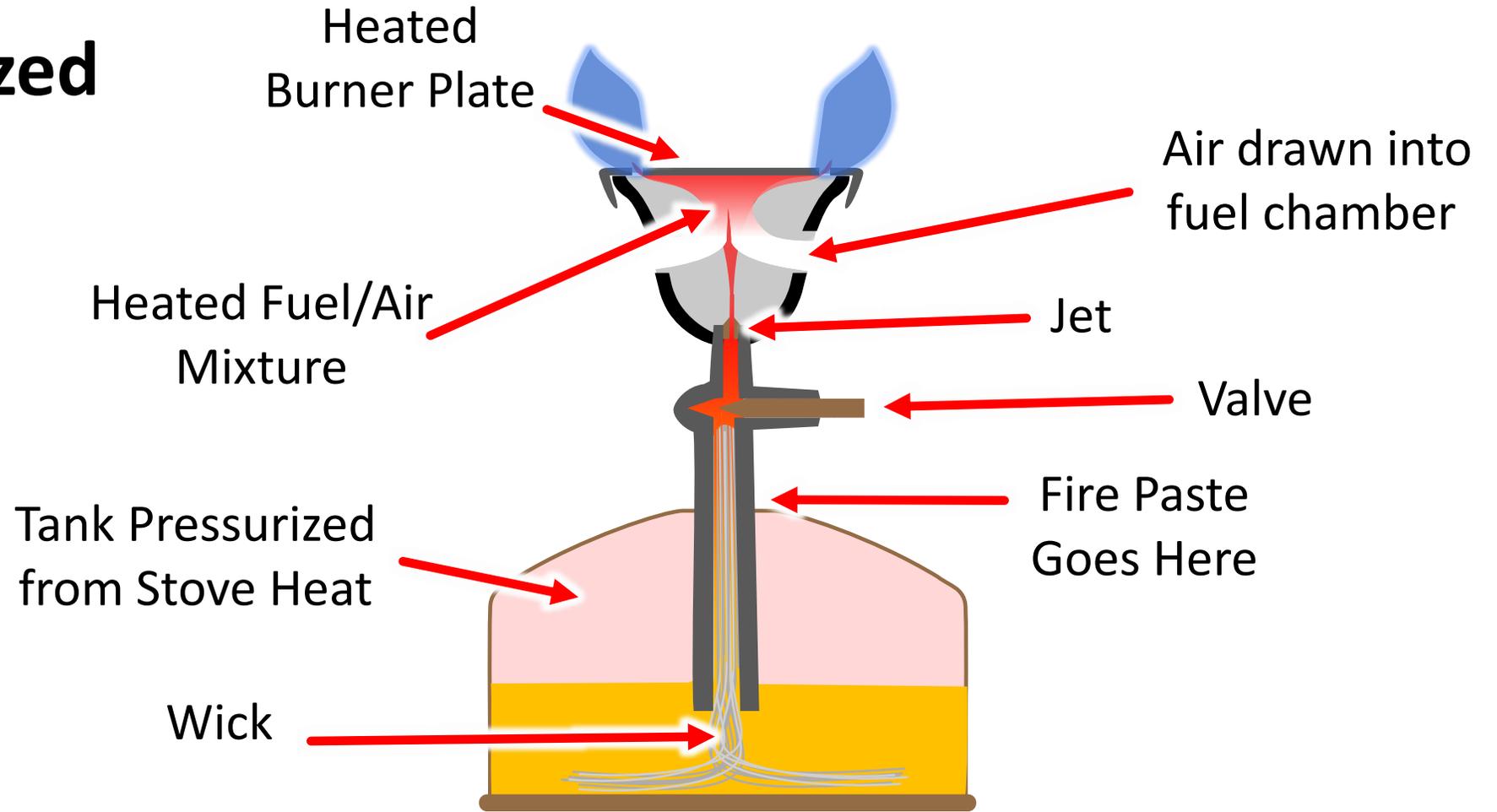




Food

Liquid Petrol Stove Use

Self-Pressurized Stove

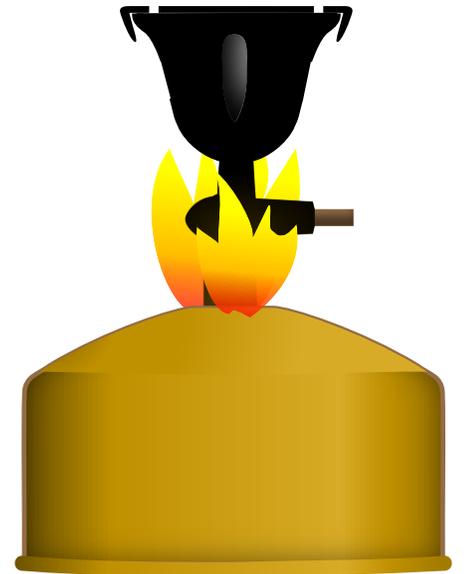




Food

Liquid Petrol Stove Use

- A few old school stoves “Self Pressurize”
 - Stove is primed, similar to pump stoves
 - Instead of using a pump to get fuel out for priming:
 - Stove may be warmed with hands to create just enough pressure to leak a small amount of priming fuel
 - NO skin to metal contact if extremely cold!
 - Priming heats up generator tube and fuel tank
 - Heated tank builds up pressure
 - Liquid fuel is forced into generator tubes





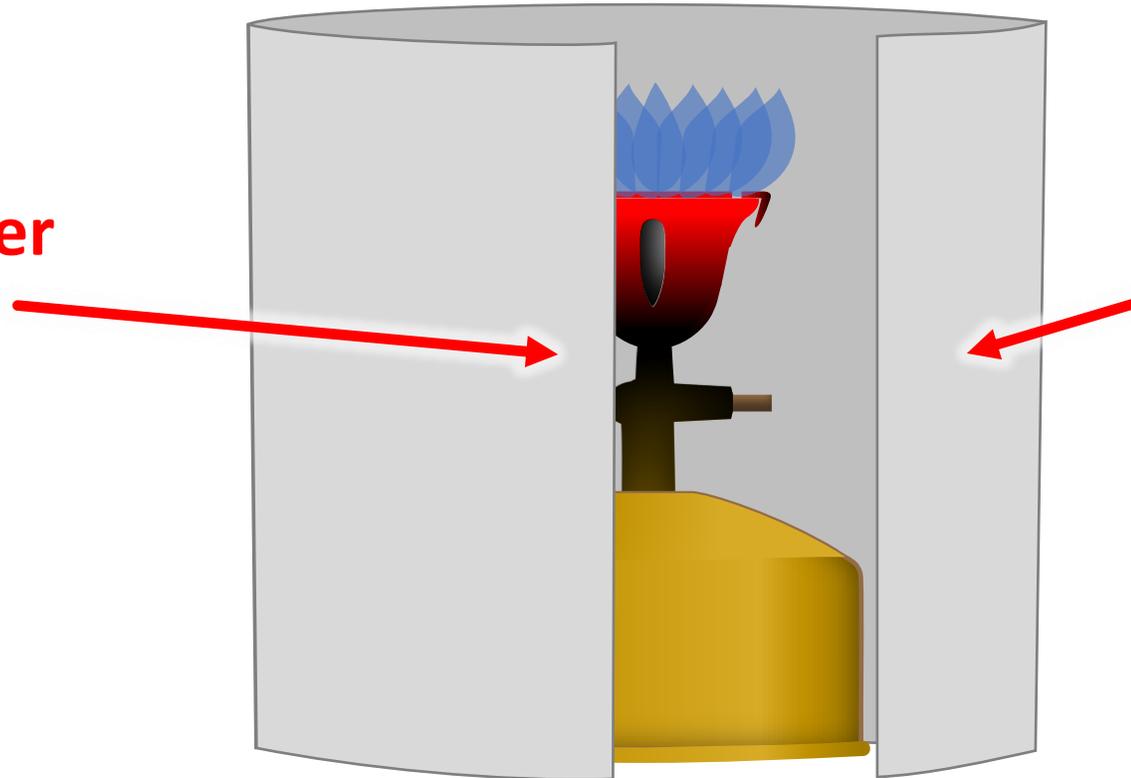
Food

Liquid Petrol Stove Use – Overheating

- Placing a tight windscreen around a stove-over-tank stove is Dangerous

**Heat is reflected
towards fuel canister
and is trapped**

Risk of Explosion!



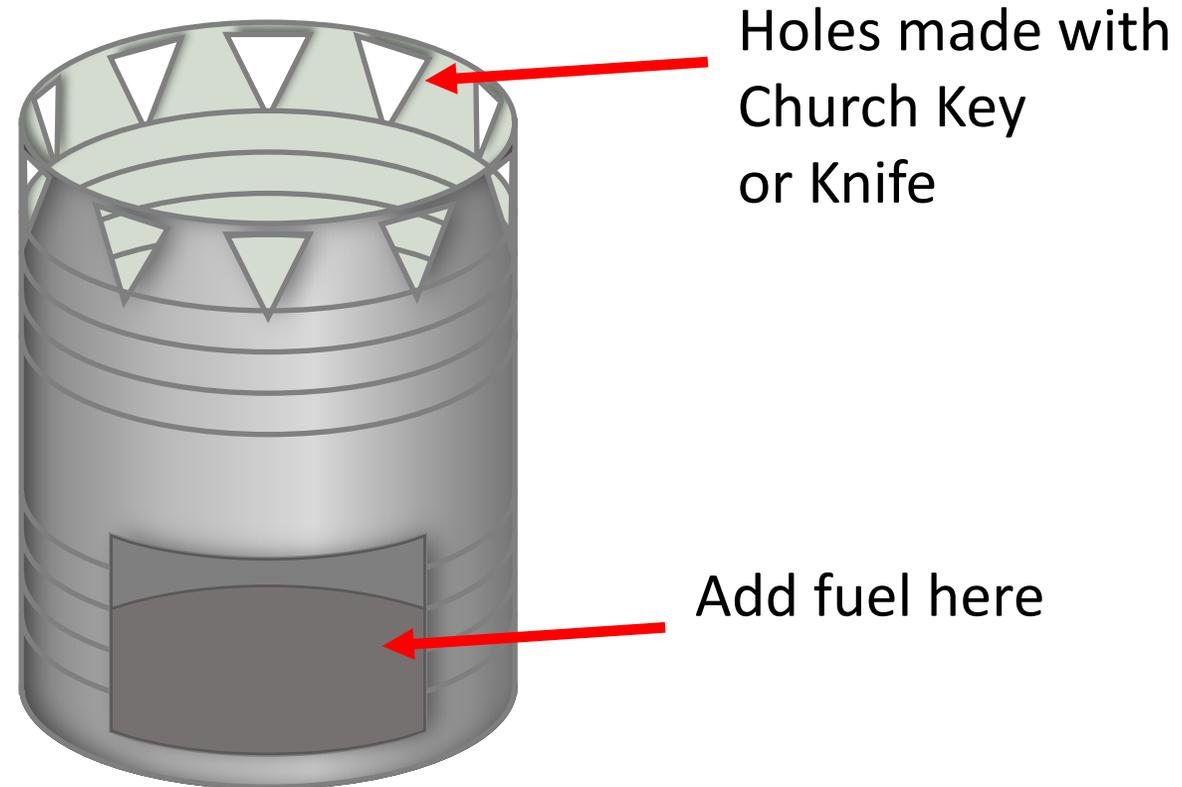
**Do NOT use tight
fitting windscreen
around this type
of stove**

**The ventilated screen that
came with stove is fine**

Food

Backpacking Stove Use – Wood Stoves

- Wood stoves can be as simple as a coffee can with holes in it
- More sophisticated stoves are of course available



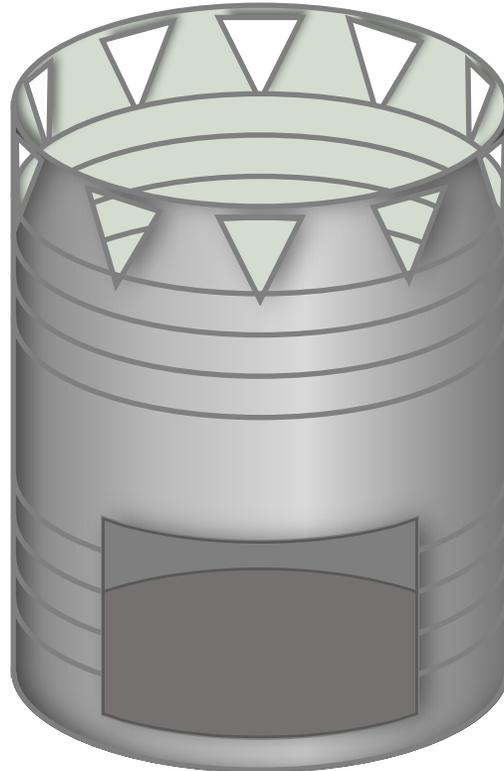
Hobo Stove



Food

Backpacking Stove Use – Wood Stoves

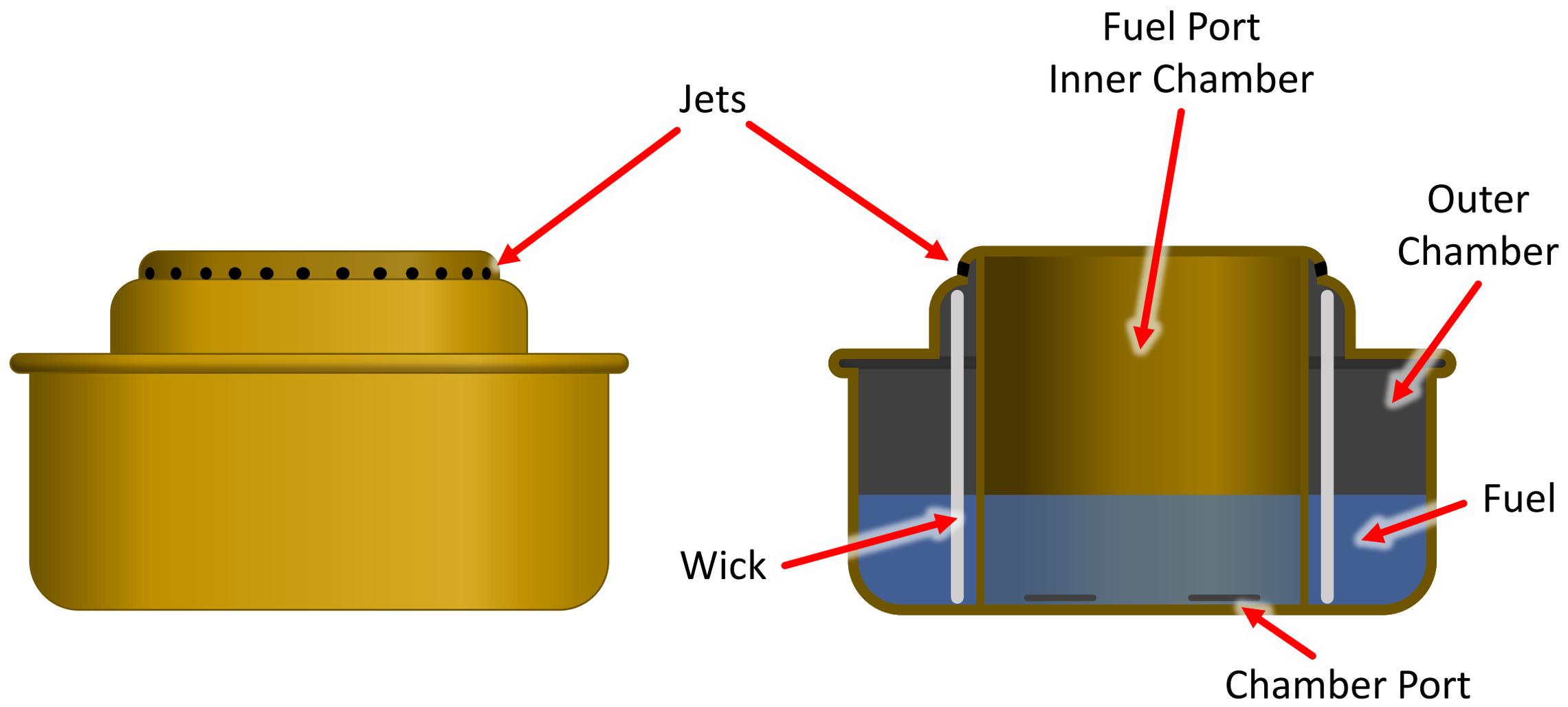
- Requires fuel and fire-starting skills



Hobo Stove

Food

Alcohol Stove Use

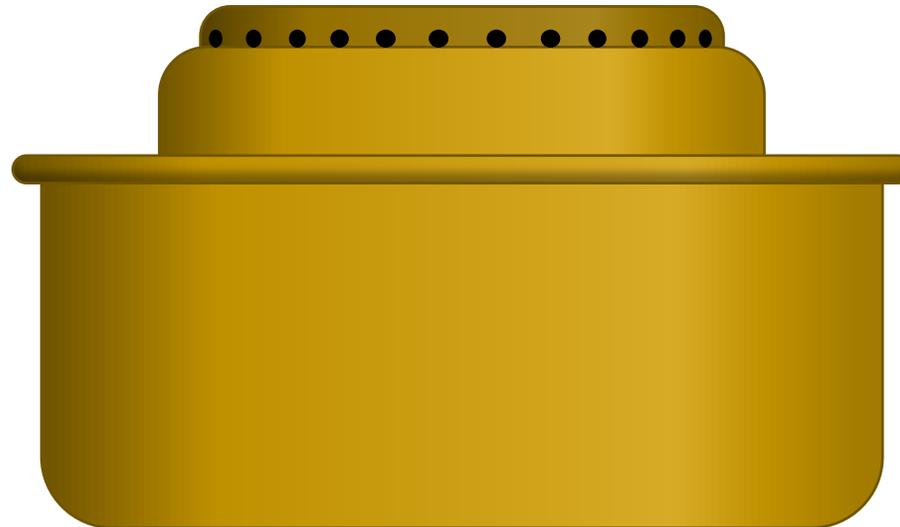


Food

Alcohol Stove Use

- Alcohol stove use is usually pretty straight forward
 1. Fill as instructed
 2. Light
 3. If you can't see a flame, check with a pine needle (NOT finger)
 4. When done, snuff or allow to run dry (depending on stove)

It is important to use
a Windscreen with
an Alcohol Stove

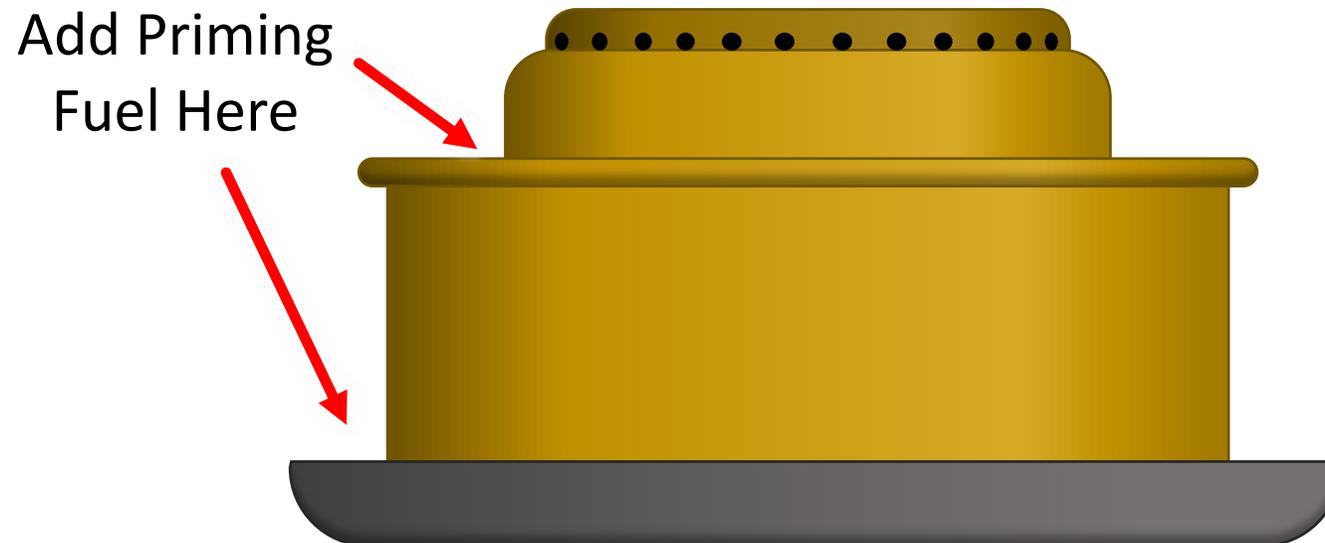




Food

Alcohol Stoves – Priming

- Depending on design, alcohol stoves may need to be primed if cold
 - Pour a little alcohol on stove or in pan under stove and light
 - This will warm stove and fuel within stove – resulting in vaporization for fuel

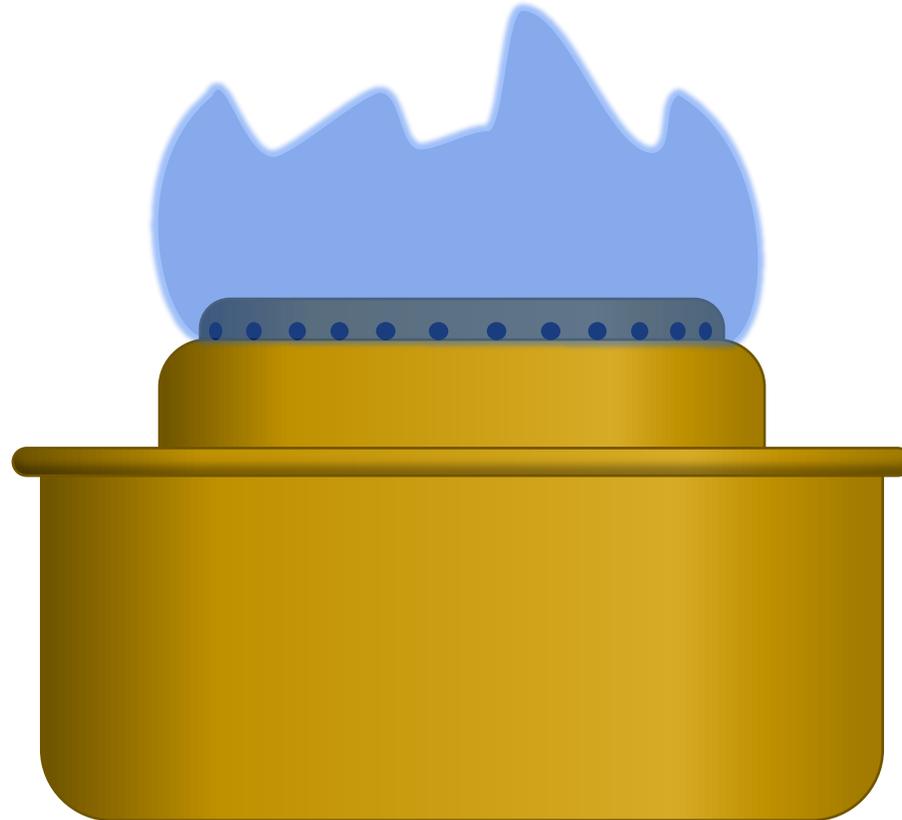




Food

Alcohol Stove Use – Not for Everyone

- Although these stoves are a great option
- **There is a reason the BSA recommends against their use**

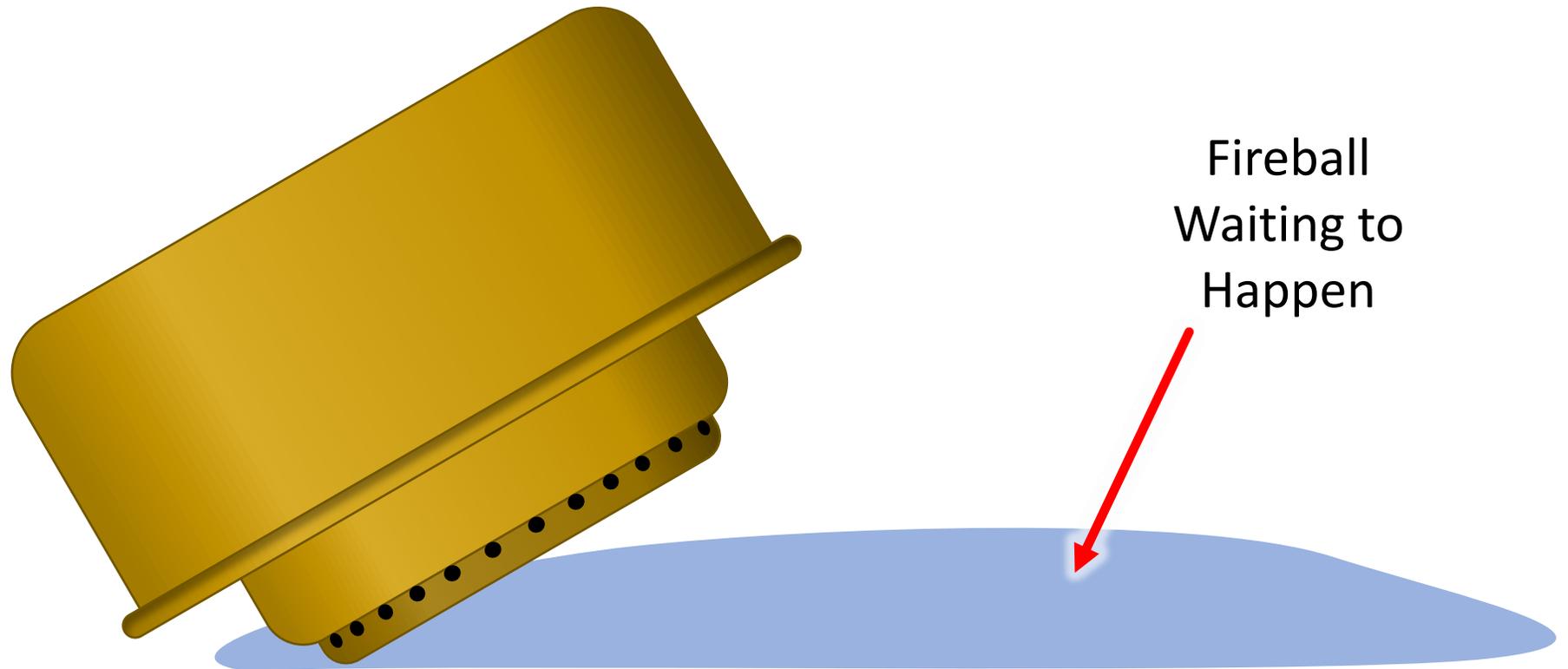




Food

Alcohol Stove Use – Spill Hazard

- Many alcohol stoves present a spill hazard
- If you knock over a stove, it can spill fuel everywhere
- Spilled fuel from a burning stove is an obvious burn hazard

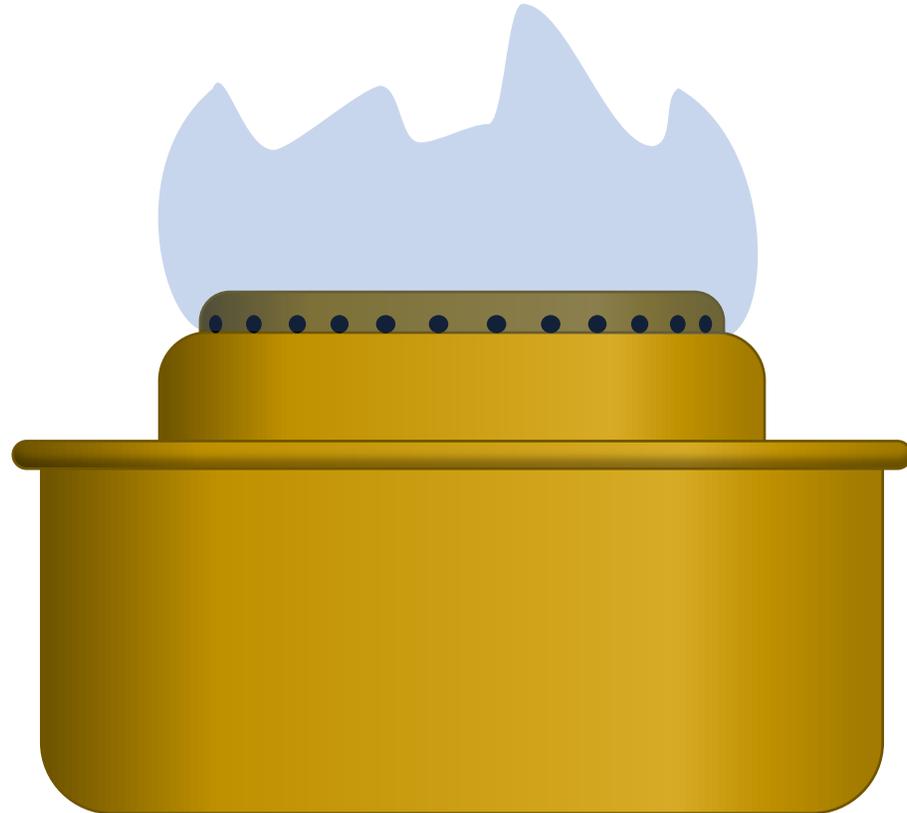




Food

Alcohol Stove Use – Hidden Flame

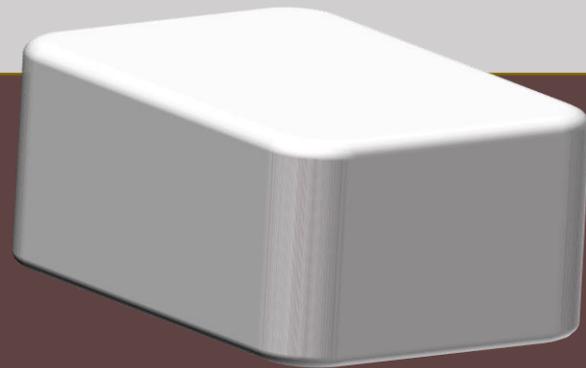
- Flames from burning alcohol is more or less invisible in sunlight
- Don't burn yourself and knock over stove



Food

Chemical Stove Use

- Light fuel
- Allow to burn out or blow out

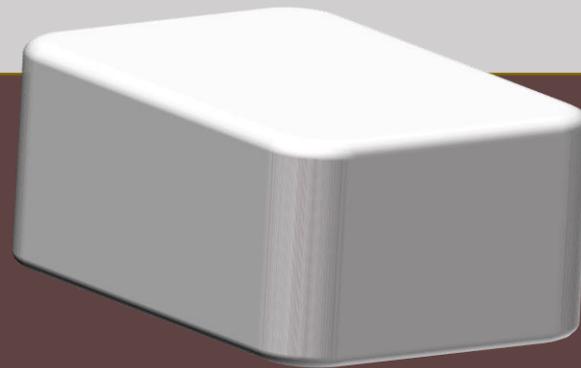




Food

Chemical Stove Use

- Tabs can be cut in half for shorter burn times
- More than one tab can be used for heating up larger items

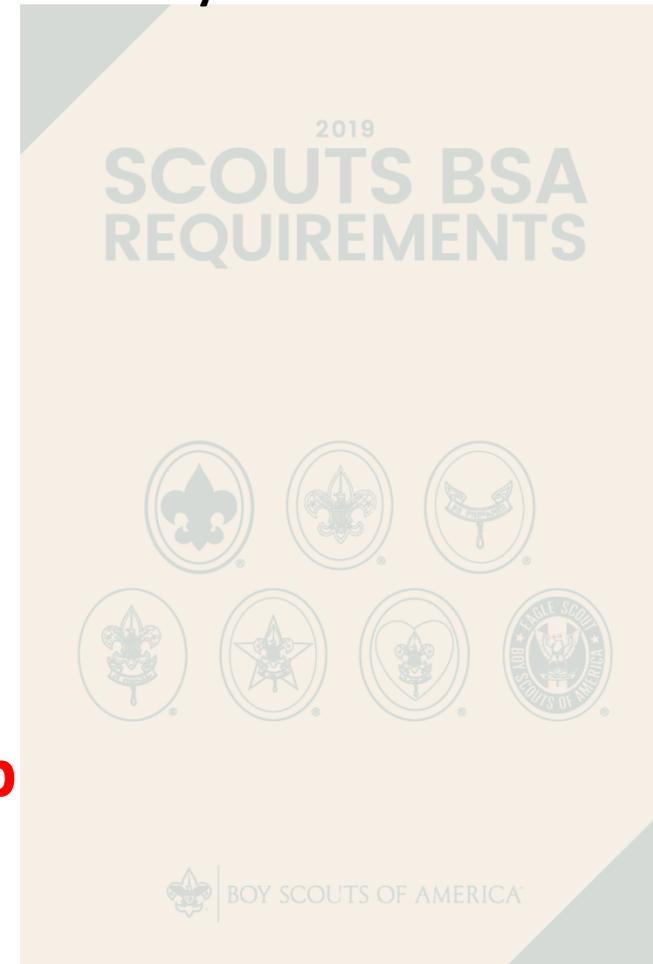


Food

Requirement B8c – 3 Meals

Prepare at least three meals using a stove and fuel you can carry in a backpack.

Ideally complete on a Backpacking Trip

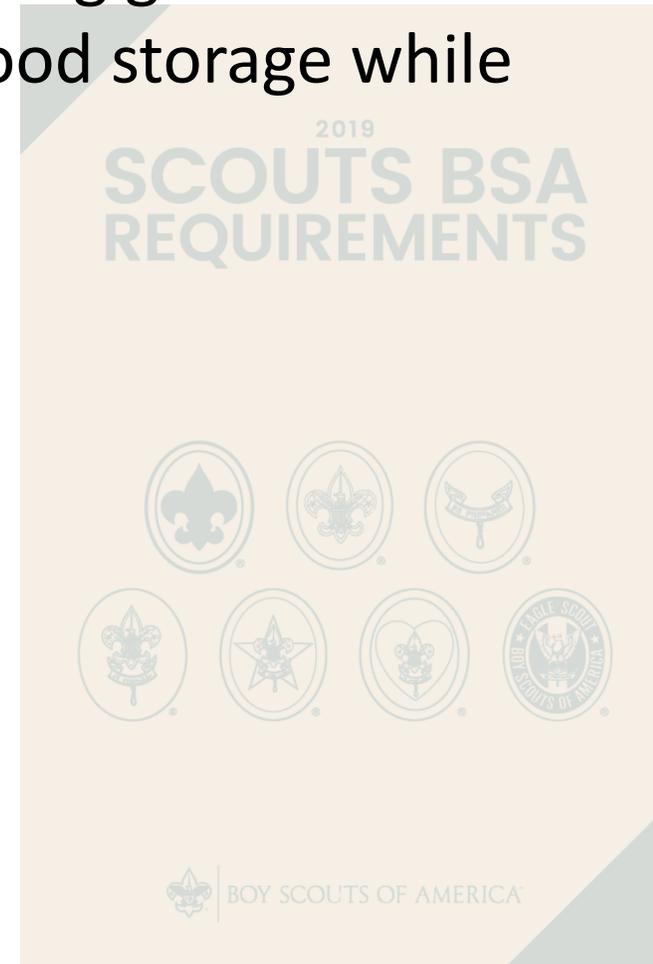


Food

Requirement B8b – Food Sanitation

Demonstrate that you know how to keep cooking and eating gear clean and sanitary, and that you practice proper methods for food storage while on a backpacking trek.

Complete on a Backpacking Trip



Food

Requirement C8c – Food Planning

Prepare a camp menu.

Explain how the menu would differ from a menu for a backpacking or float trip.

Give recipes and make a food list for your patrol.

Plan two breakfasts, three lunches, and two suppers.

Discuss how to protect your food against bad weather, animals, and contamination.

Complete and Fill out Workbook



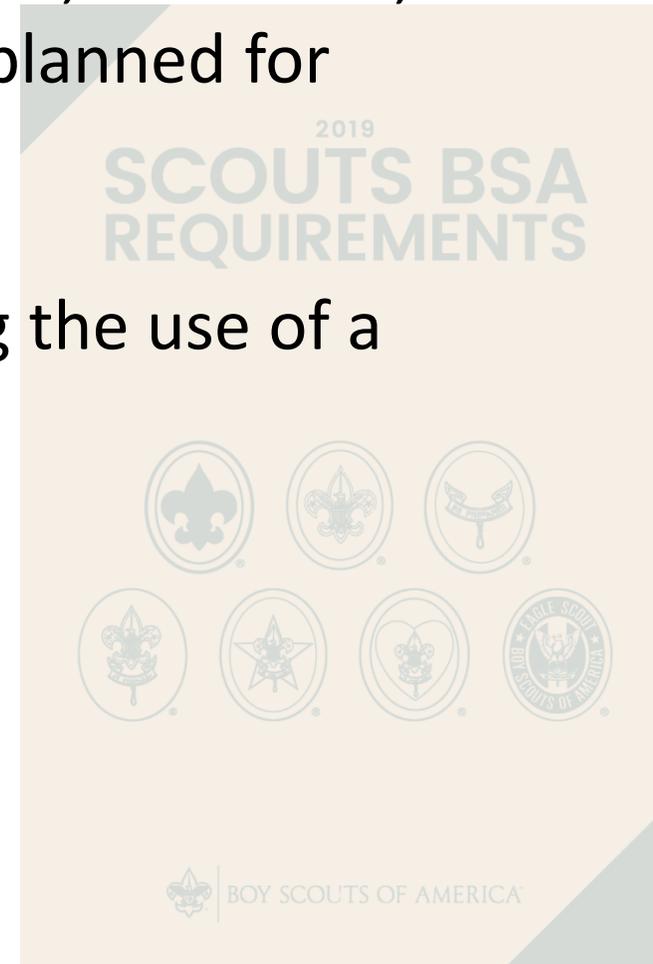
Food

Requirement C8d – Cooking

While camping in the outdoors, cook at least one breakfast, one lunch, and one dinner for your patrol from the meals you have planned for requirement 8c.

At least one of those meals must be a trail meal requiring the use of a lightweight stove

Complete and Fill out Workbook



Food

Food Sanitation

- Food Sanitation is an important topic
- Guidelines are not universally practiced outside of restaurants
- Inadequate water treatment and food sanitation result in sickness

Food

Food Sanitation

- Crew should use personal utensils and water bottles
- Foods need to be stored appropriately
- Some foods will quickly spoil if not refrigerated
- Some foods need to be cooked to a certain temperature
- Plan to avoid foods that require special storage or preparation

Food

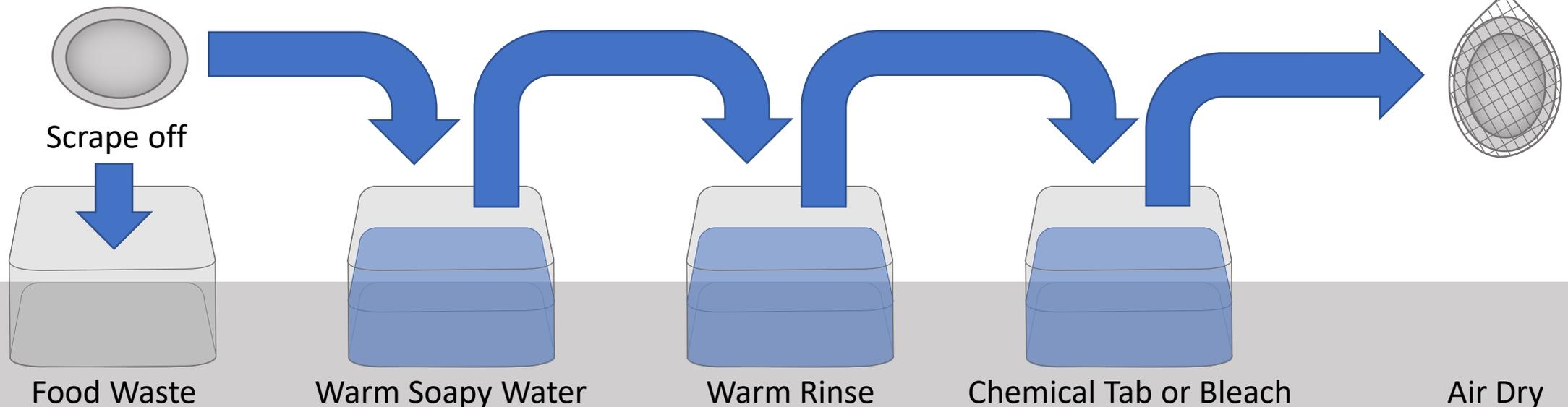
Food Sanitation – Cleaning Dishes and Utensils

- Cooking and Eating utensils need to be cleaned and sanitized
 - Use a few drops of biodegradable soap to wash utensils
 - Rinse them in pot with cold water and sanitation tablet or bleach
 - Ideally use 3 tub/pot method
 - Allow to air dry (don't wipe dry with dirty cloth)

Food

Cleaning Dishes and Utensils – Three Tub Method

- Scrape leftover food off dishes and utensils
- Scrub dishes in warm soapy water in 1st Tub/Sink
- Rinse dishes in warm, clean water in 2nd Tub/Sink
- Soak dishes in chemical sanitizing solution in 3rd Tub/Sink
- Air-dry dishes and utensils



Food

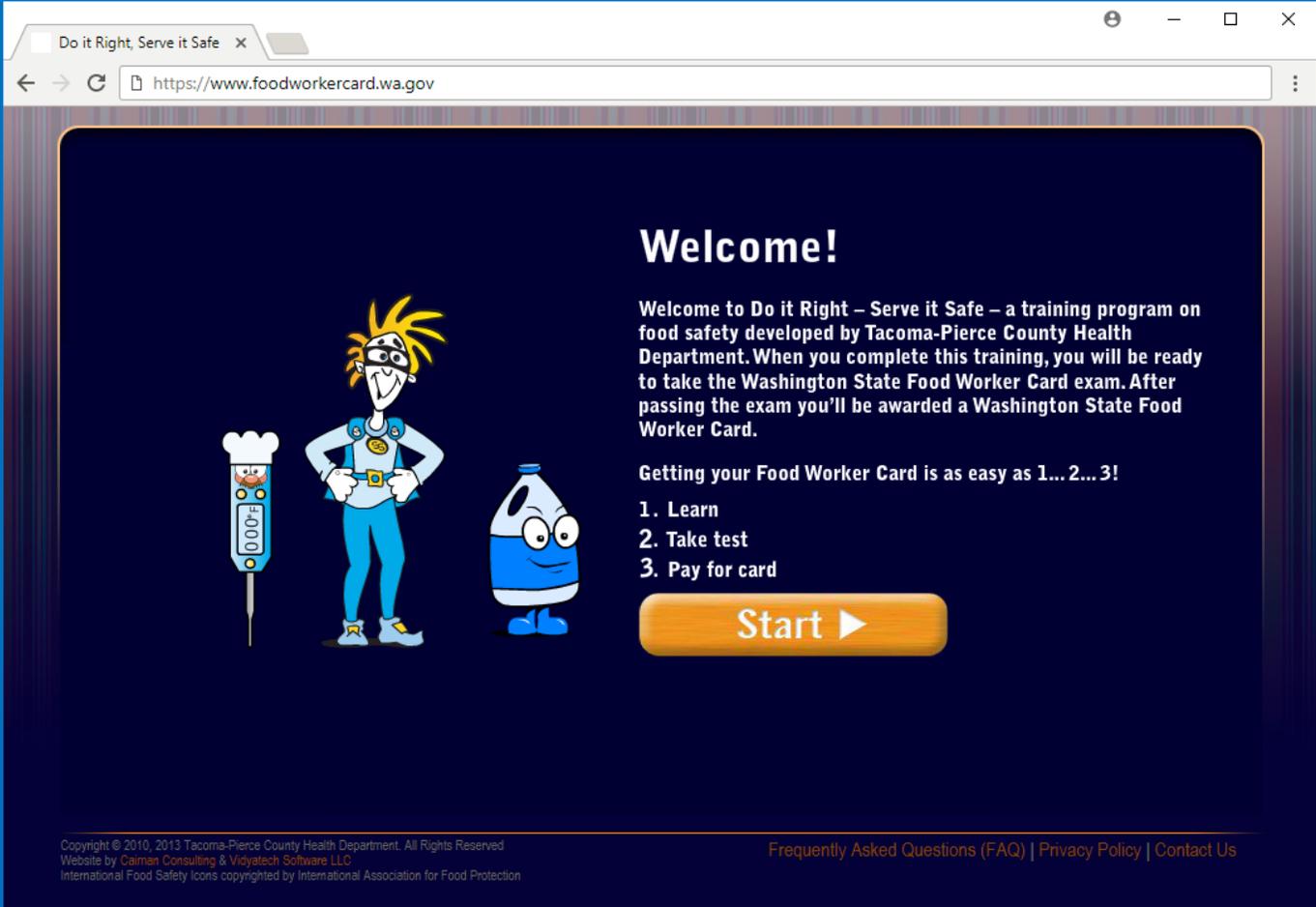
Food Sanitation

- All foods and smellables (toothpaste) need to be stored appropriately
 - NOT in tent
 - Bear Bag
 - Bear Can

Food

Washington State Food Worker Course

- Not a BSA or Merit Badge requirement
- Valuable training for:
 - Wilderness
 - BSA events
 - Social gatherings
 - Family health
- [foodworkercard.wa.gov](https://www.foodworkercard.wa.gov)



Do it Right, Serve it Safe x

https://www.foodworkercard.wa.gov

Welcome!

Welcome to Do it Right - Serve it Safe - a training program on food safety developed by Tacoma-Pierce County Health Department. When you complete this training, you will be ready to take the Washington State Food Worker Card exam. After passing the exam you'll be awarded a Washington State Food Worker Card.

Getting your Food Worker Card is as easy as 1... 2... 3!

1. Learn
2. Take test
3. Pay for card

[Start ▶](#)

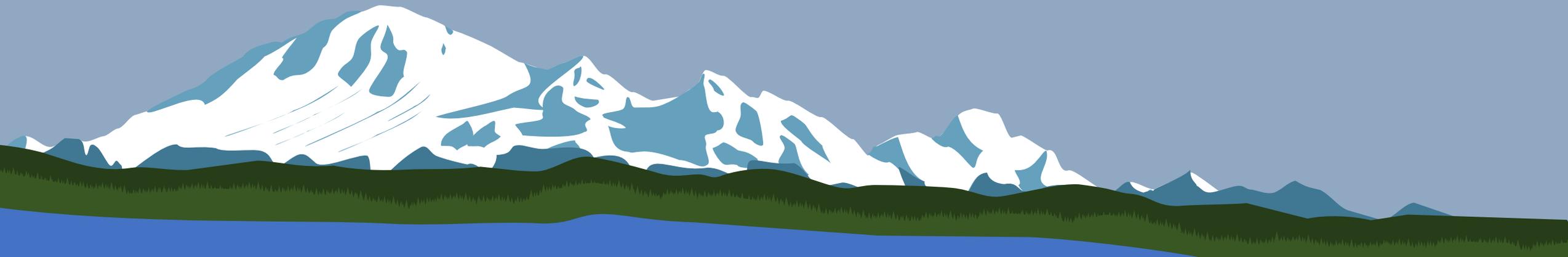
Copyright © 2010, 2013 Tacoma-Pierce County Health Department. All Rights Reserved
Website by Carman Consulting & Vidiatech Software LLC
International Food Safety Icons copyrighted by International Association for Food Protection

[Frequently Asked Questions \(FAQ\)](#) | [Privacy Policy](#) | [Contact Us](#)

1. Hiking Merit Badge Requirements	11. Leave No Trace
2. Backpacking Merit Badge Requirements	12. Hiking Philosophy
3. Camping Merit Badge Requirements	13. Preparation
4. Merit Badge Intro	14. Hiking - Getting Out There
5. Hazards	15. Backpacking - Getting Out There
6. First Aid	16. Camping - Getting Out There
7. Gear	17. Final Thoughts
8. Water	18. Resources
9. Food	19. Instructor's Corner
10. Navigation	



Navigation



Navigation

Map and Compass Skills

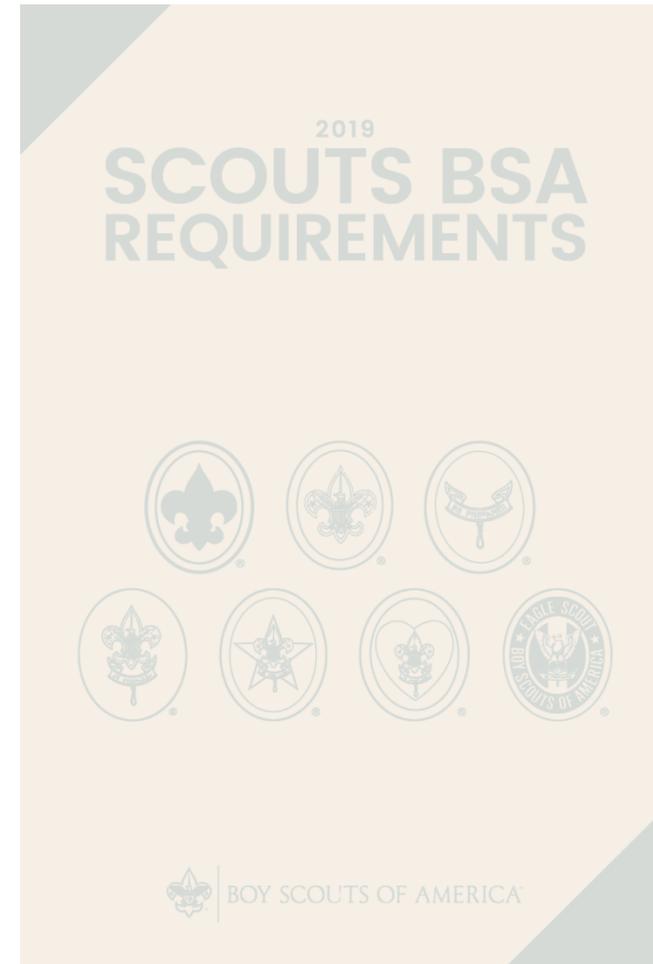
- Vital skill set required for backcountry adventures
 - Helps prevent you from getting lost
 - Helps you re-find your location when lost
 - Helps you plan out your trip
 - Good places to sleep
 - Good places for resources such as water and fish
 - Find places to explore or for view
 - Identify places to avoid

Navigation

Requirement B6a – Read a Map

Demonstrate that you can read topographic maps.

Complete and Fill out Workbook



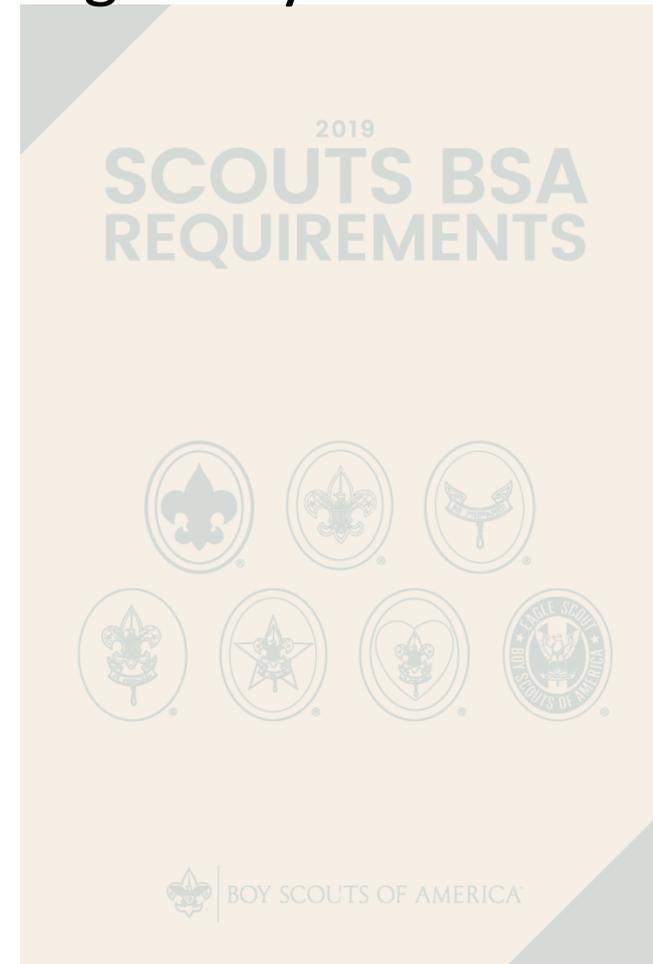
Navigation

Requirement C3 – Navigation

Make a written plan for an overnight trek and show how to get to your camping spot using a topographical map and

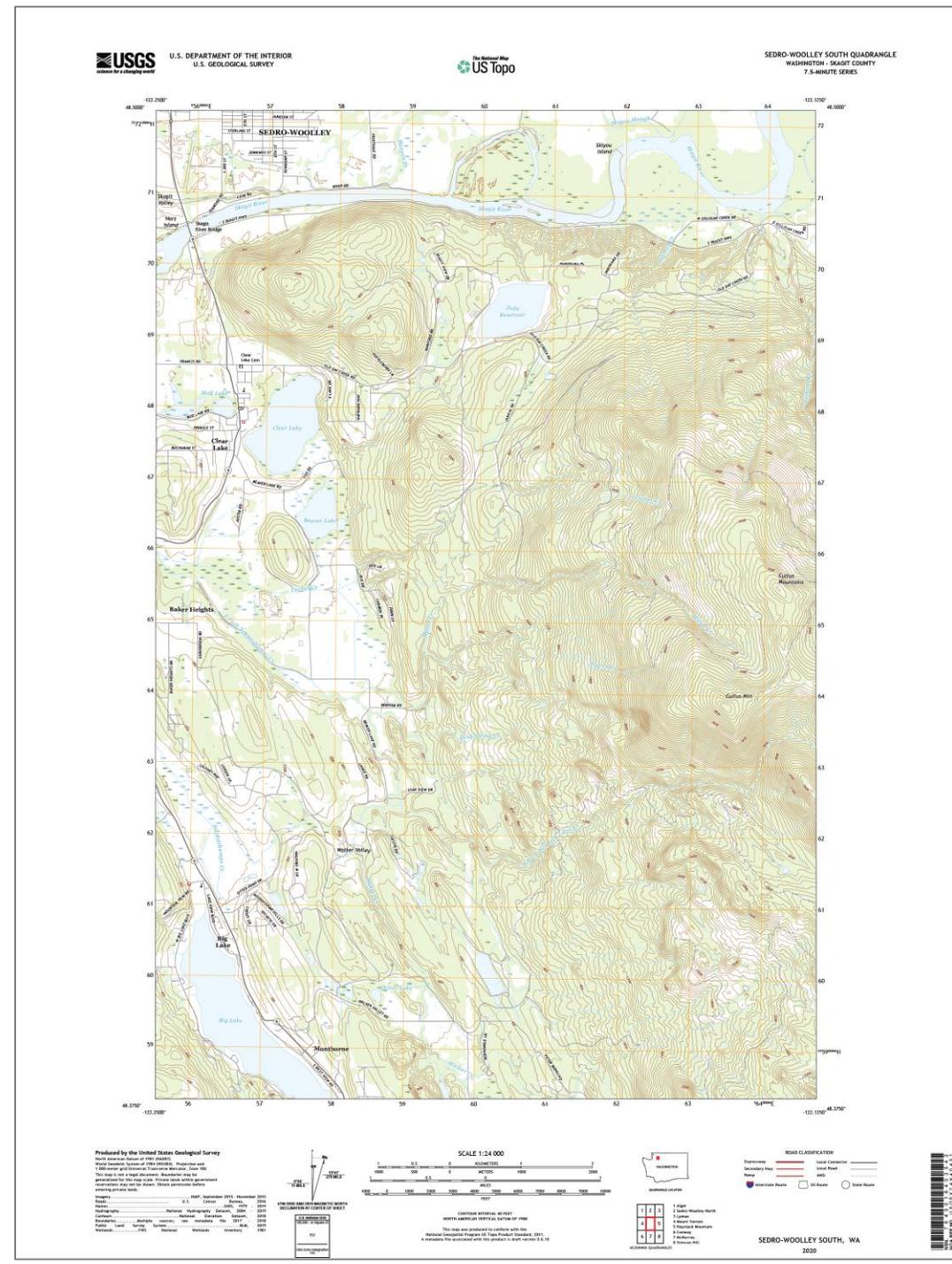
- a. a compass
- b. a GPS receiver
- c. a smartphone with a GPS app

Complete and Fill out Workbook

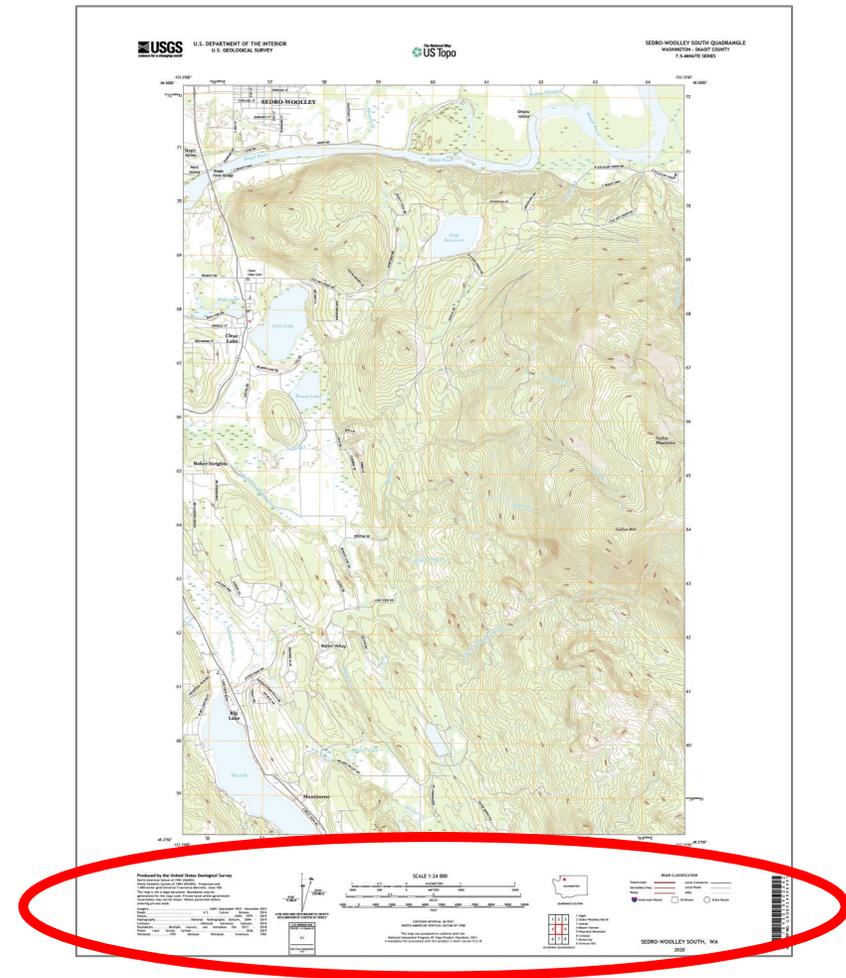


USGS Topographical Map

viewer.nationalmap.gov/basic



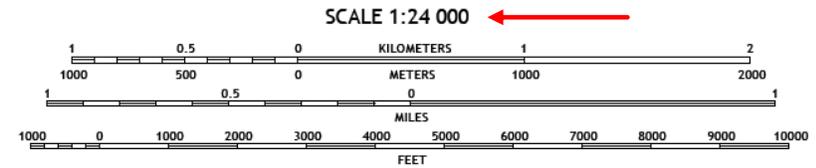
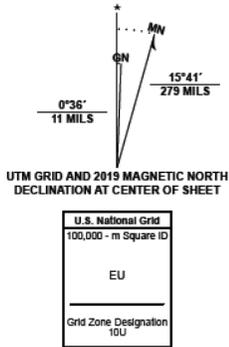
Map Legend



Produced by the United States Geological Survey

North American Datum of 1983 (NAD83)
 World Geodetic System of 1984 (WGS84). Projection and 1 000-meter grid: Universal Transverse Mercator, Zone 10U
 This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery.....NAIP, September 2015 - November 2015
 Roads.....U.S. Census Bureau, 2016
 Names.....GNIS, 1979 - 2019
 Hydrography.....National Hydrography Dataset, 2004 - 2019
 Contours.....National Elevation Dataset, 2018
 Boundaries.....Multiple sources; see metadata file 2017 - 2018
 Public Land Survey System.....BLM, 2019
 Wetlands.....FWS National Wetlands Inventory 1981



CONTOUR INTERVAL 40 FEET
 NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011. A metadata file associated with this product is draft version 0.6.18



1	2	3
4	5	6
6	7	8

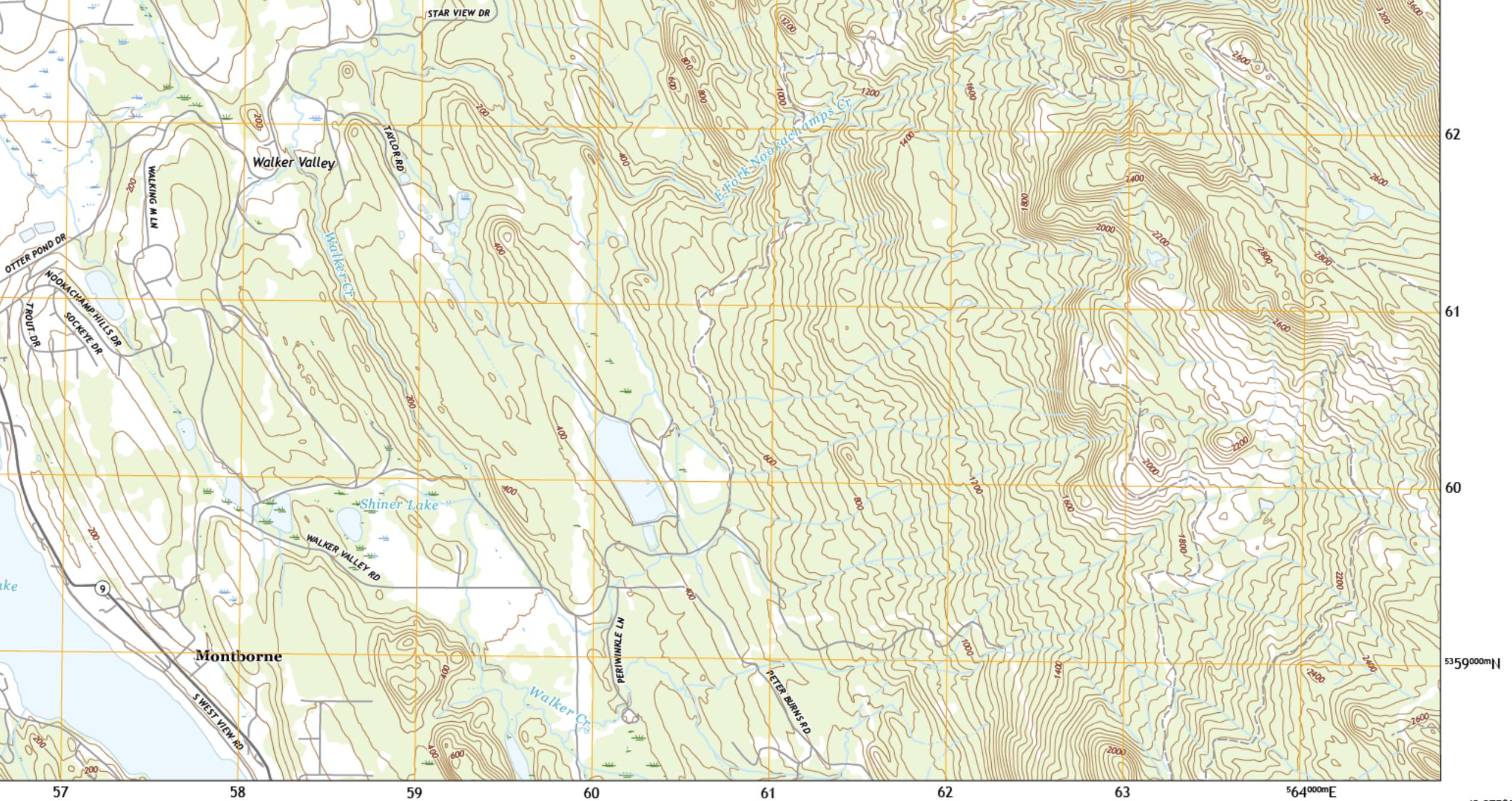
ADJOINING QUADRANGLES

- 1 Alger
- 2 Sedro-Woolley North
- 3 Lyman
- 4 Mount Vernon
- 5 Haystack Mountain
- 6 Conway
- 7 McMurray
- 8 Stimson Hill



SEDRO-WOOLLEY SOUTH, WA

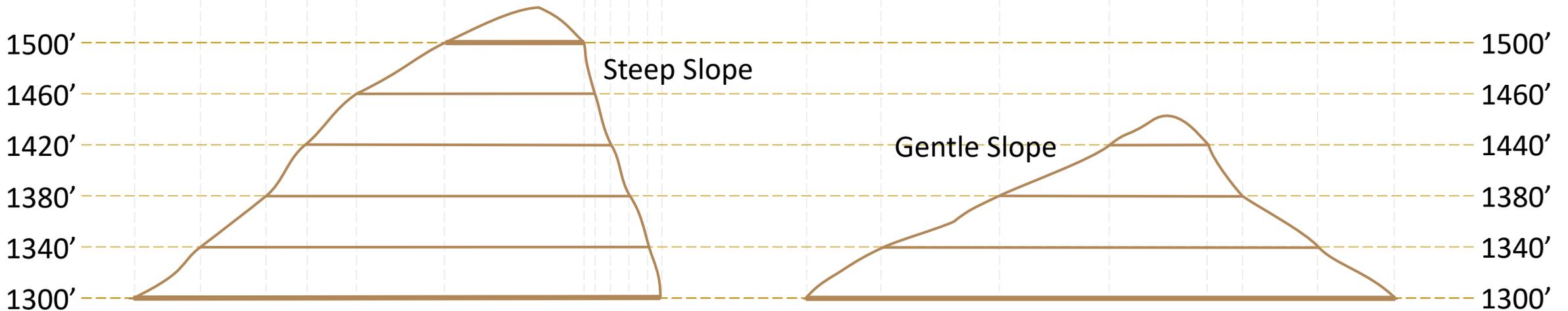
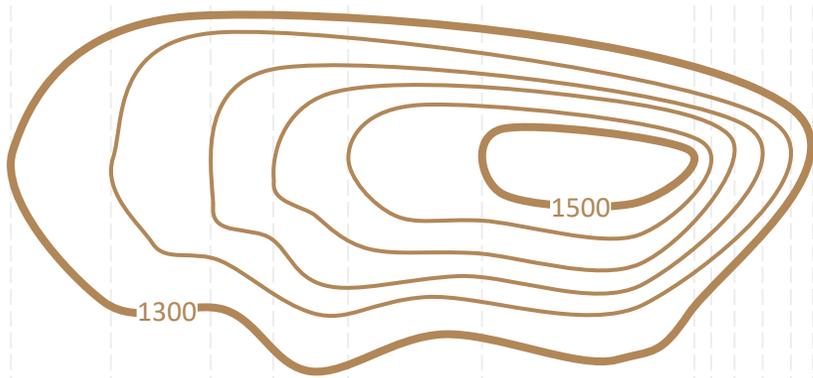
2020

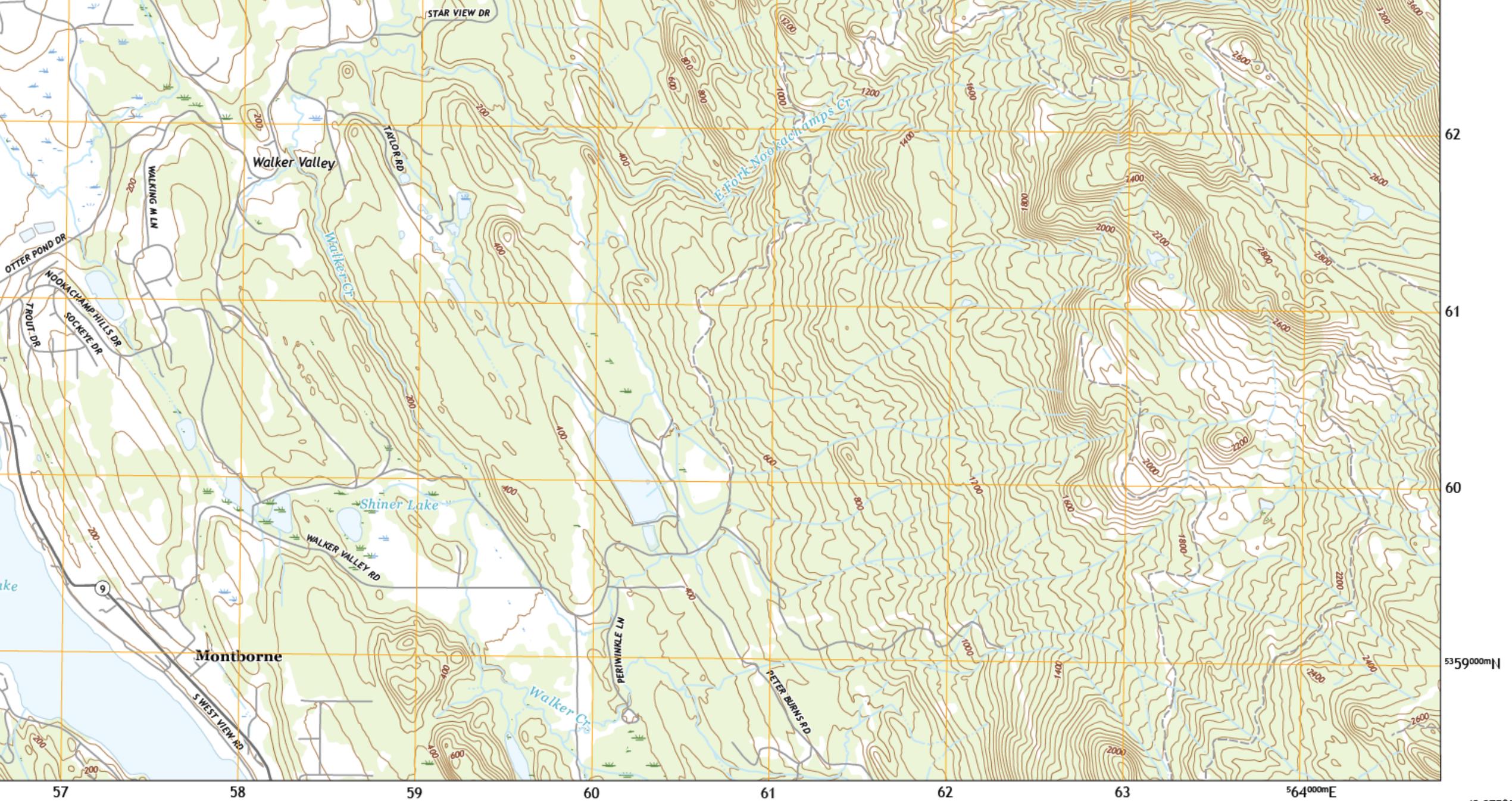


Map Originally 1:24,000 Scale

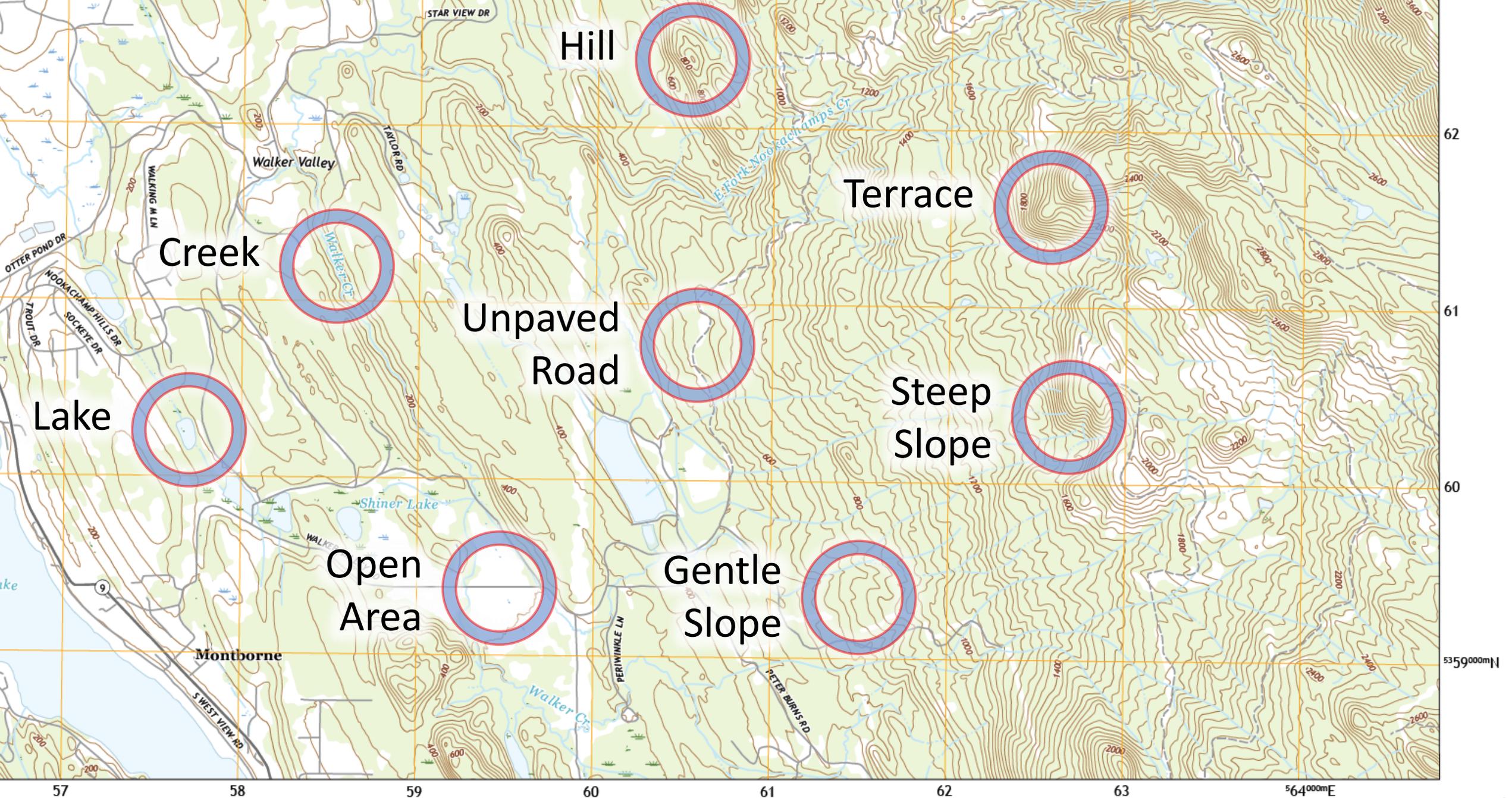
Topographic Maps

Contour Lines





Map Originally 1:24,000 Scale



Map Originally 1:24,000 Scale

USGS Map Symbols

pubs.usgs.gov



What is a Topographic Map?

A map is a representation of the Earth, or part of it. The distinctive characteristic of a topographic map is that the shape of the Earth's surface is shown by contour lines. Contours are imaginary lines that join points of equal elevation on the surface of the land above or below a reference surface, such as mean sea level. Contours make it possible to measure the height of mountains, depths of the ocean bottom, and steepness of slopes.

A topographic map shows more than contours. The map includes symbols that represent such features as streets, buildings, streams, and vegetation. These symbols are constantly refined to better relate to the features they represent, improve the appearance or readability of the map, or reduce production cost.

Consequently, within the same series, maps may have slightly different symbols for the same feature. Examples of symbols that have changed include built-up areas, roads, intermittent drainage, and some lettering styles. On one type of large-scale topographic map, called provisional, some symbols and lettering are hand-drawn.

Topographic Map Symbols

Reading Topographic Maps

Interpreting the colored lines, areas, and other symbols is the first step in using topographic maps. Features are shown as points, lines, or areas, depending on their size and extent. For example, individual houses may be shown as small black squares. For larger buildings, the actual shapes are mapped. In densely built-up areas, most individual buildings are omitted and an area tint is shown. On some maps, post offices, churches, city halls, and other landmark buildings are shown within the tinted area.

The first features usually noticed on a topographic map are the area features, such as vegetation (green), water (blue), and densely built-up areas (gray or red).

Many features are shown by lines that may be straight, curved, solid, dashed, dotted, or in any combination. The colors of the lines usually indicate similar classes of information: topographic contours (brown); lakes, streams, irrigation ditches, and other hydrographic features (blue); land grids and important roads (red); and other roads and trails, railroads, boundaries, and other cultural features (black). At one time, purple was used as a revision color to show all feature changes. Currently, purple is not used in our revision program, but purple features are still present on many existing maps.

Various point symbols are used to depict features such as buildings, campgrounds, springs, water tanks, mines, survey control points, and wells. Names of places and features are shown in a color corresponding to the type of feature. Many features are identified by labels, such as "Substation" or "Golf Course."

Topographic contours are shown in brown by lines of different widths. Each contour is a line of equal elevation; therefore, contours never cross. They show the general shape of the terrain. To help the user determine elevations, index contours are wider. Elevation values are printed in several places along these lines. The narrower intermediate and supplementary contours found between the index contours help to show more details of the land surface shape. Contours that are very close together represent steep slopes. Widely spaced contours or an absence of contours means that the ground slope is relatively level. The elevation difference between adjacent contour lines, called the contour interval, is selected to best show the general shape of the terrain. A map of a relatively flat area may have a contour interval of 10 feet or less. Maps in mountainous areas may have contour intervals of 100 feet or more. The contour interval is printed in the margin of each U.S. Geological Survey (USGS) map.

Bathymetric contours are shown in blue or black, depending on their location. They show the shape and slope of the ocean bottom surface. The bathymetric contour interval may vary on each map and is explained in the map margin.

CONTOURS

Topographic

Index	
Approximate or indefinite	
Intermediate	
Approximate or indefinite	
Supplementary	
Depression	
Cut	
Fill	
Continental divide	

Bathymetric

Index***	
Intermediate***	
Index primary***	
Primary***	
Supplementary***	

VEGETATION

Woodland	
Shrubland	
Orchard	
Vineyard	
Mangrove	

SURFACE FEATURES

Levee	
Sand or mud	
Disturbed surface	
Gravel beach or glacial moraine	
Tailings pond	

MINES AND CAVES

Quarry or open pit mine	
Gravel, sand, clay, or borrow pit	
Mine tunnel or cave entrance	
Mine shaft	
Prospect	
Tailings	
Mine dump	
Former disposal site or mine	

ROADS AND RELATED FEATURES

Please note: Roads on Provisional-edition maps are not classified as primary, secondary, or light duty. These roads are all classified as improved roads and are symbolized the same as light duty roads.

Primary highway	
Secondary highway	
Light duty road	
Light duty road, paved*	
Light duty road, gravel*	
Light duty road, dirt*	
Light duty road, unspecified*	
Unimproved road	
Unimproved road*	
4WD road	
4WD road*	
Trail	
Highway or road with median strip	
Highway or road under construction	
Highway or road underpass; overpass	
Highway or road bridge; drawbridge	
Highway or road tunnel	
Road block, berm, or barrier*	
Gate on road*	
Trailhead*	

BUILDINGS AND RELATED FEATURES

Building	
School; house of worship	
Athletic field	
Built-up area	
Forest headquarters*	
Ranger district office*	
Guard station or work center*	
Racetrack or raceway	
Airport, paved landing strip, runway, taxiway, or apron	
Unpaved landing strip	
Well (other than water), windmill or wind generator	
Tanks	
Covered reservoir	
Gaging station	
Located or landmark object (feature as labeled)	
Boat ramp or boat access*	
Roadside park or rest area	
Picnic area	
Campground	
Winter recreation area*	
Cemetery	

TRANSMISSION LINES AND PIPELINES

Power transmission line; pole; tower	
Telephone line	
Aboveground pipeline	
Underground pipeline	

RAILROADS AND RELATED FEATURES

Standard gauge railroad, single track	
Standard gauge railroad, multiple track	
Narrow gauge railroad, single track	
Narrow gauge railroad, multiple track	
Railroad siding	
Railroad in highway	
Railroad in road	
Railroad in light duty road*	
Railroad underpass; overpass	
Railroad bridge; drawbridge	
Railroad tunnel	
Railroad yard	
Railroad turntable; roundhouse	

RIVERS, LAKES, AND CANALS

Perennial stream	
Perennial river	
Intermittent stream	
Intermittent river	
Disappearing stream	
Falls, small	
Falls, large	
Rapids, small	
Rapids, large	
Masonry dam	
Dam with lock	
Dam carrying road	
Perennial lake/pond	
Intermittent lake/pond	
Dry lake/pond	
Narrow wash	
Wide wash	
Canal, flume, or aqueduct with lock	
Elevated aqueduct, flume, or conduit	
Aqueduct tunnel	
Water well, geyser, fumarole, or mud pot	
Spring or seep	

MARINE SHORELINES

Shoreline	
Apparent (edge of vegetation)***	
Indefinite or unsurveyed	

COASTAL FEATURES

Foreshore flat	
Coral or rock reef	
Rock, bare or awash; dangerous to navigation	
Group of rocks, bare or awash	
Exposed wreck	
Depth curve; sounding	
Breakwater, pier, jetty, or wharf	
Seawall	
Oil or gas well; platform	

BATHYMETRIC FEATURES

Area exposed at mean low tide; sounding datum***	
Channel***	
Sunken rock***	

SUBMERGED AREAS AND BOGS

Marsh or swamp	
Submerged marsh or swamp	
Wooded marsh or swamp	
Submerged wooded marsh or swamp	
Land subject to inundation	

Max Pool 43!

GLACIERS AND PERMANENT SNOWFIELDS

Contours and limits	
Formlines	
Glacial advance	
Glacial retreat	

BOUNDARIES

National	
State or territorial	
County or equivalent	
Civil township or equivalent	
Incorporated city or equivalent	
Federally administered park, reservation, or monument (external)	
Federally administered park, reservation, or monument (internal)	
State forest, park, reservation, or monument and large county park	
Forest Service administrative area*	
Forest Service ranger district*	
National Forest System land status, Forest Service lands*	
National Forest System land status, non-Forest Service lands*	

PROJECTION AND GRIDS

Neatline	
Graticule tick	
Graticule intersection	
Datum shift tick	

State plane coordinate systems

Primary zone tick	
Secondary zone tick	
Tertiary zone tick	
Quaternary zone tick	
Quintary zone tick	

Universal transverse metcator grid

UTM grid (full grid)	
UTM grid ticks*	

LAND SURVEYS

Public land survey system

Range or Township line	
Location approximate	
Location doubtful	
Protracted	
Protracted (AK 1:63,360-scale)	
Range or Township labels	
Section line	
Location approximate	
Location doubtful	
Protracted	
Protracted (AK 1:63,360-scale)	
Section numbers	
Found section corner	
Found closing corner	
Witness corner	
Meander corner	
Weak corner*	

Other land surveys

Range or Township line	
Section line	
Land grant, mining claim, donation land claim, or tract	
Land grant, homestead, mineral, or other special survey monument	
Fence or field lines	

CONTROL DATA AND MONUMENTS

Principal point**	
U.S. mineral or location monument	
River mileage marker	
Boundary monument	
Third-order or better elevation, with tablet	
Third-order or better elevation, recoverable mark, no tablet	
With number and elevation	
Horizontal control	
Third-order or better, permanent mark	
With third-order or better elevation	
With checked spot elevation	
Coincident with found section corner	
Unmonumented**	
Vertical control	
Third-order or better elevation, with tablet	
Third-order or better elevation, recoverable mark, no tablet	
Bench mark coincident with found section corner	
Spot elevation	

Compass

Surveying Compass

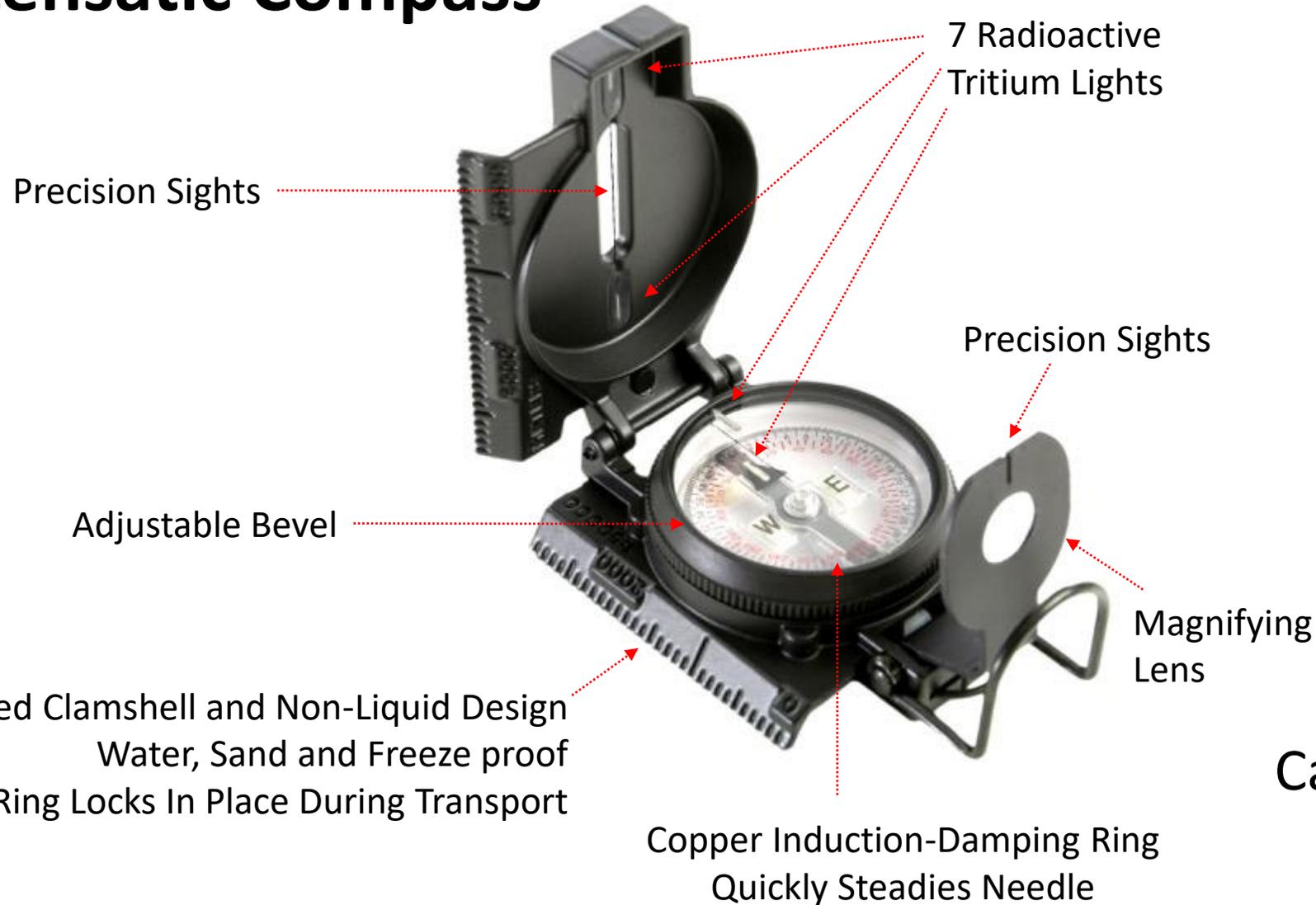


Brunton Transit

- Extremely accurate
 - Engineering
 - Surveying
 - Artillery
 - Caving
- NOT for Orienteering
 - NO Bearing ring
 - Bulky
 - Needs protractor
- Adjustable Declination
- Air filled needle housing
- Expedition Quality
- Needle lock
- Extremely Expensive

Compass

Lensatic Compass



- Very accurate for measuring azimuths
- Glows at night
- Expedition durability
- Base NOT transparent
 - Need protractor
- NO declination adjustment
- Expensive
- Bulky

Cammenga Tritium 3H

Compass

Mirror Compass

- Excellent compass
 - Adjustable declination
 - Global option
 - Fast jewel bearing
 - Southern hemisphere usable
 - 20° tilt margin
- Mirror
 - Accurate long-range azimuth
 - Signaling device
- Magnifying Glass
 - Fire starter
 - First-aid
- Clinometer
- Made in Finland

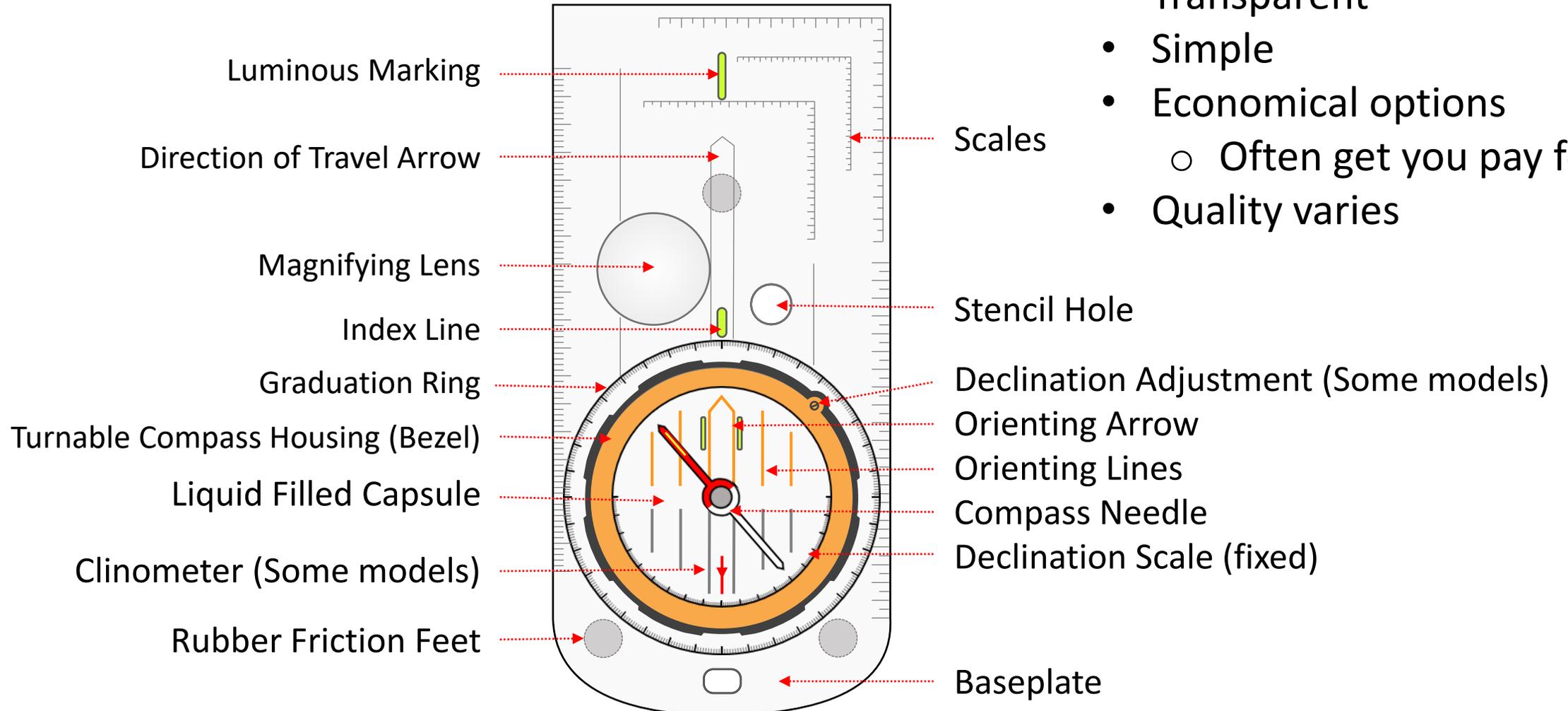


- Excellent Compass
- Expensive
- More than what you need for orienteering

SUUNTO MC-2 G

Compass

The Baseplate Compass



- Very versatile
- Transparent
- Simple
- Economical options
 - Often get you pay for
- Quality varies

Compass

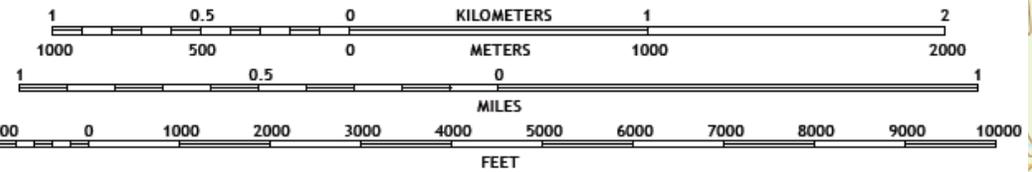
Orienteering Compass



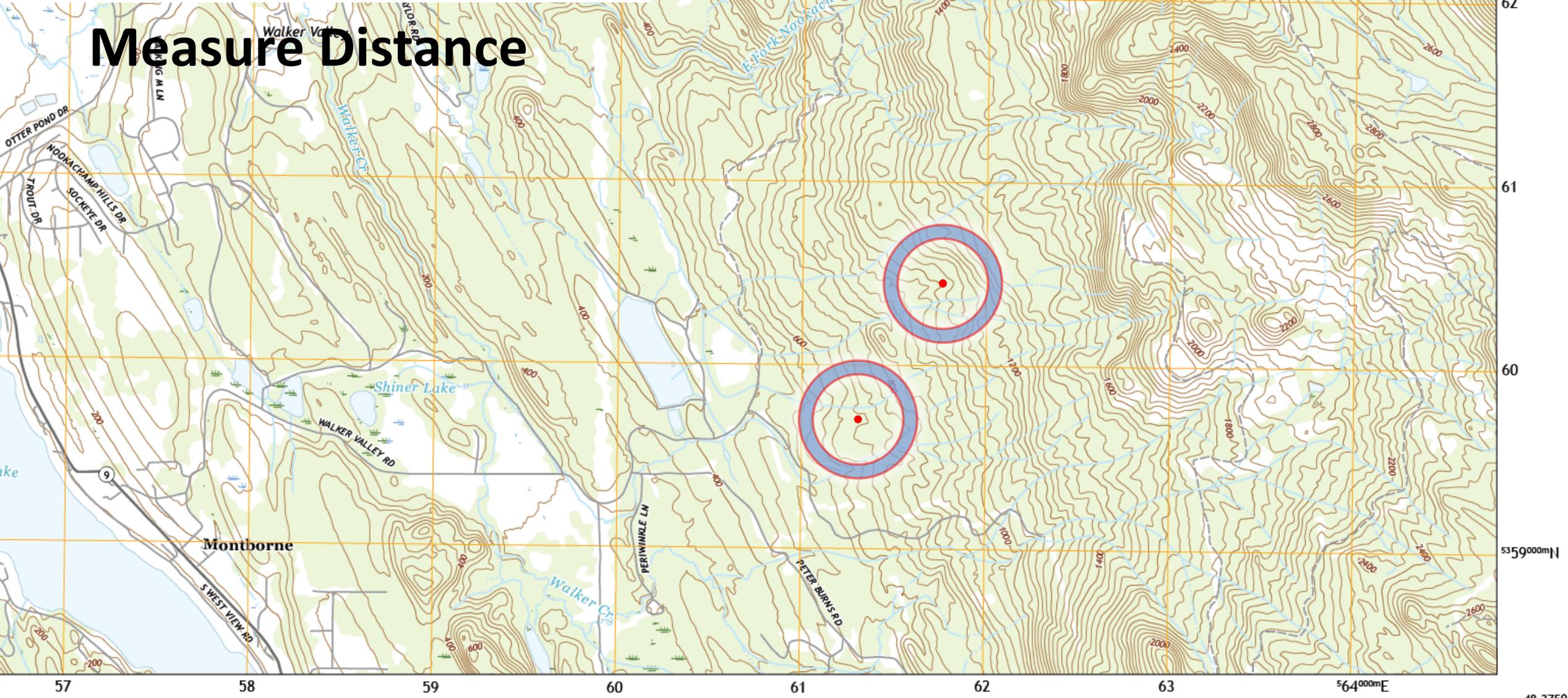
- Bare minimum for Orienteering
- Lightweight
- Hands free
- Lack versatility

SUUNTO AIM-6 NH COMPASS

SCALE 1:24 000

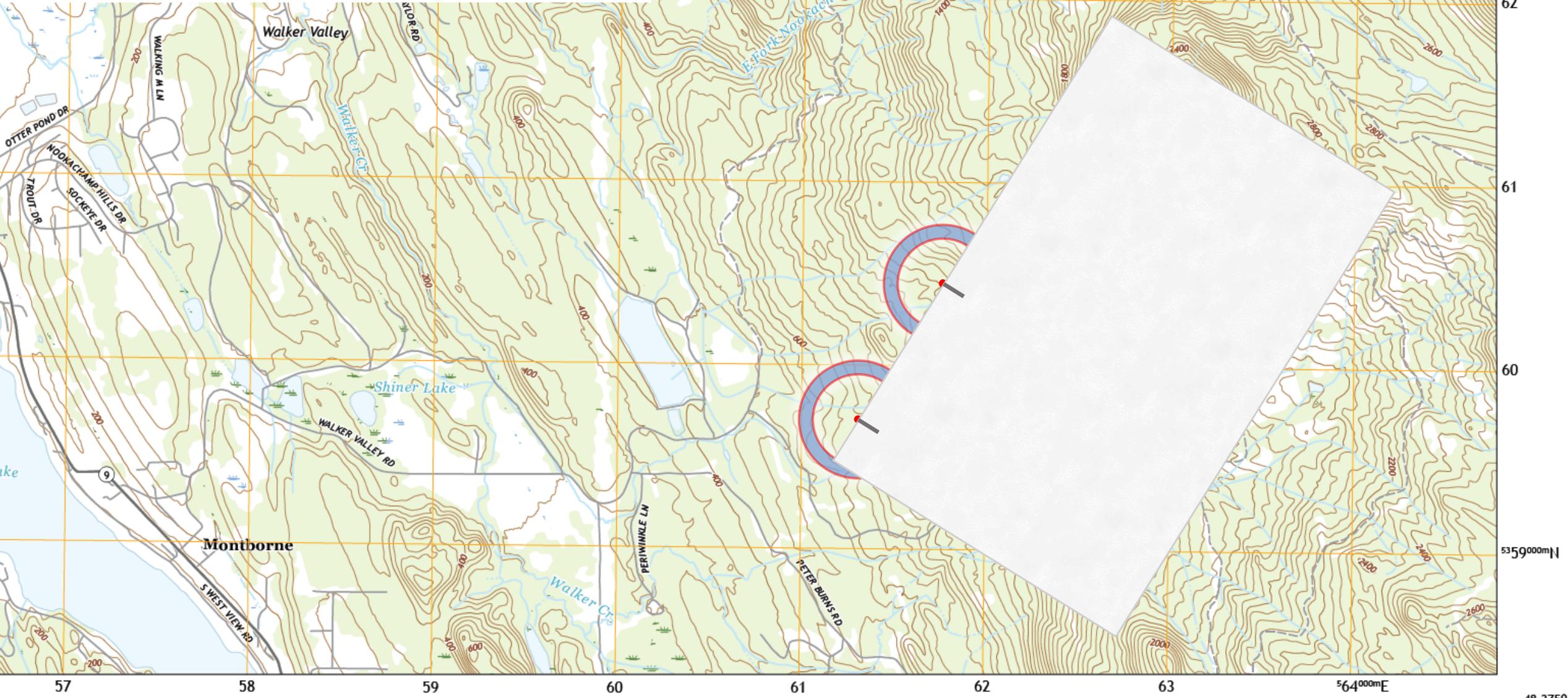
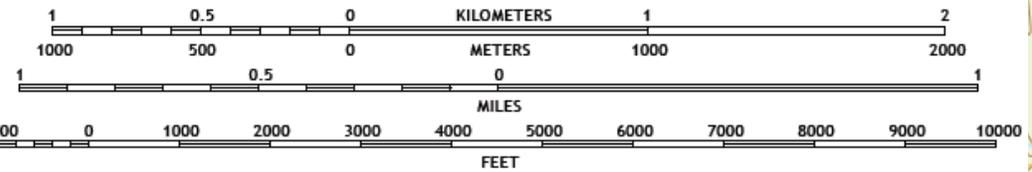


Measure Distance



-122.1250° 48.3750°

SCALE 1:24 000

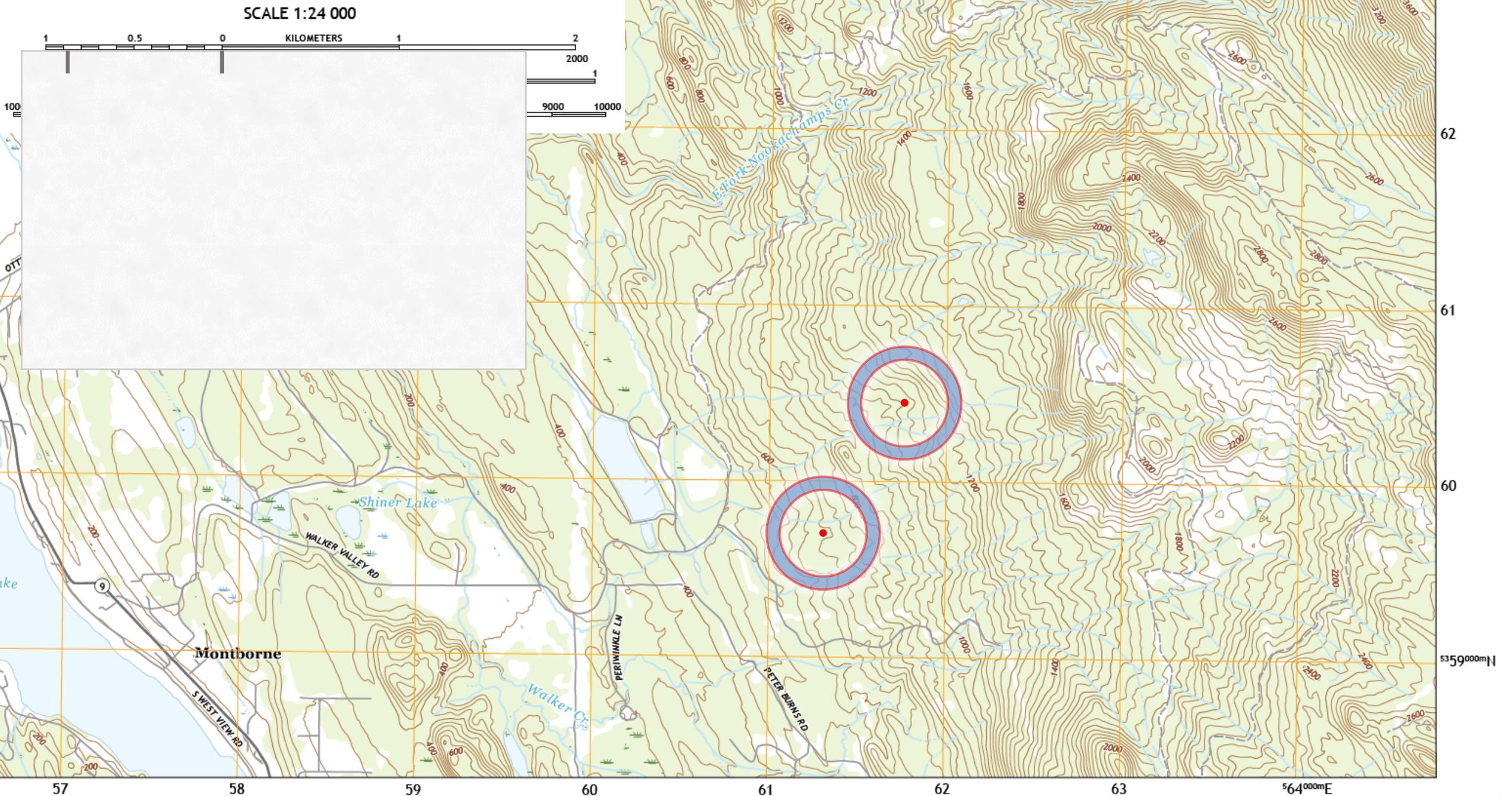


-122.1250° 48.3750°

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2

2000
1
9000 10000



-122.1250° 48.3750°

Compass

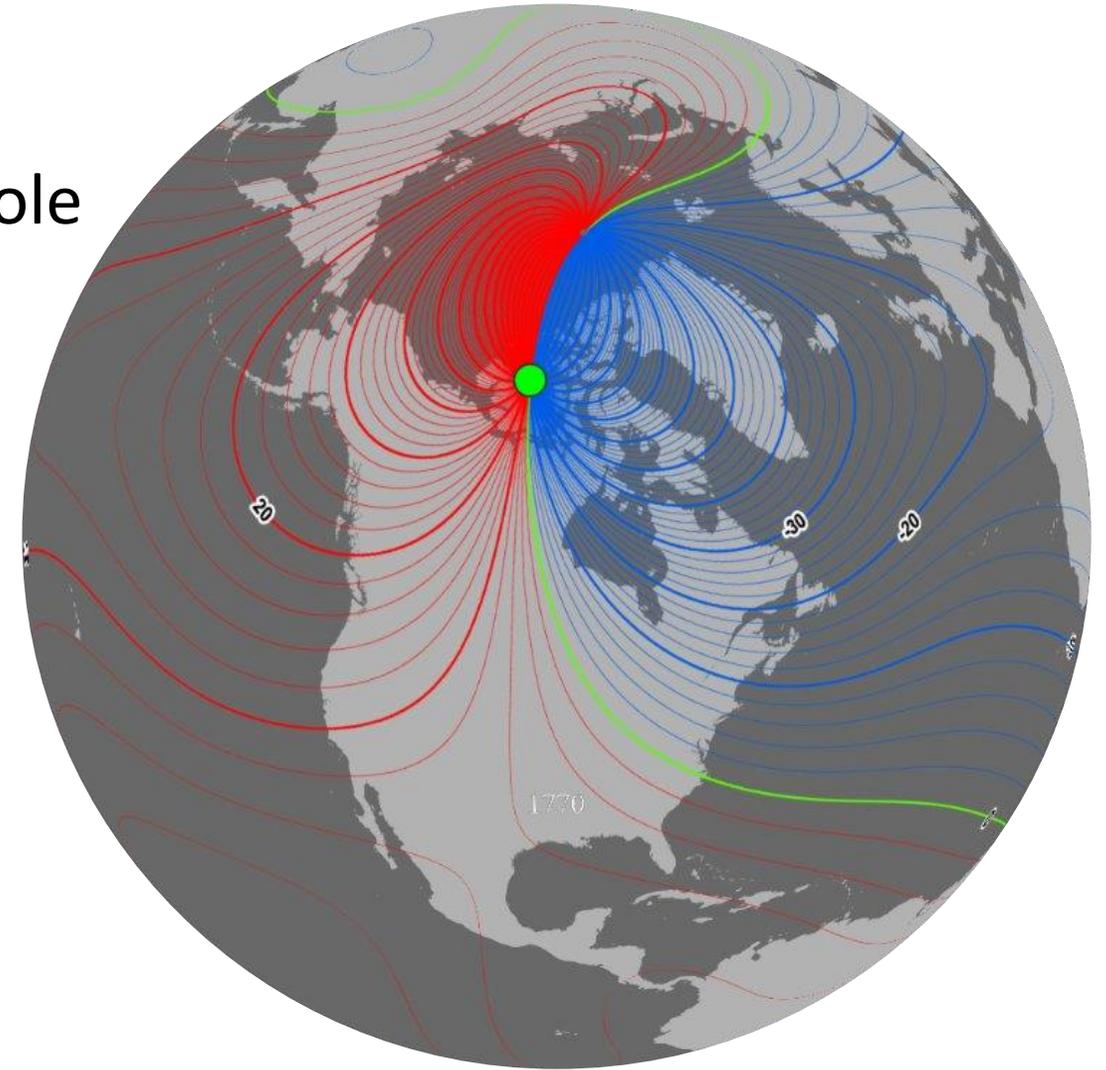
Magnetic Declination

Magnetic declination is an important concept to understand when using a magnetic compass

Compass

Magnetic Declination

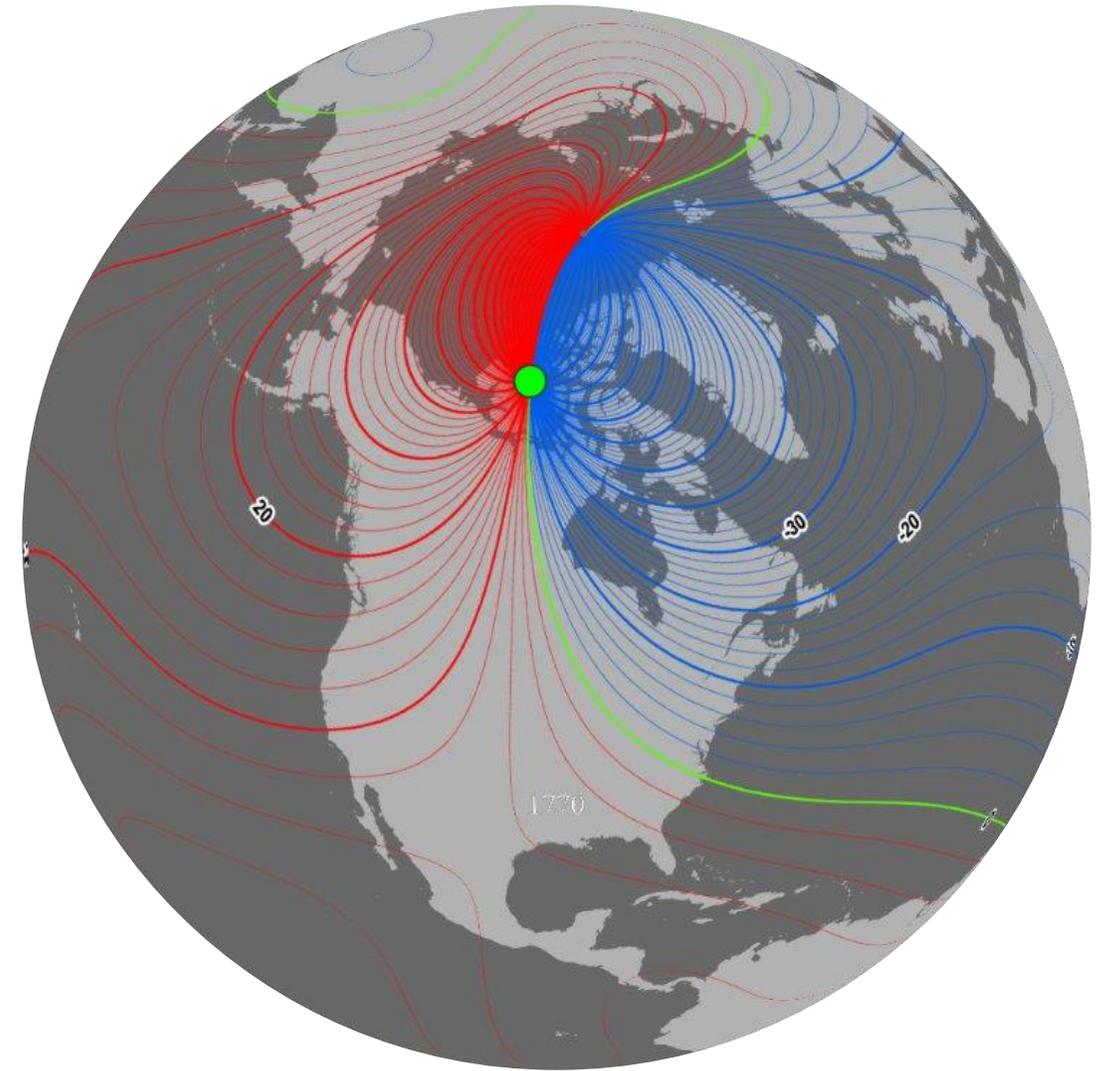
A compass doesn't point at the North Pole



Compass

Magnetic Declination

The Earth creates its own magnetic field from the electric currents created in the liquid iron-nickel core.

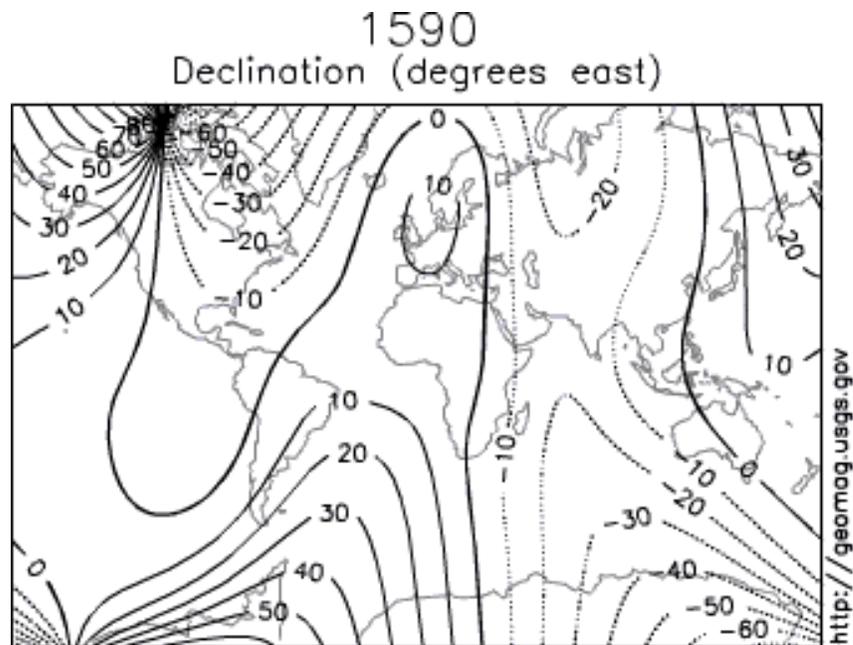


Compass

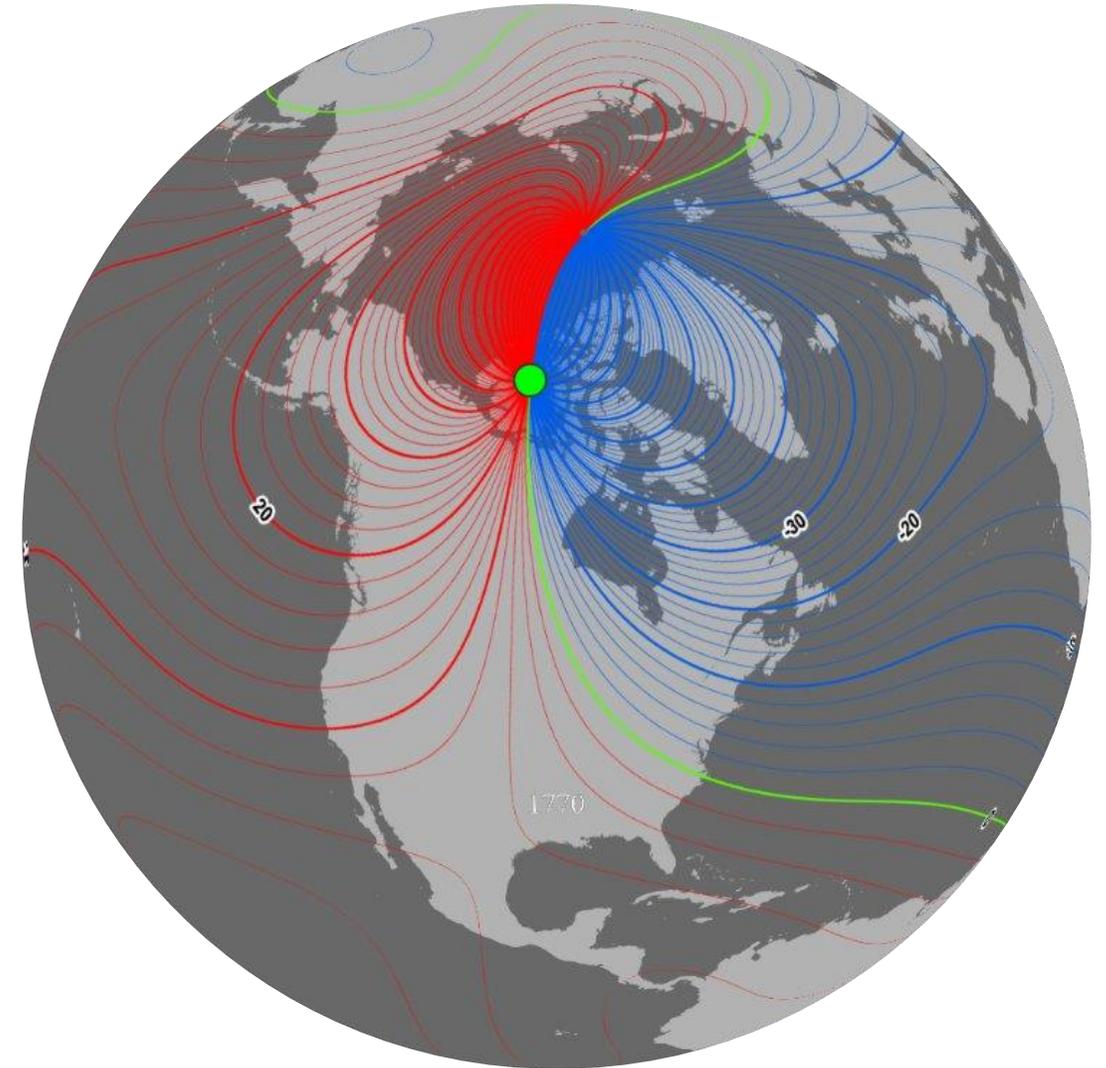
Magnetic Declination

The poles also slowly move over time...

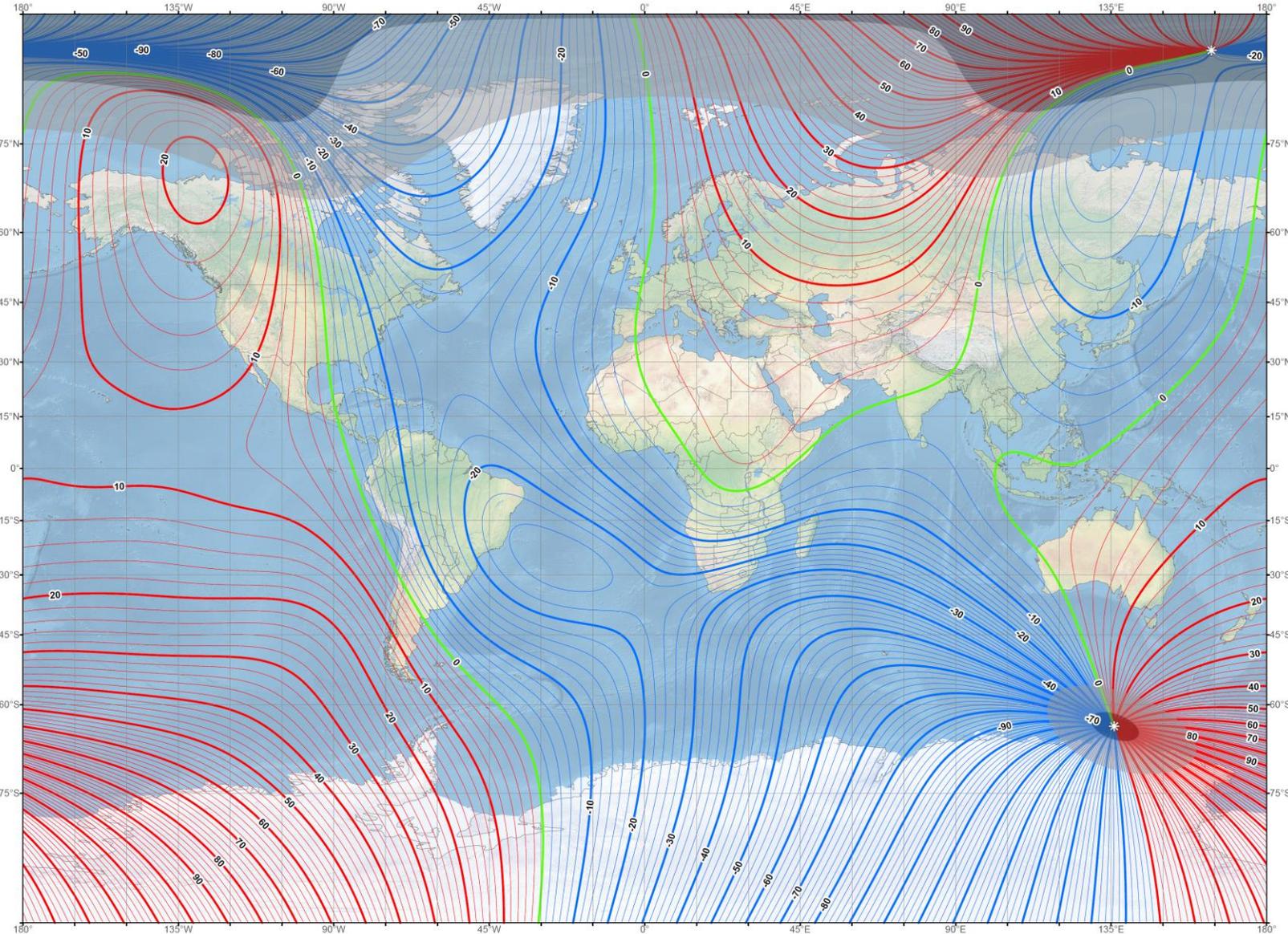
Now more than 30 miles per year



Model by A. Jackson, A. R. T. Jonkers, M. R. Walker,
Phil. Trans. R. Soc. London A (2000), 358, 957-990.



US/UK World Magnetic Model - Epoch 2020.0 Main Field Declination (D)



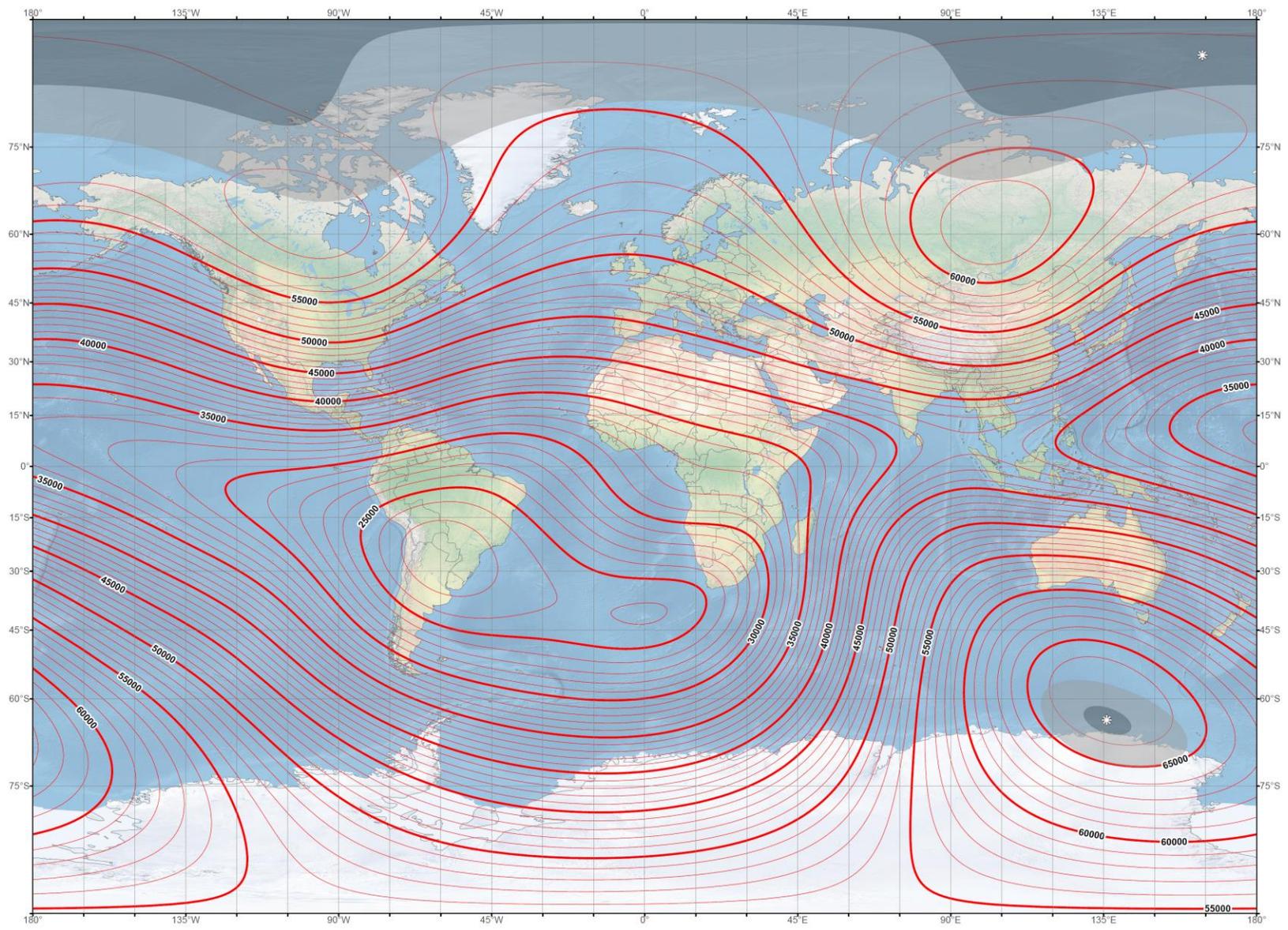
Main Field Declination (D)
Miller Cylindrical Projection
Contour interval: 2 degrees
— Positive (east)
— Negative (west)
— Zero (agonic) line

Position of Dip Poles

Blackout Zones
Horizontal Field (H) Strength:
■ 0-2000 nT (Unreliable Zone)
■ 2000-6000 nT (Caution Zone)

Map developed by NOAA/NCEI and CIRES
<https://ngdc.noaa.gov/geomag/WMM>
Published December 2019

US/UK World Magnetic Model - Epoch 2020.0 Main Field Total Intensity (F)



Main Field Total Intensity (F)
 Miller Cylindrical Projection
 Contour interval: 1000 nT

Position of Dip Poles

Blackout Zones
 Horizontal Field (H) Strength:
 0-2000 nT (Unreliable Zone)
 2000-6000 nT (Caution Zone)

Map developed by NOAA/NCEI and CIRES
<https://ngdc.noaa.gov/geomag/WMM>
 Published December 2019

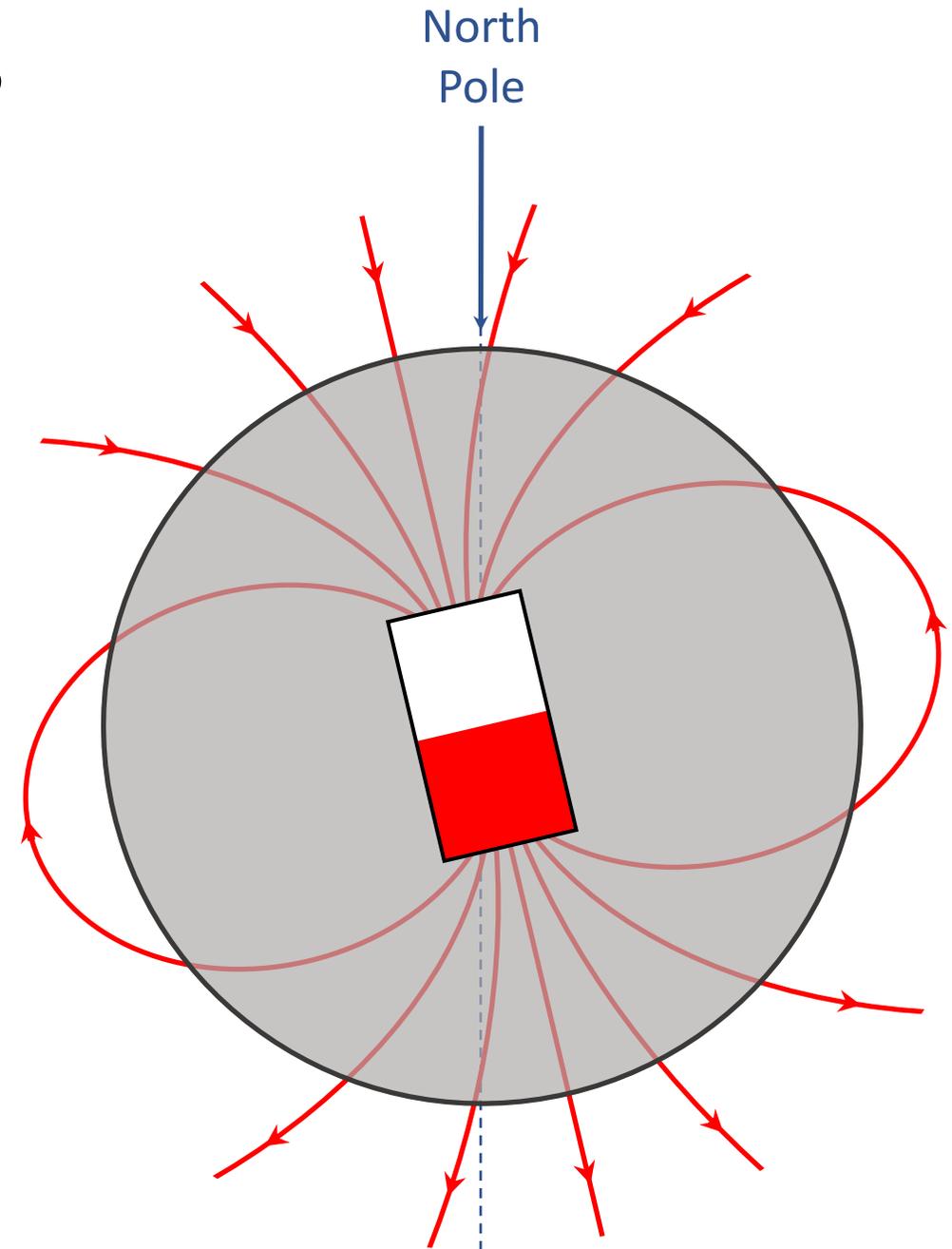


Compass

Magnetic Inclination

The earth's magnetic field is 3 dimensional

- Northern Zones – Needle dives
- Magnetic Equator – Needle balanced
- Southern Zones – Needle climbs



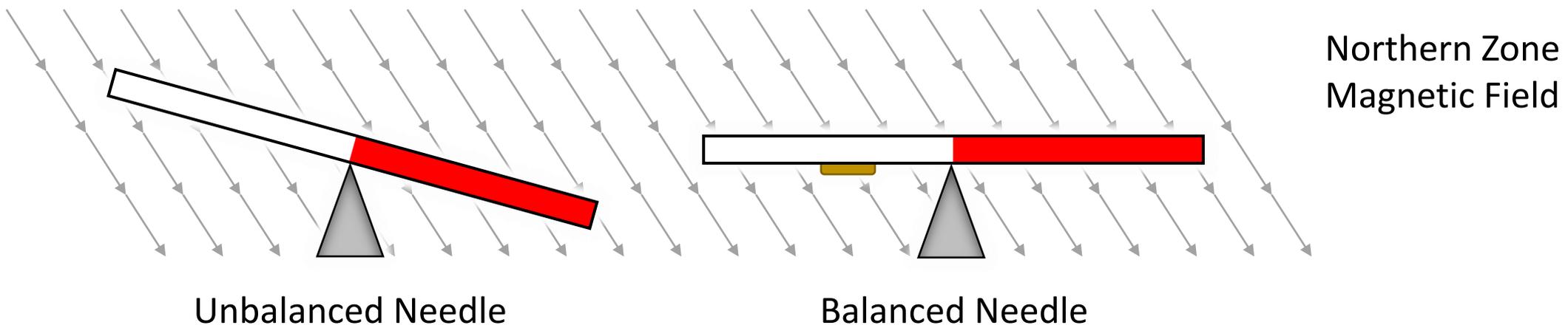


Compass

Magnetic Inclination

A needle on a compass will dip and rise with the Earth's magnetic field

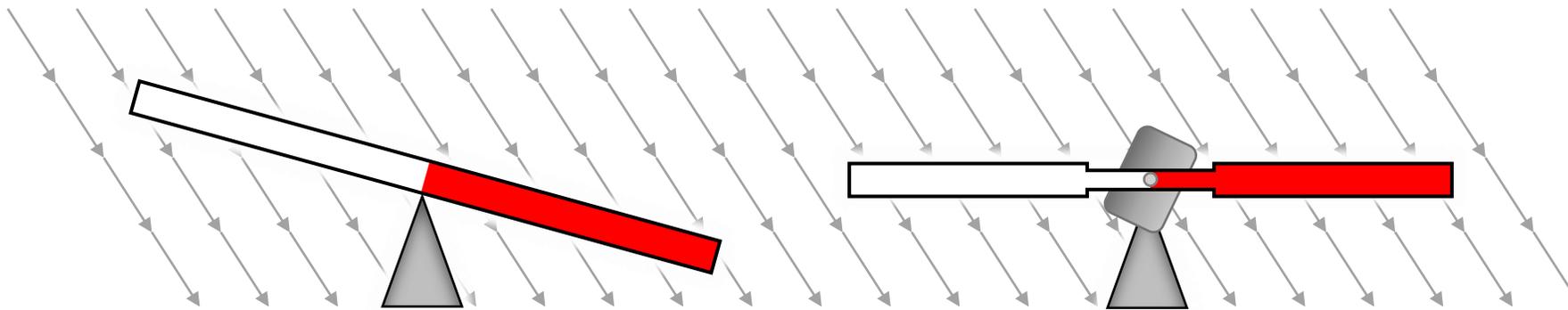
- Most compasses are balanced to compensate for inclination
 - A compass balanced for the USA will drag in Australia
 - A compass balanced for Australia will drag in the USA



Compass

“Global” Compass

- RECTA and Suunto Global Needle System
 - Compass needle and magnet are built as separate units
 - Needle fixed at its pivot by means of a double bearing
 - Magnet rotates on a pivot with its own jeweled bearing
 - Needle does NOT dip with magnetic inclination



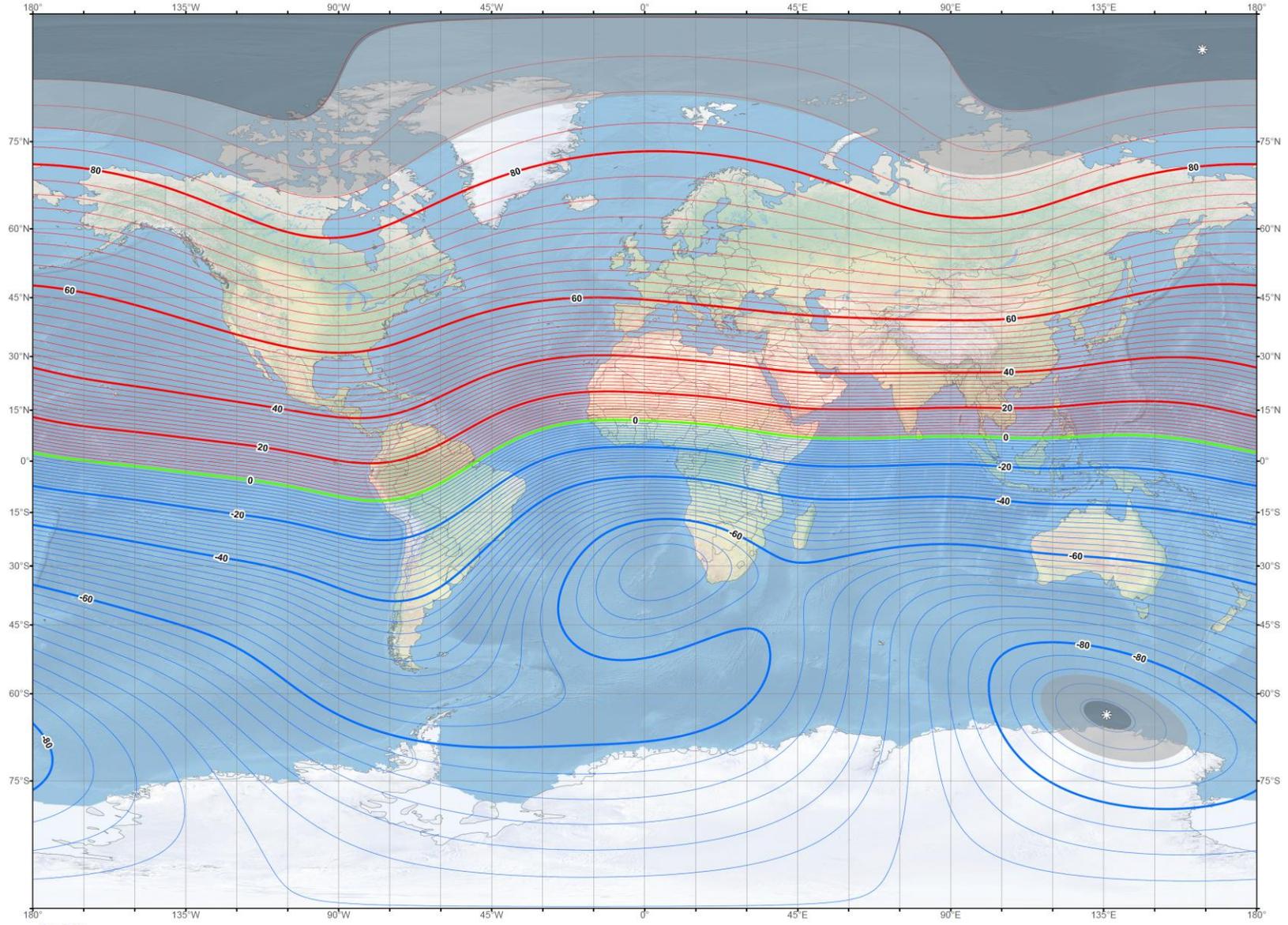
Unbalanced Needle

Global Needle



SUUNTO MC-2 G

US/UK World Magnetic Model - Epoch 2020.0 Main Field Inclination (I)



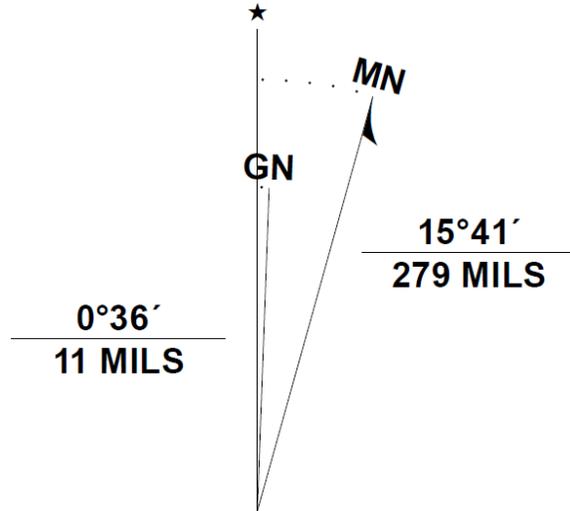
Main Field Inclination (I)
 Miller Cylindrical Projection
 Contour interval: 2 degrees
 Positive (down)
 Negative (up)
 Zero line

Position of Dip Poles

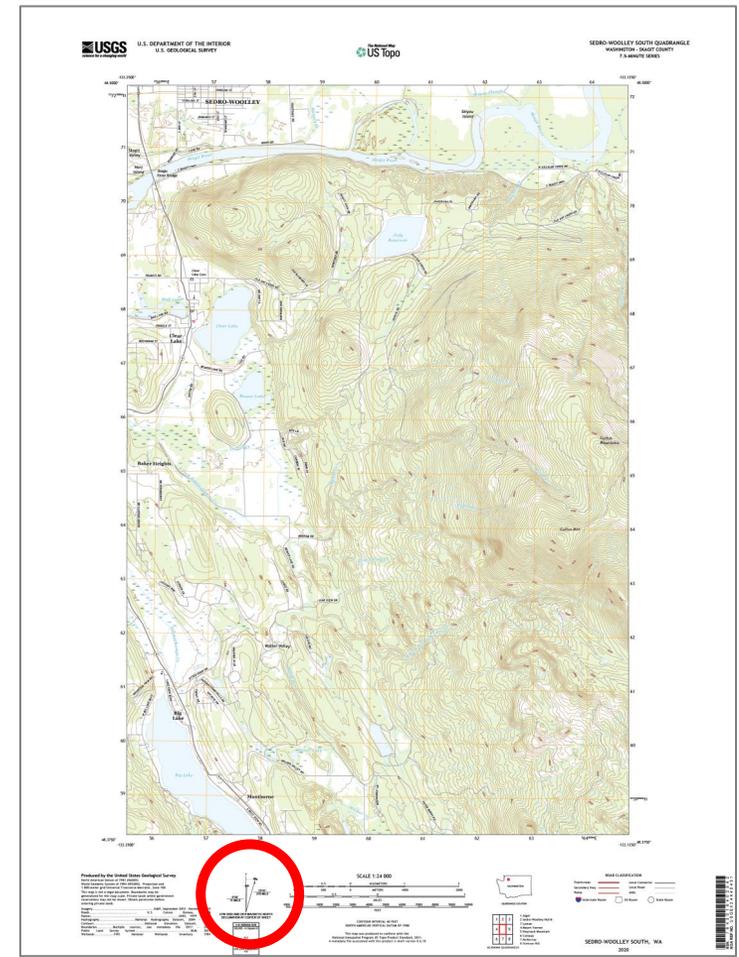
Blackout Zones
 Horizontal Field (H) Strength:
 0-2000 nT (Unreliable Zone)
 2000-6000 nT (Caution Zone)

Map developed by NOAA/NCEI and CIRES
<https://ngdc.noaa.gov/geomag/WMM>
 Published December 2019

Magnetic Declination



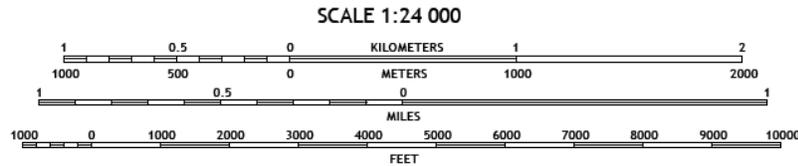
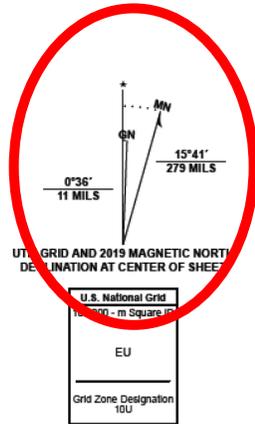
UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET



Produced by the United States Geological Survey

North American Datum of 1983 (NAD83)
 World Geodetic System of 1984 (WGS84). Projection and 1 000-meter grid: Universal Transverse Mercator, Zone 10U
 This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery.....NAIP, September 2015 - November 2015
 Roads.....U.S. Census Bureau, 2016
 Names.....GNIS, 1979 - 2019
 Hydrography.....National Hydrography Dataset, 2004 - 2019
 Contours.....National Elevation Dataset, 2018
 Boundaries.....Multiple sources; see metadata file 2017 - 2018
 Public Land Survey System.....BLM, 2019
 Wetlands.....FWS National Wetlands Inventory 1981



CONTOUR INTERVAL 40 FEET
 NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011. A metadata file associated with this product is draft version 0.6.18

Magnetic Field Calculators

Declination

U.S. Historic Declination

Magnetic Field

Magnetic Field Component Grid

Magnetic Declination Estimated Value ⓘ

Declination is calculated using the most recent [World Magnetic Model \(WMM\)](#) or the [International Geomagnetic Reference Field \(IGRF\)](#) model. For 1590 to 1900 the calculator is based on the [gufm1](#) model. A smooth transition from gufm1 to IGRF was imposed from 1890 to 1900. The [Enhanced Magnetic Model \(EMM\)](#) is a research model compiled from satellite, marine, aeromagnetic and ground magnetic surveys which attempts to include crustal variations in the magnetic field too fine to appear in the World Magnetic Model. Declination results are typically accurate to 30 minutes of arc, but environmental factors can cause magnetic field disturbances. The calculator provides an easy way for you to get results in HTML, XML, CSV, or JSON programmatically (API). For more information click the information button above.

Calculate Declination

Latitude: S NLongitude: W EModel: **WMM (2019-2024)** IGRF (1590-2024)
 EMM (2000-2019)Date: Year Month Day Result format: HTML XML CSV JSON PDF

Lookup Latitude / Longitude

Enter a street address, street name, or street intersection. For best results, include as much location information as possible with the street address in your search, such as city, state, zip code.

Location:

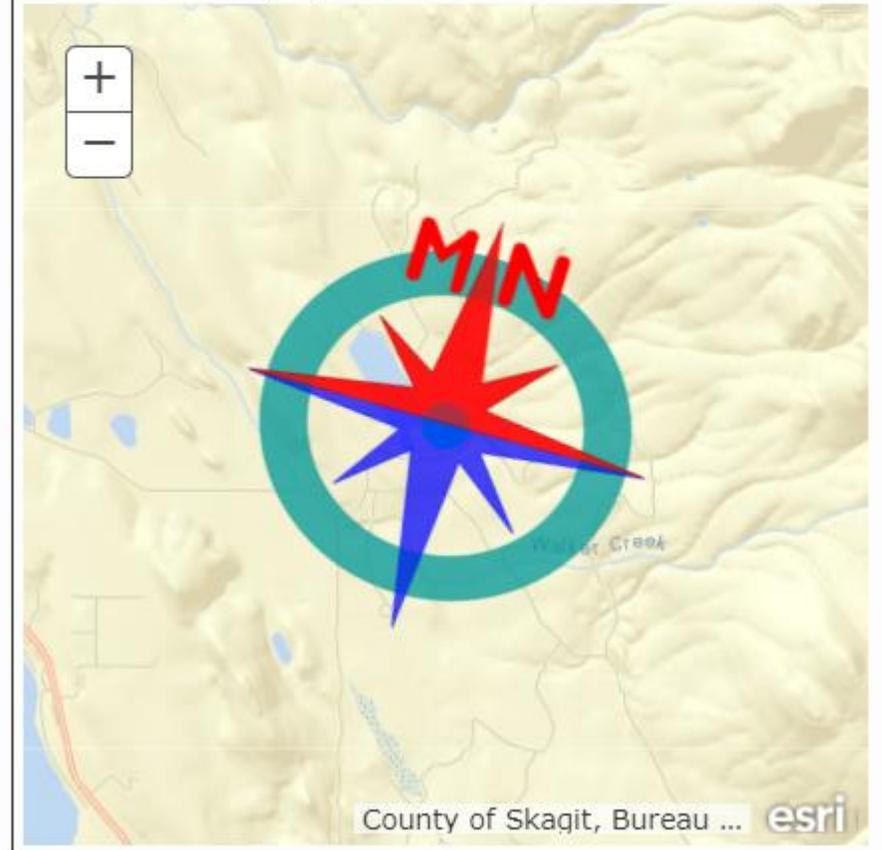
Declination ✕

Model Used: WMM-2020

Latitude: 48° 23' 18" N ⓘ

Longitude: 122° 10' 55" W

Date	Declination
2021-01-09	15° 40' E ± 0° 24' changing by 0° 6' W per year



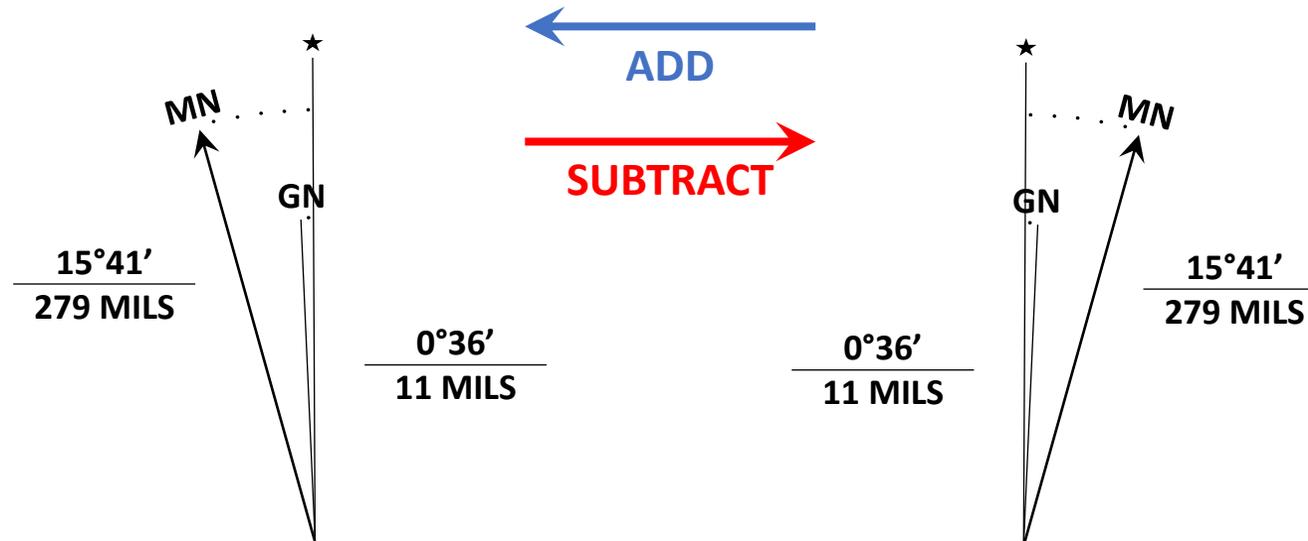
Compass

Magnetic Declination – Conversions

Converting between Grid and Magnetic North requires a bit of math

To convert a
Magnetic Azimuth to a
Grid Azimuth
SUBTRACT angle

To convert a
Grid Azimuth to a
Magnetic Azimuth
ADD angle



West Declination

East Declination

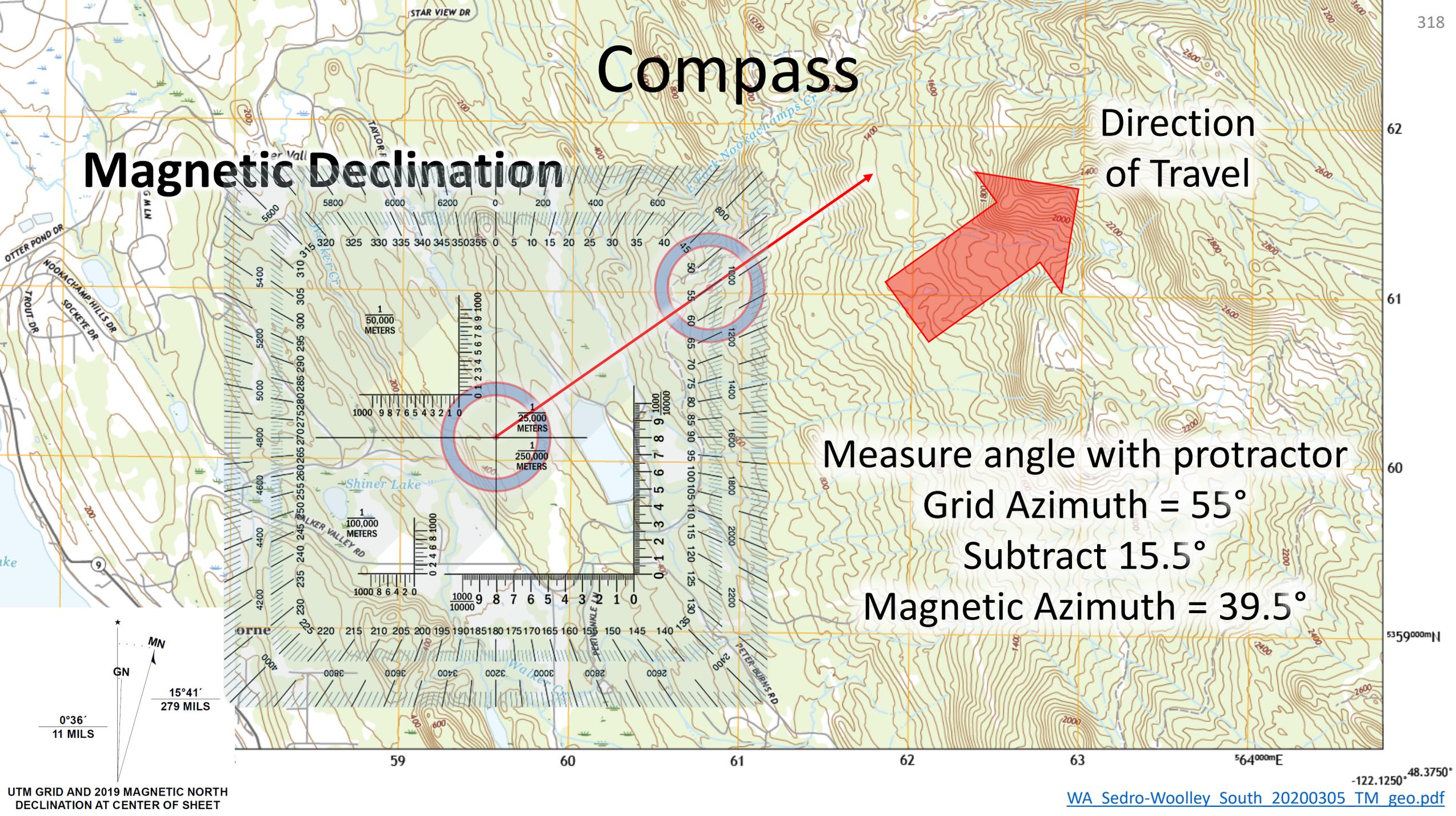
To convert a
Magnetic Azimuth to a
Grid Azimuth
ADD angle

To convert a
Grid Azimuth to a
Magnetic Azimuth
SUBTRACT angle

Compass

Magnetic Declination

Direction of Travel



Measure angle with protractor
 Grid Azimuth = 55°
 Subtract 15.5°
 Magnetic Azimuth = 39.5°

Compass

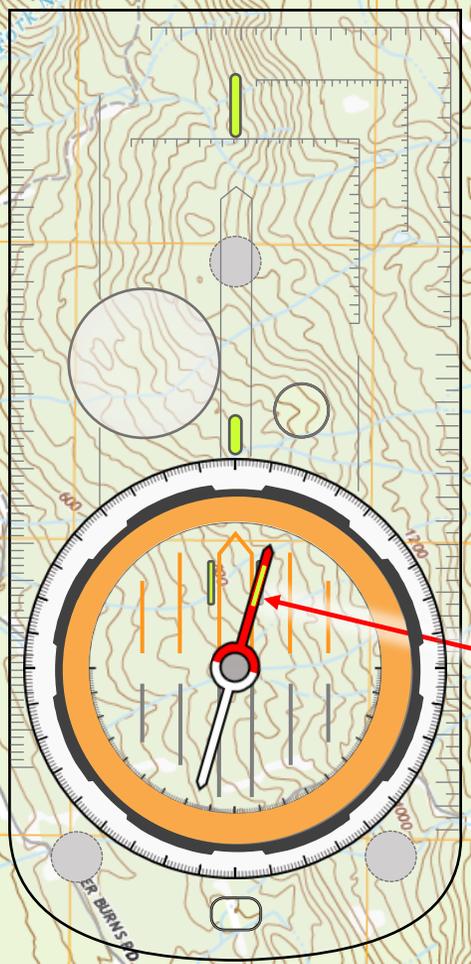
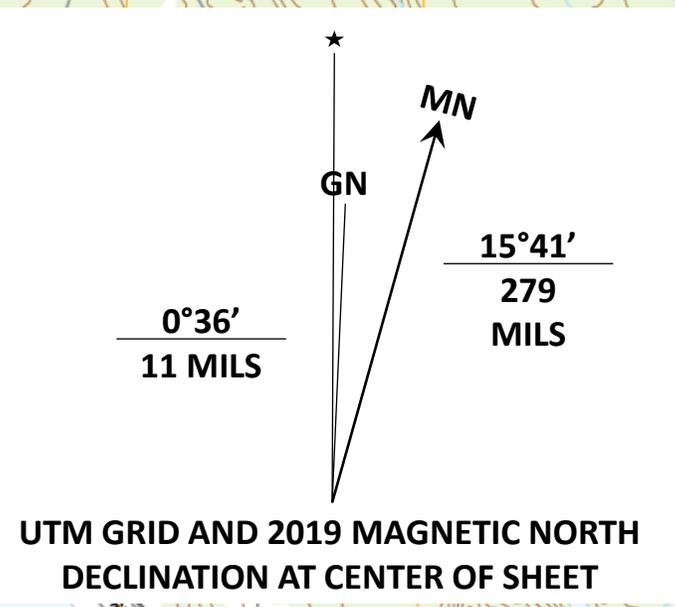
Map Orientation

Show how to orient a map using a compass.

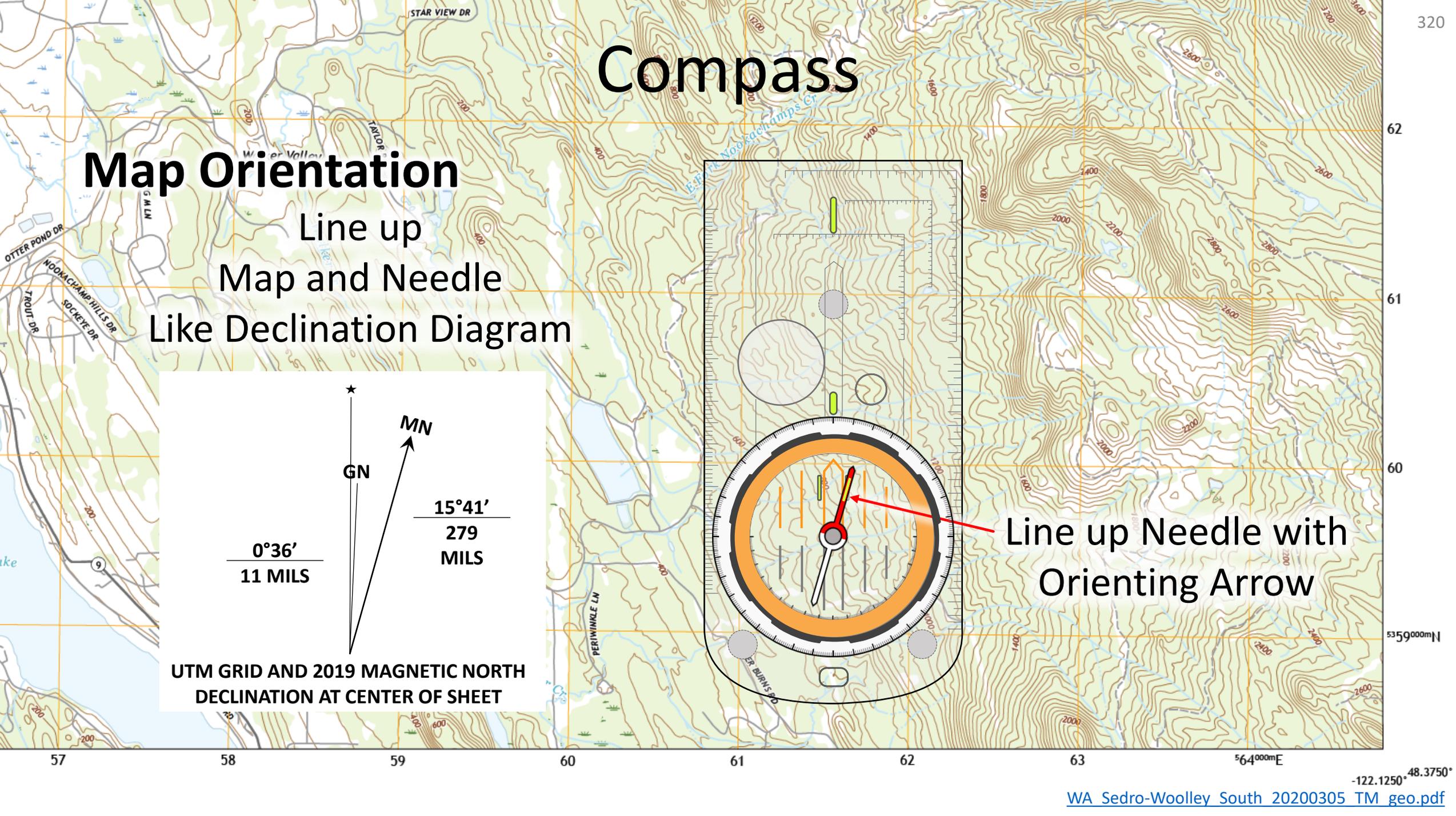
Compass

Map Orientation

Line up
Map and Needle
Like Declination Diagram



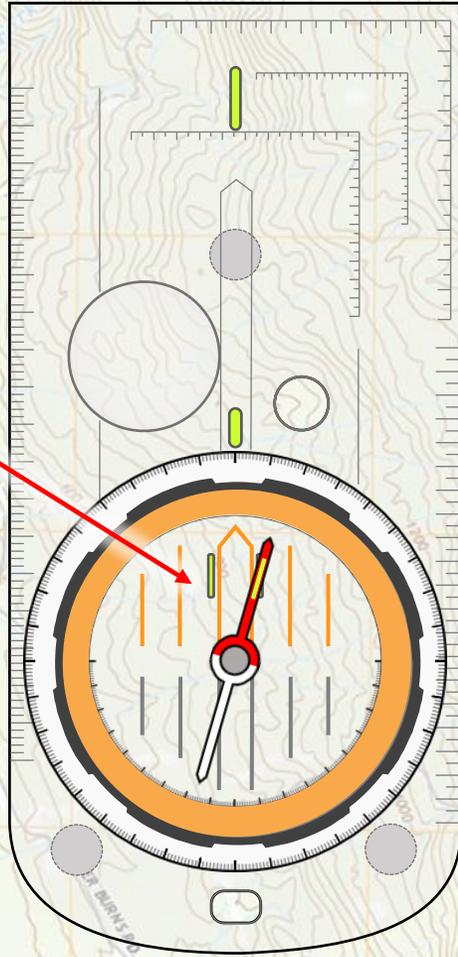
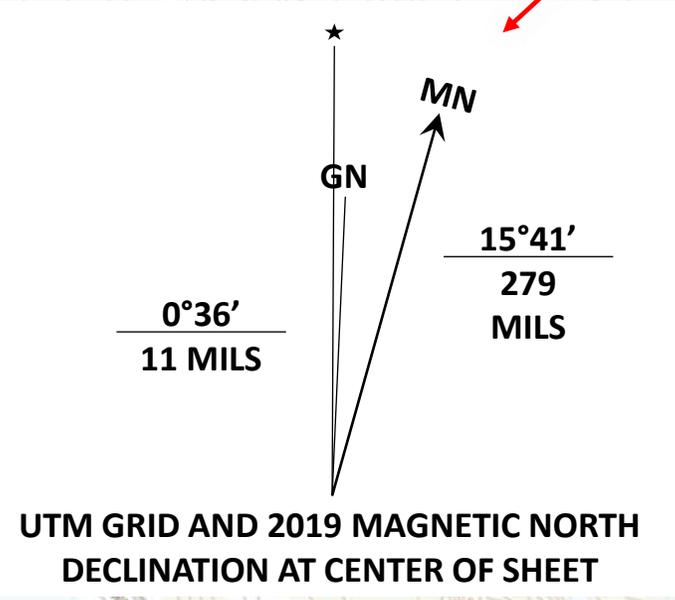
Line up Needle with
Orienting Arrow



Compass

Map Orientation

Make these look like each other



57 58 59 60 61 62 63 64^{000mE}

-122.1250° 48.3750°

Compass

Map Orientation

Direction of Travel

Line up Compass with points

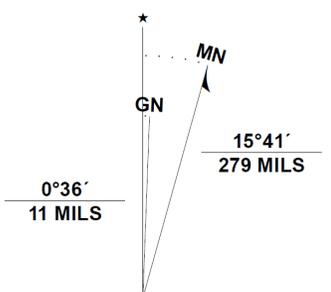
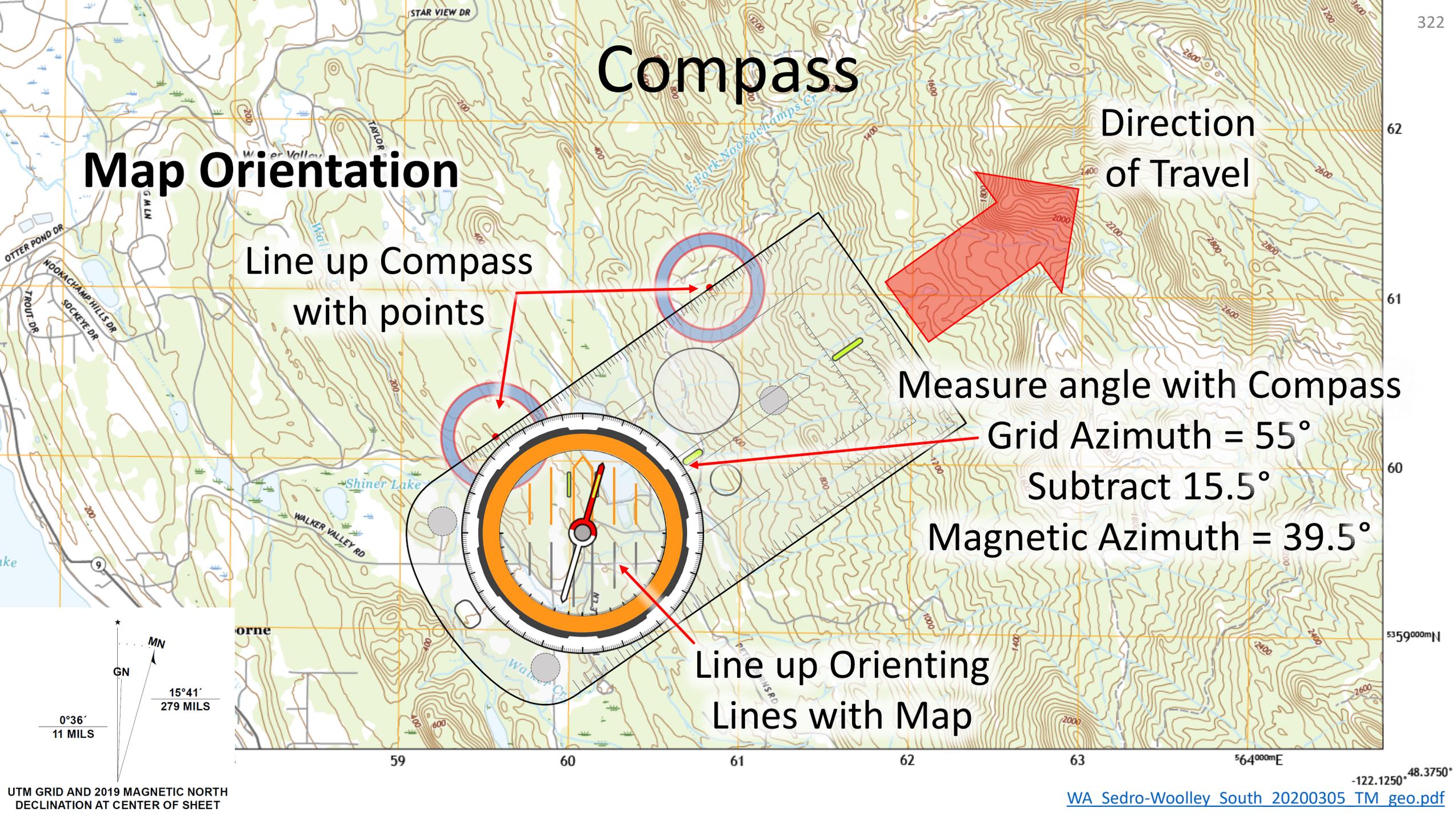
Measure angle with Compass

Grid Azimuth = 55°

Subtract 15.5°

Magnetic Azimuth = 39.5°

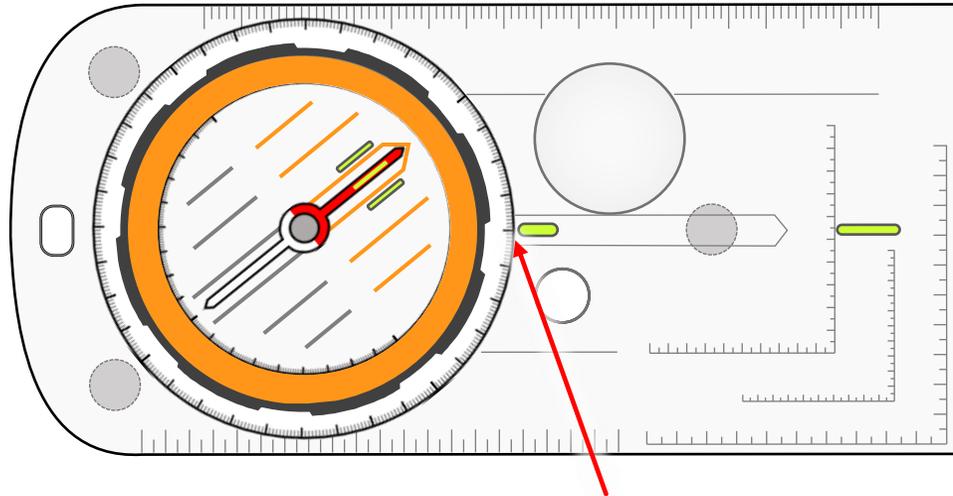
Line up Orienting Lines with Map



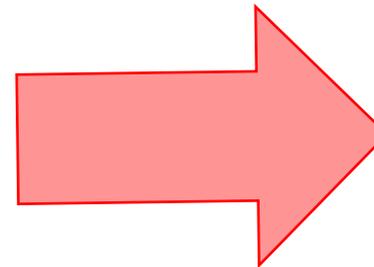
UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

-122.1250° 48.3750°

Compass Adjusted for Magnetic Declination



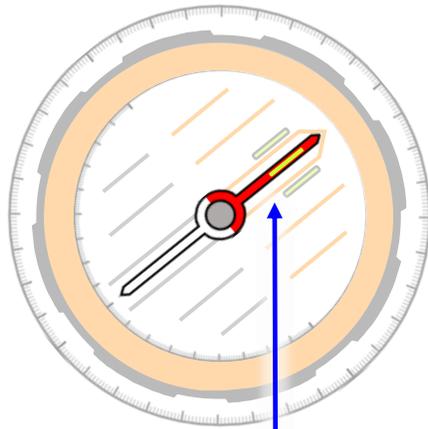
Set Bearing with
Magnetic Declination
 $55^{\circ} - 15.5^{\circ} = 39.5^{\circ}$



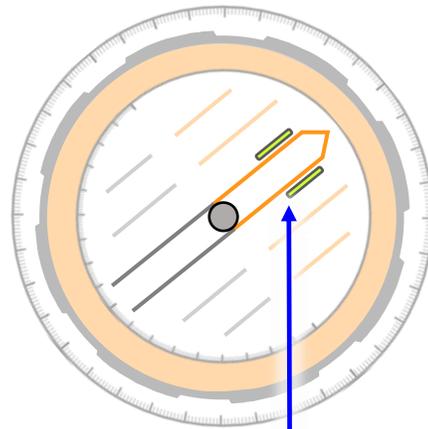
Direction
of Travel

“Red in the Shed”
Or
“Dog in the Doghouse”

Compass Adjusted for Magnetic Declination



Dog



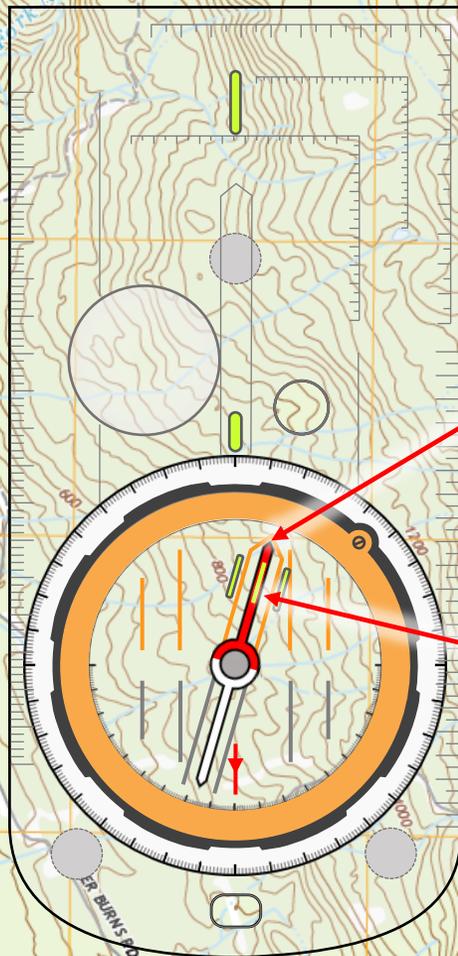
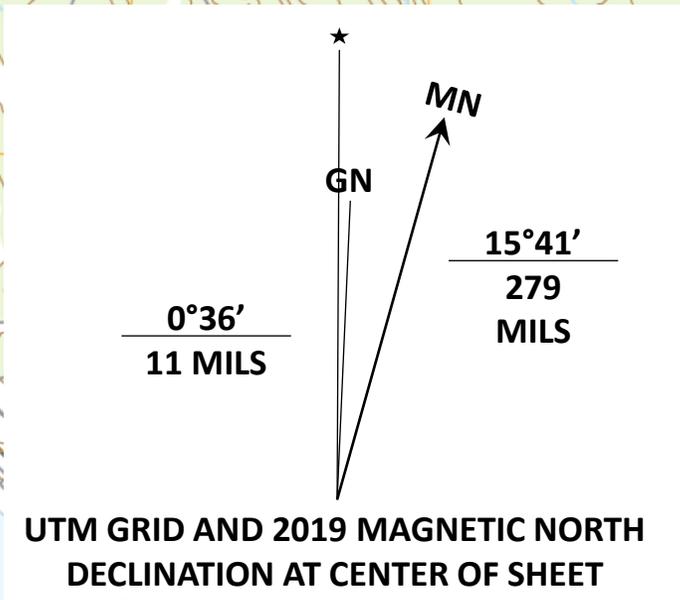
Doghouse

“Red in the Shed”
Or
“Dog in the Doghouse”

Compass with Adjustable Declination

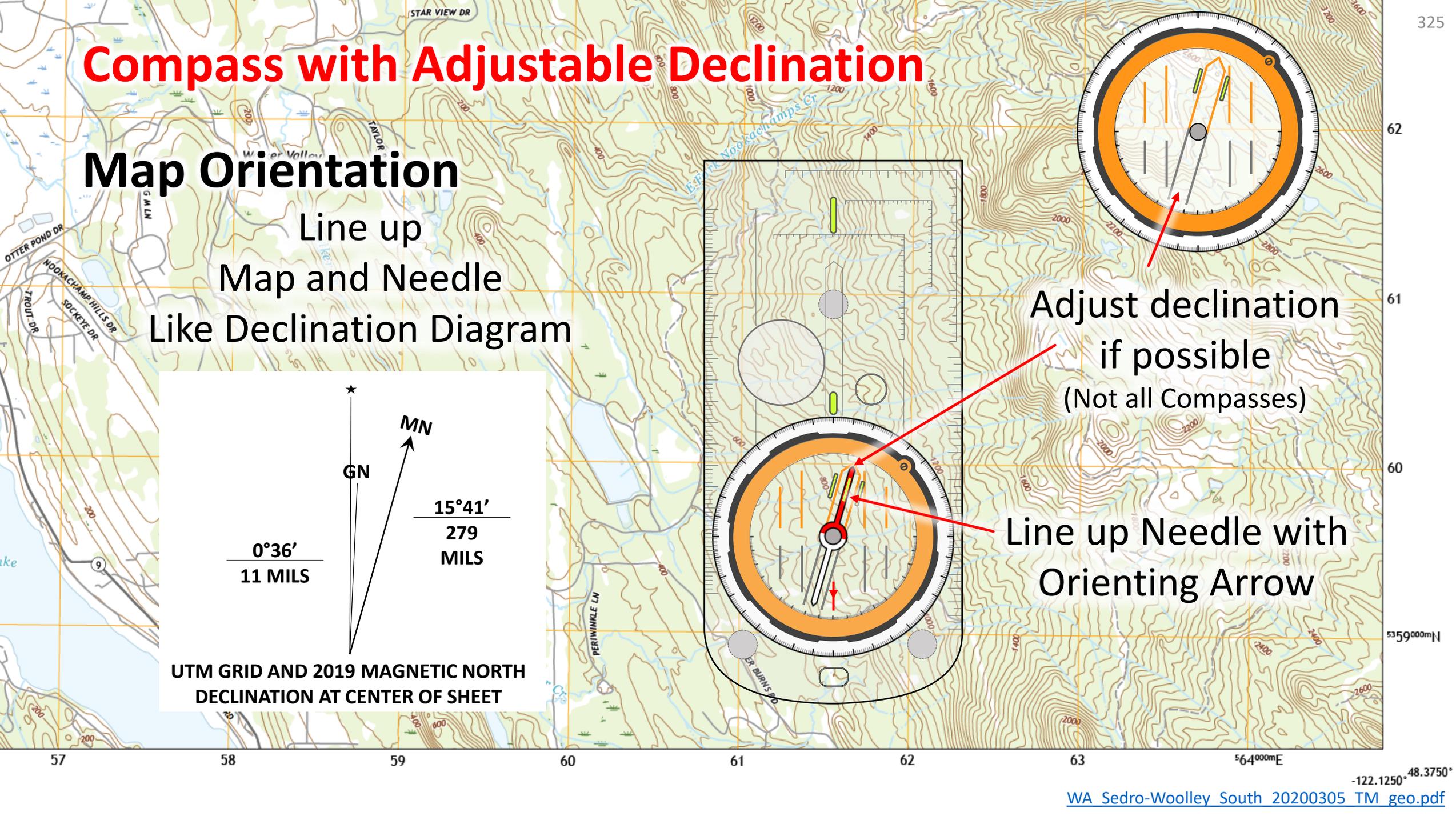
Map Orientation

Line up
Map and Needle
Like Declination Diagram



Adjust declination
if possible
(Not all Compasses)

Line up Needle with
Orienting Arrow

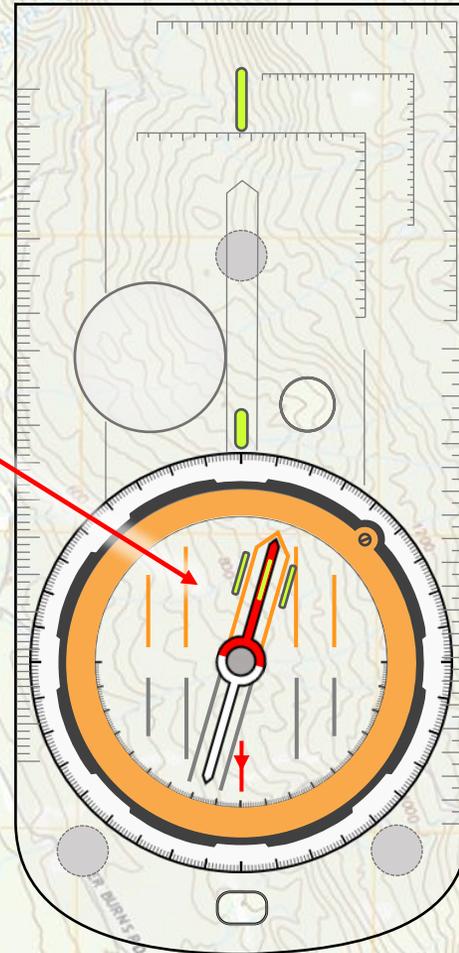
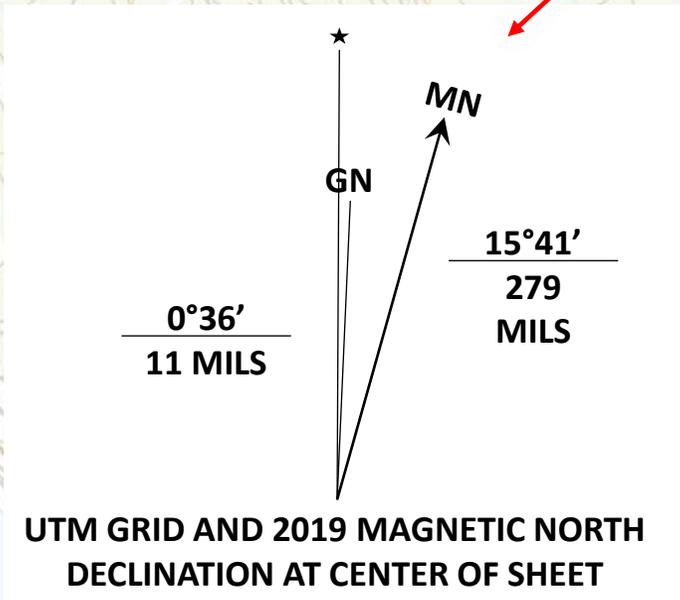


535000mN

Compass with Adjustable Declination

Map Orientation

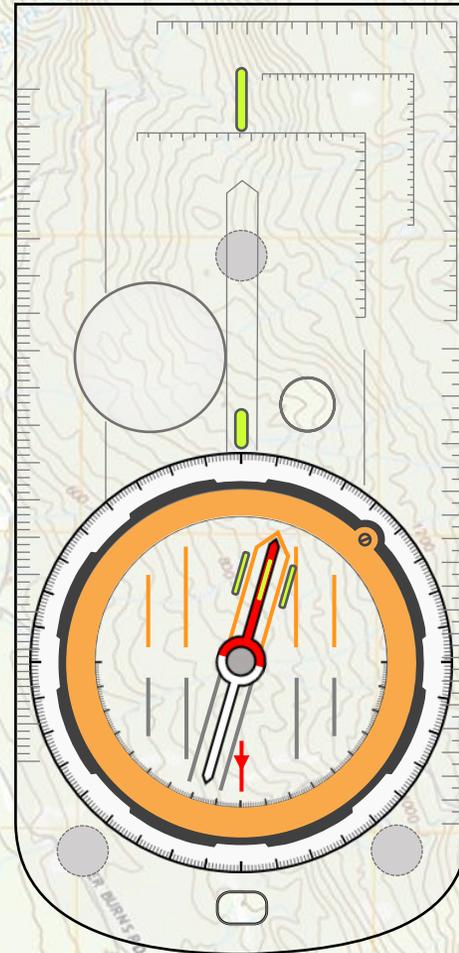
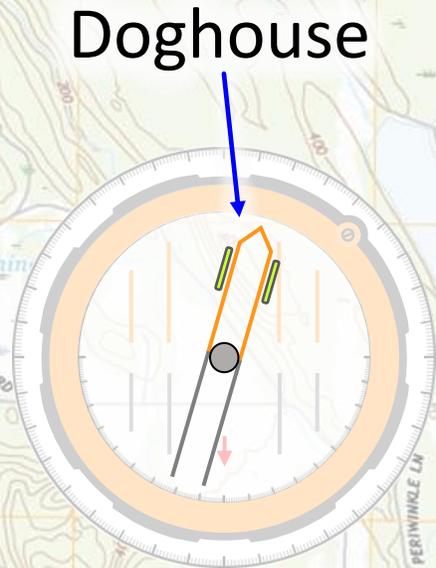
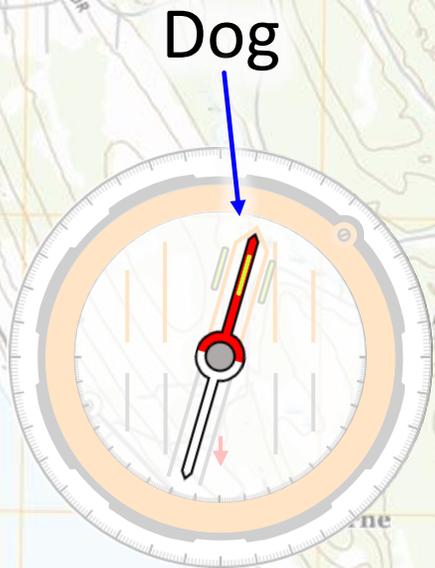
Make these look like each other



57 58 59 60 61 62 63 64^{000mE}

Compass with Adjustable Declination

Important Terminology



Put the
 “Dog in the
 Doghouse”
 or
 “Red in the Shed”

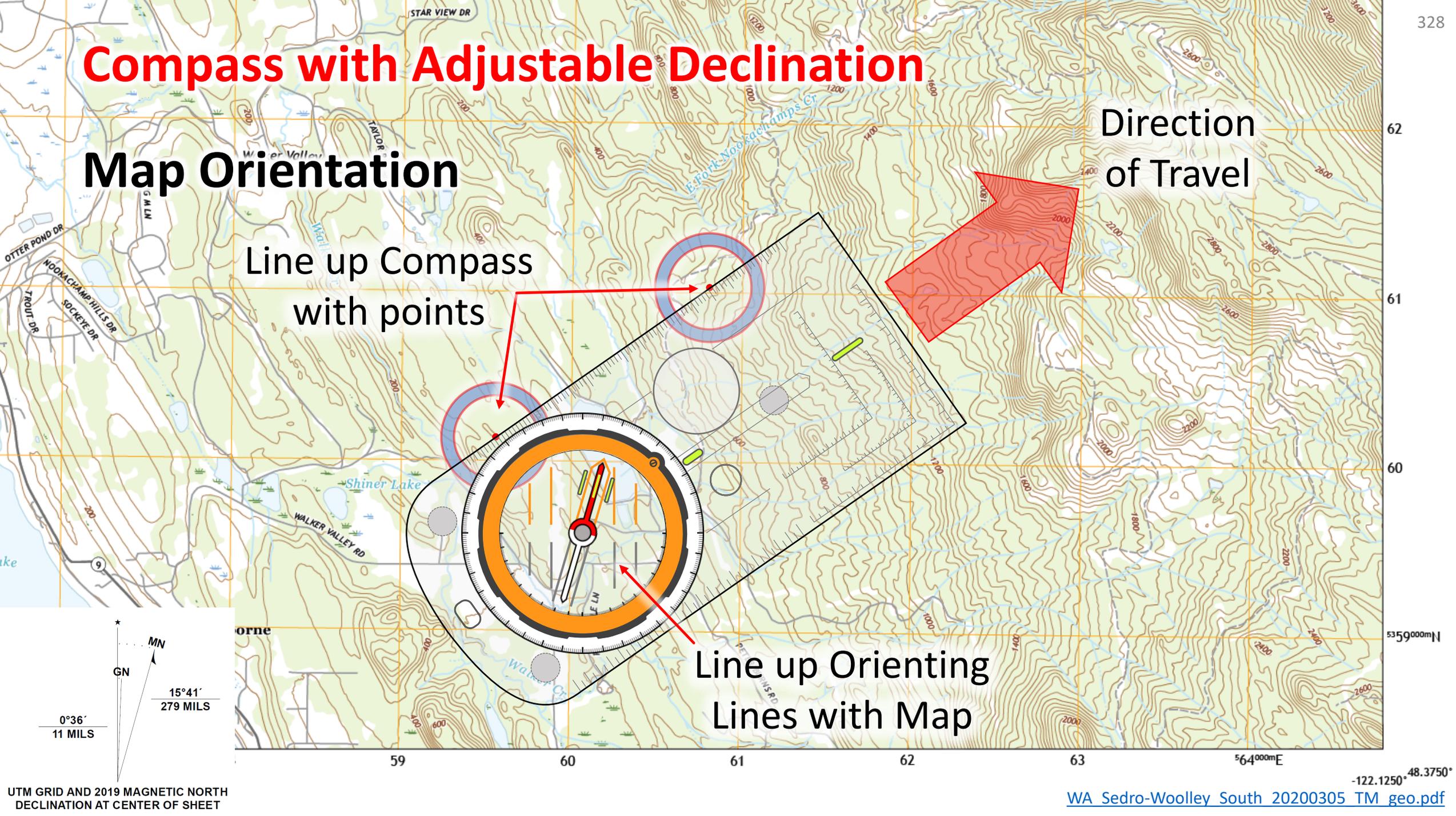
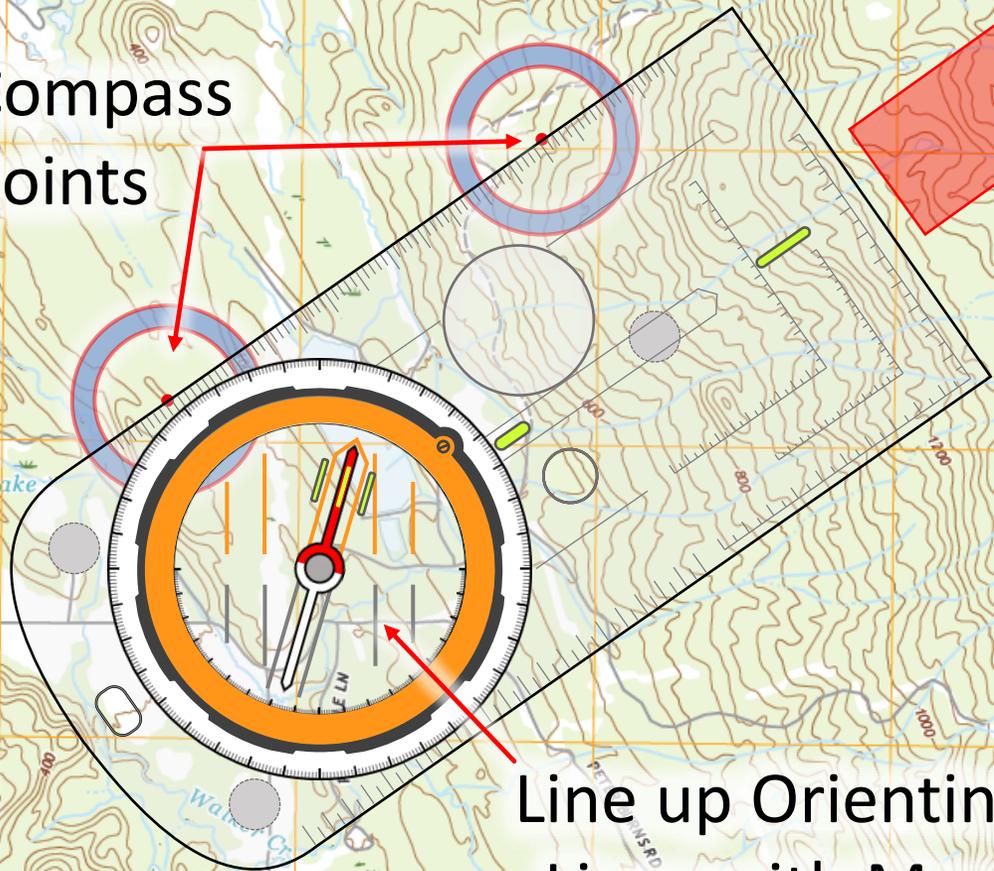
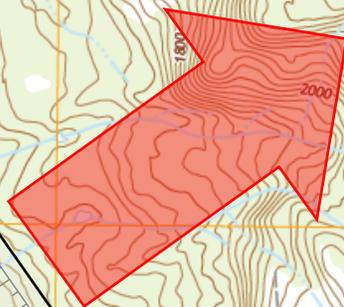
Compass with Adjustable Declination

Map Orientation

Direction of Travel

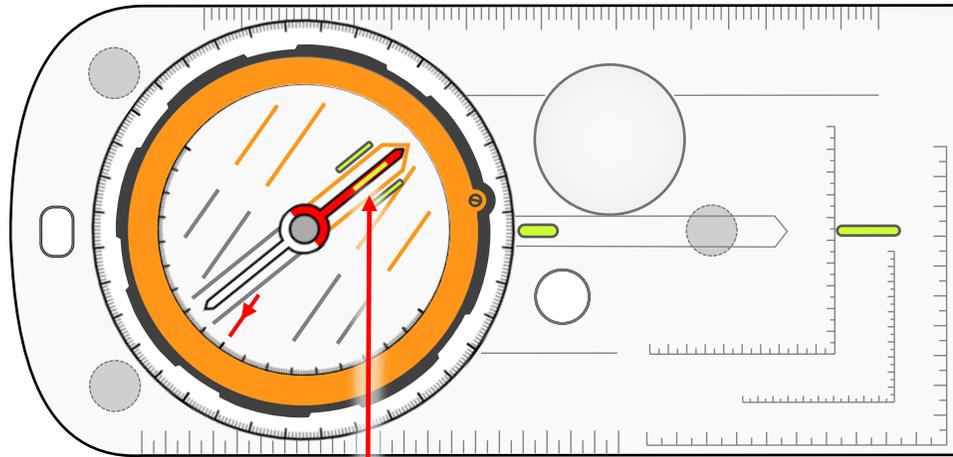
Line up Compass with points

Line up Orienting Lines with Map

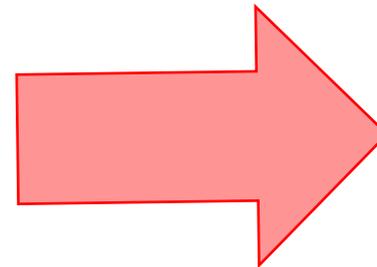


Compass with Adjustable Declination

Compass with Magnetic Declination Adjustment



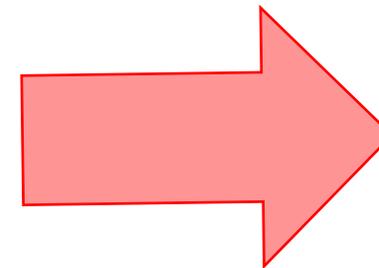
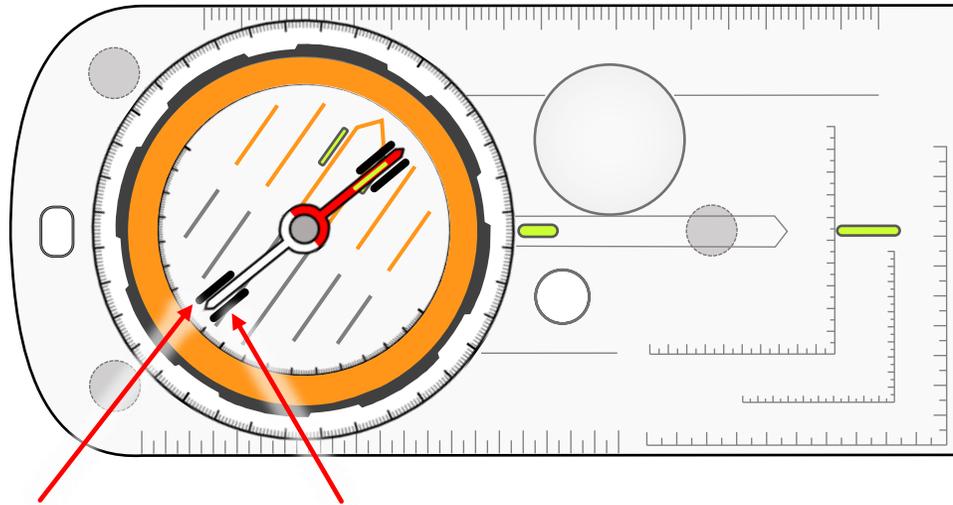
Keep Needle in
Orienting Arrow



Direction
of Travel

“Red in the Shed”
Or
“Dog in the Doghouse”

Compass Hack – DIY Magnetic Declination Adjustment



Direction
of Travel

Carefully use a Marker to make a
“Doghouse”

Problem: angles change each year

“Red in the Shed”
Or
“Dog in the Doghouse”



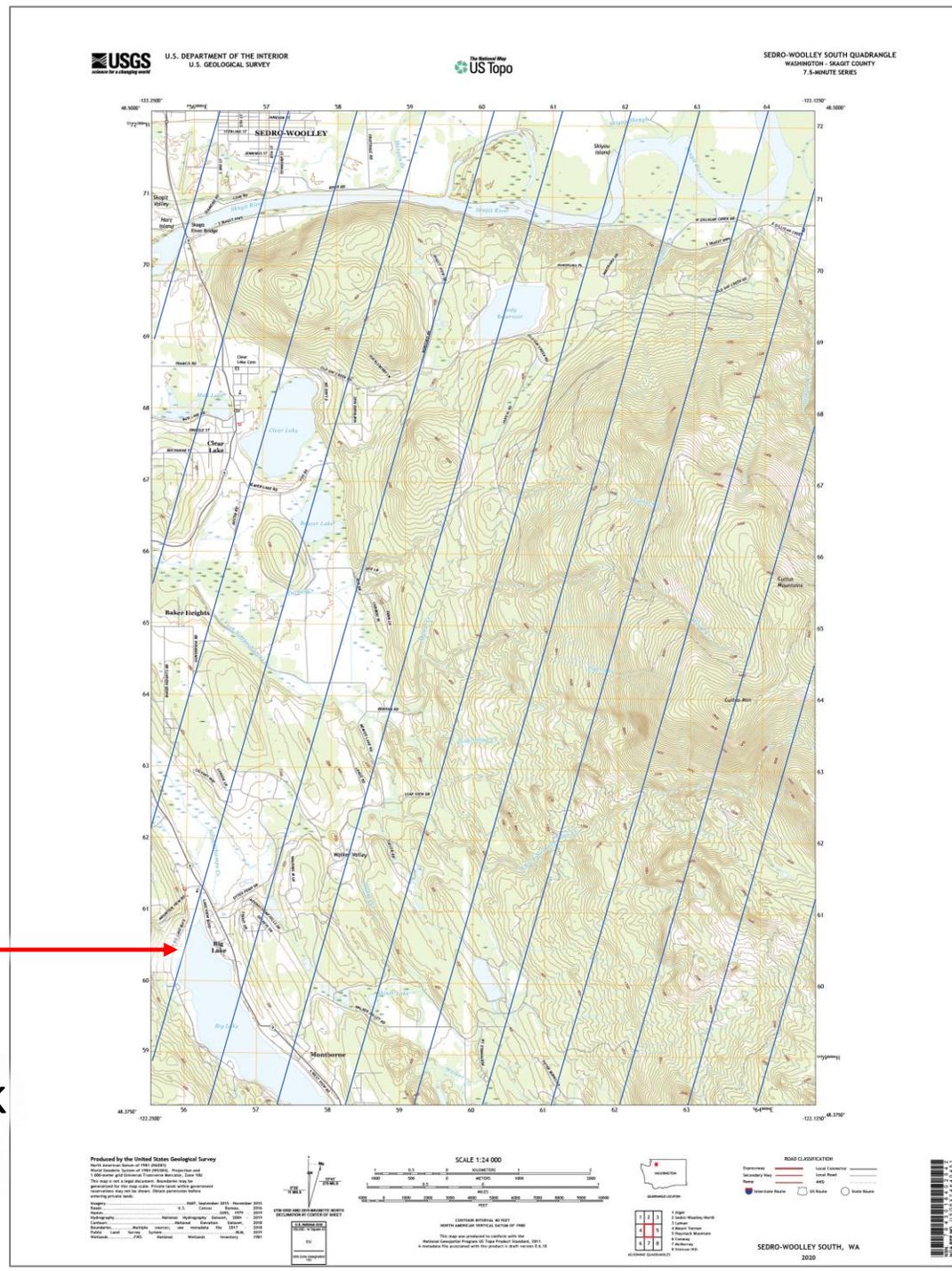
Topographical Map Hack

Map can be modified with
Magnetic North Lines

Problem:
– angles change each year

Magnetic North
Lines Added

Use metal yardstick
to copy and space
out lines

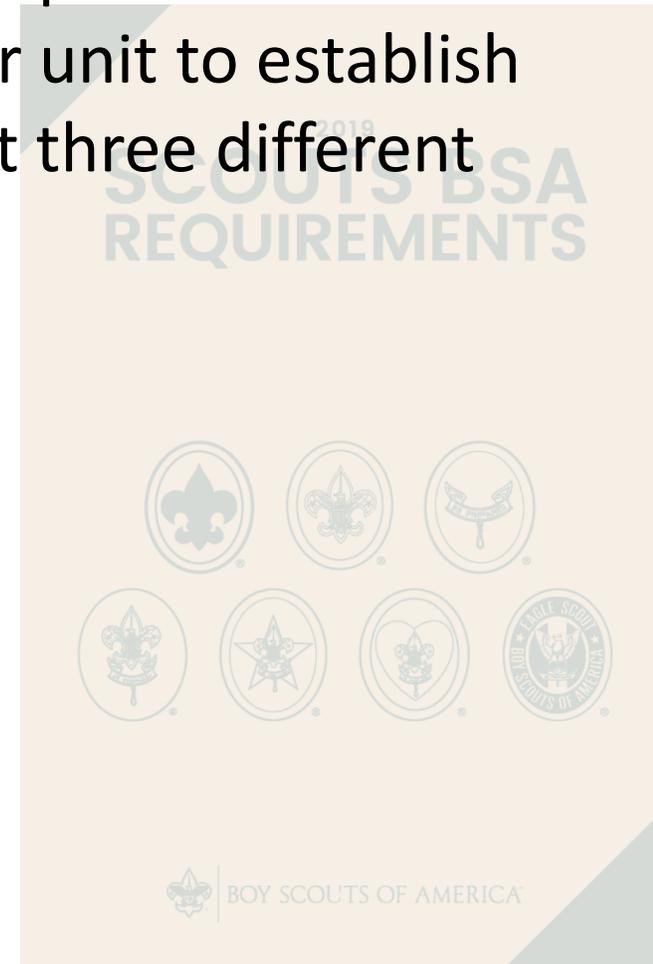


Navigation

Requirement B6b – Find your position x 3

While on a trek, use a map and compass to establish your position on the ground at three different locations, OR use a GPS receiver unit to establish your position on a topographic map and on the ground at three different locations.

Complete and Fill out Workbook



Resection

Establishing Location on a Map

- You should be able to use features on a map to pinpoint your location
 - Terrain features such as hills and lakes
 - Turn angles on paths and roads
 - Intersections between paths and roads and streams
 - Edge of tree lines

Resection

Resection

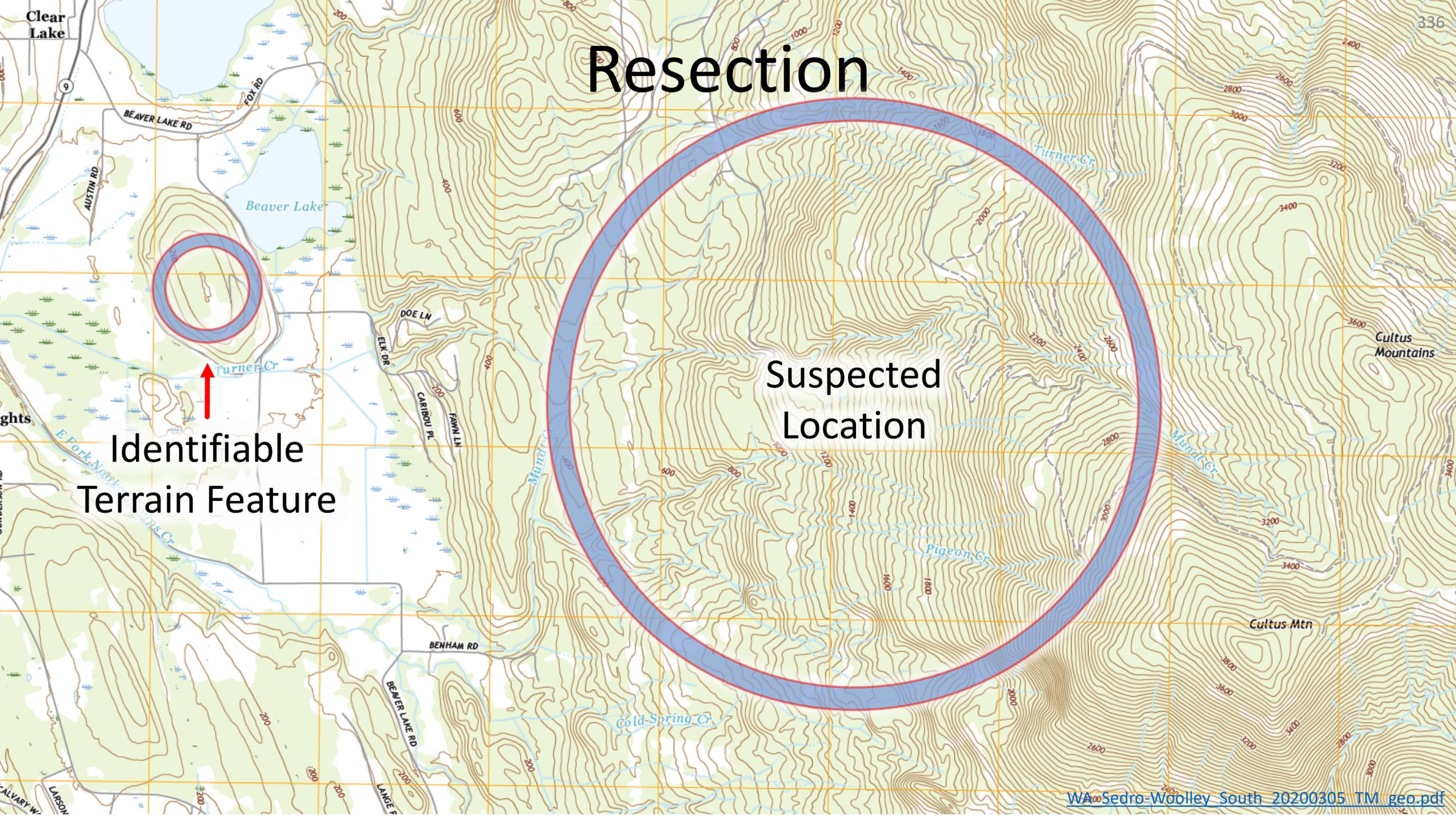
- Resection is a method for determining an unknown geographic position by measuring angles with respect to known position(s)
- The more know positions you have, the more precise your calculation
- Better compass skills = better precision
- Type of compass used also affects your final result

Resection

Where
Are We?



Resection

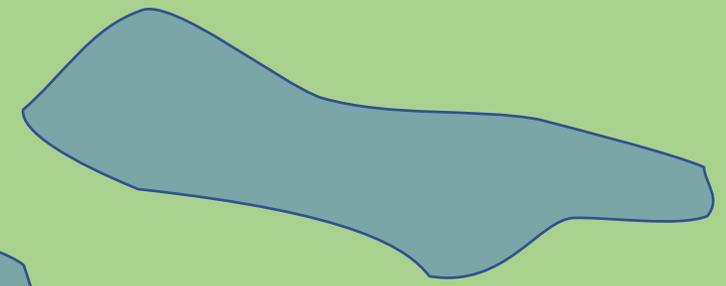
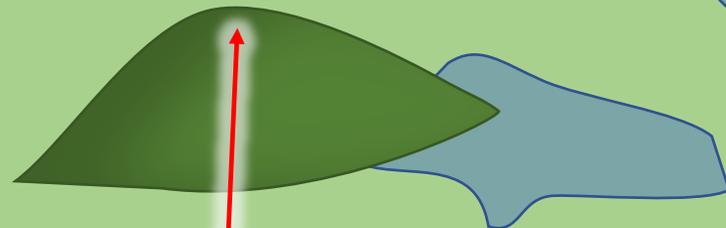


Suspected Location

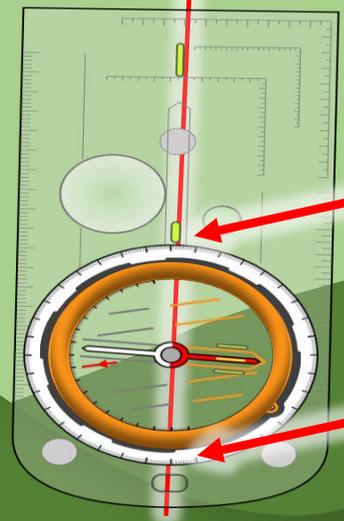
Identifiable Terrain Feature

Resection

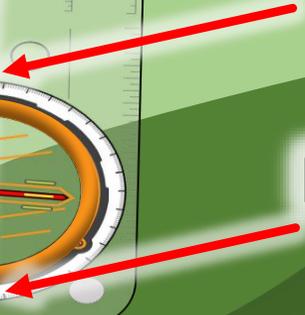
Aim at
Terrain Feature



Azimuth

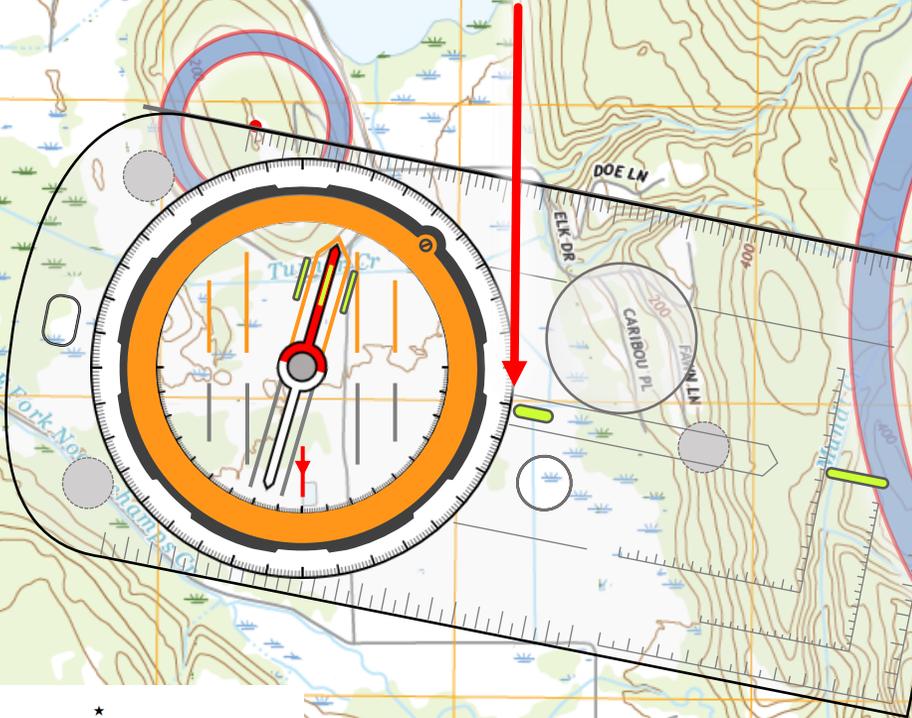


Back Azimuth

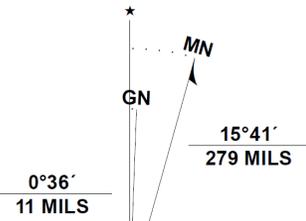


Resection

Back Azimuth

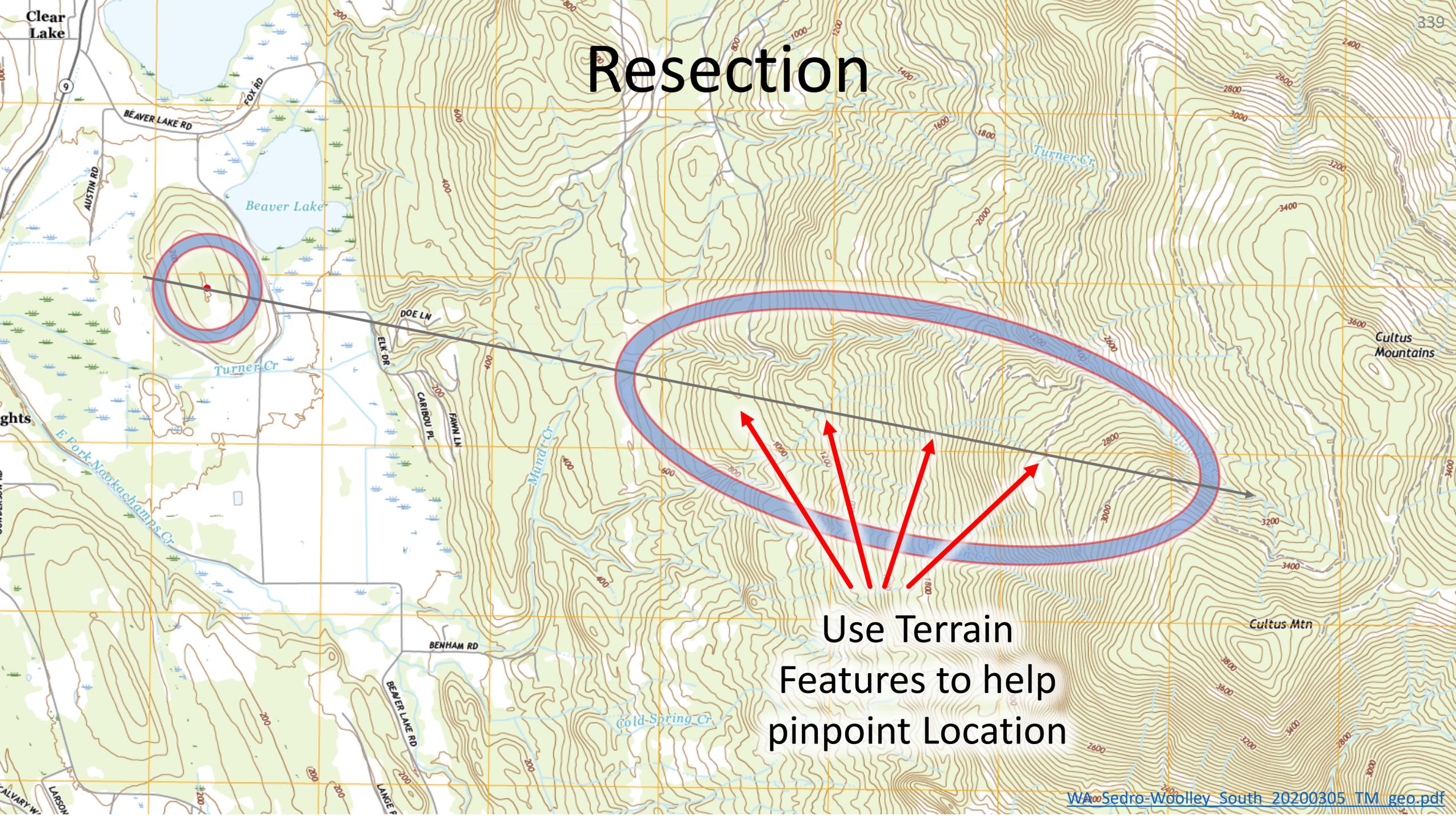


Convert Magnetic Azimuth to
Grid Azimuth as needed



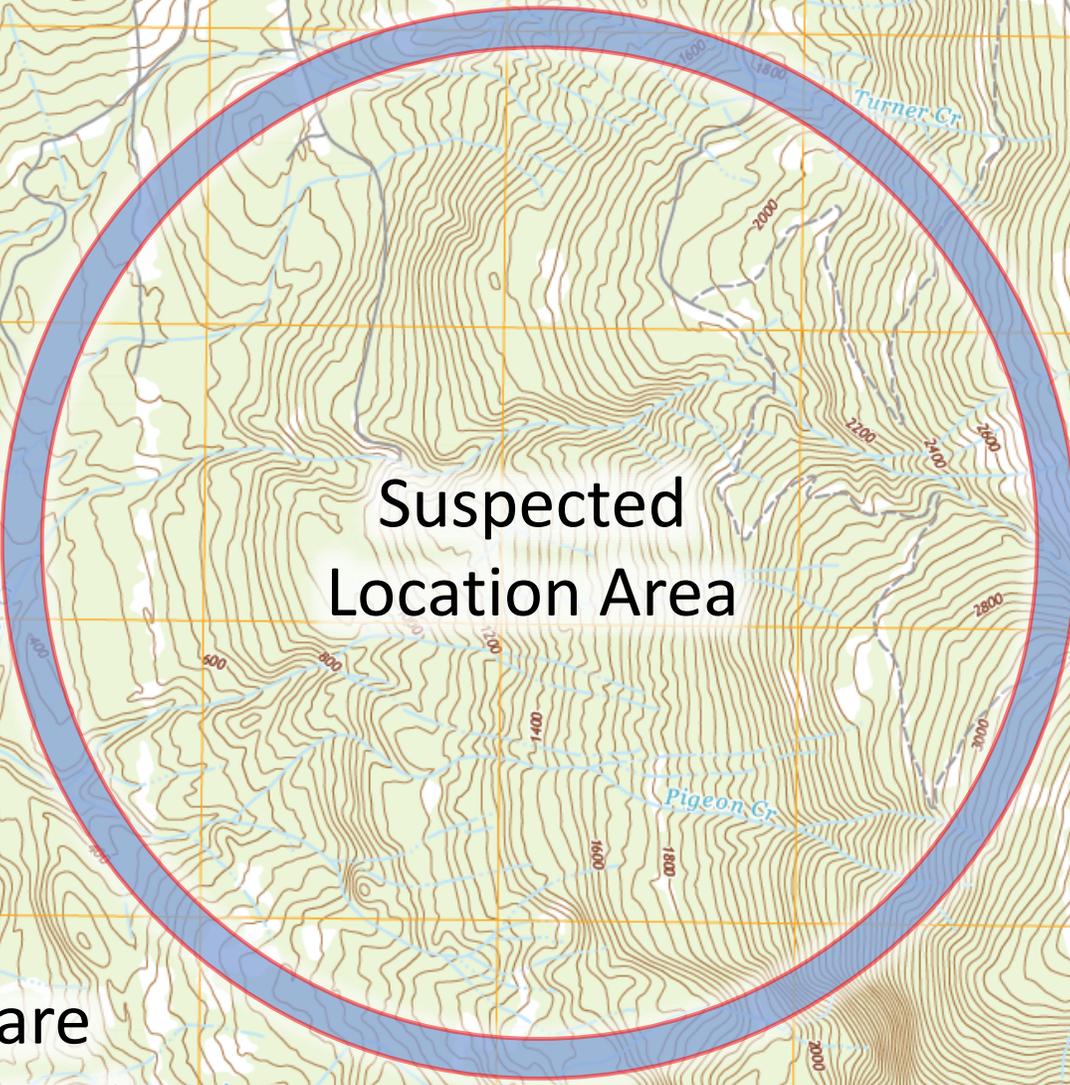
UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

Resection



Use Terrain
Features to help
pinpoint Location

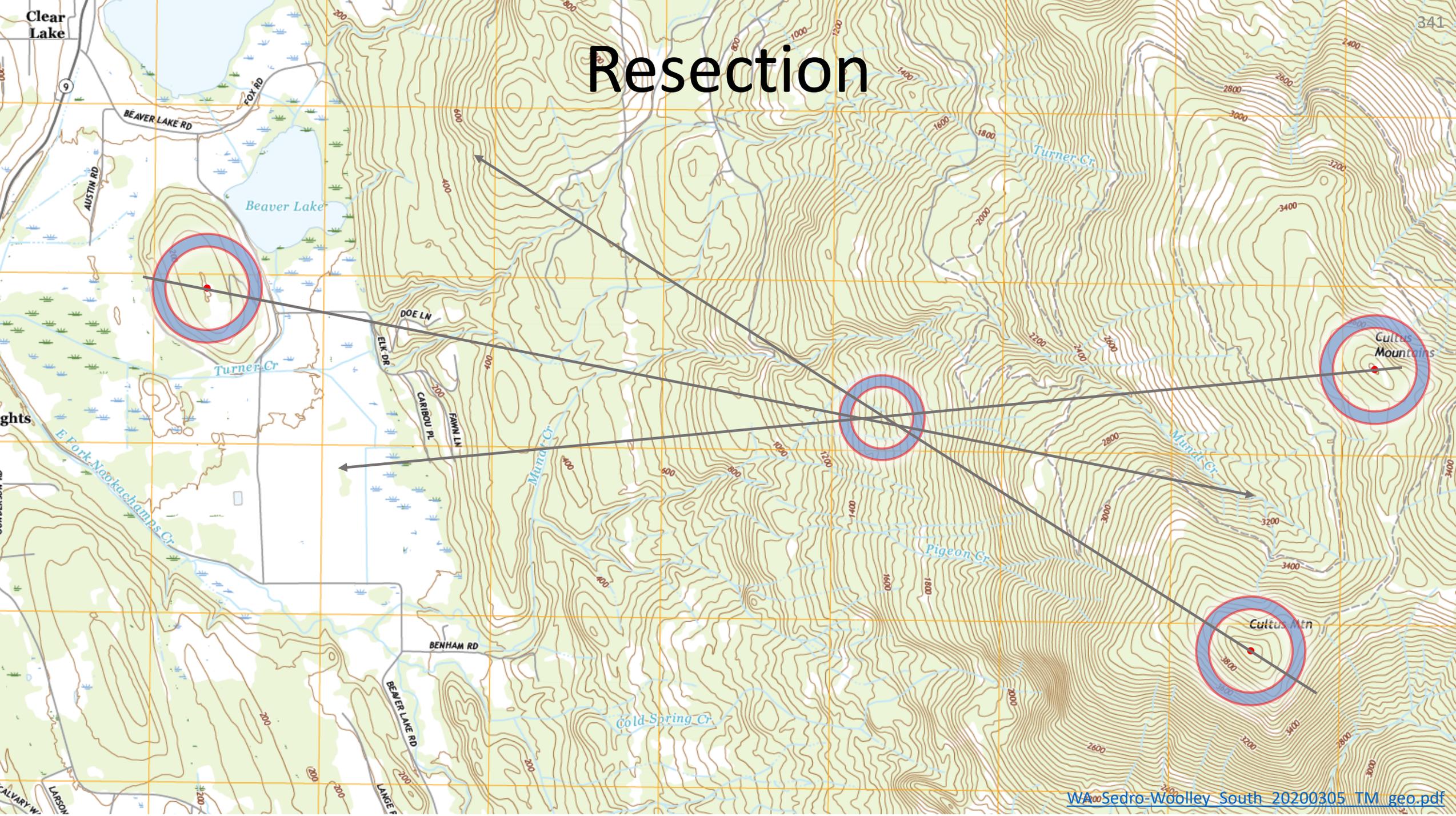
Resection



Suspected
Location Area

3 Points are
BETTER than 1

Resection

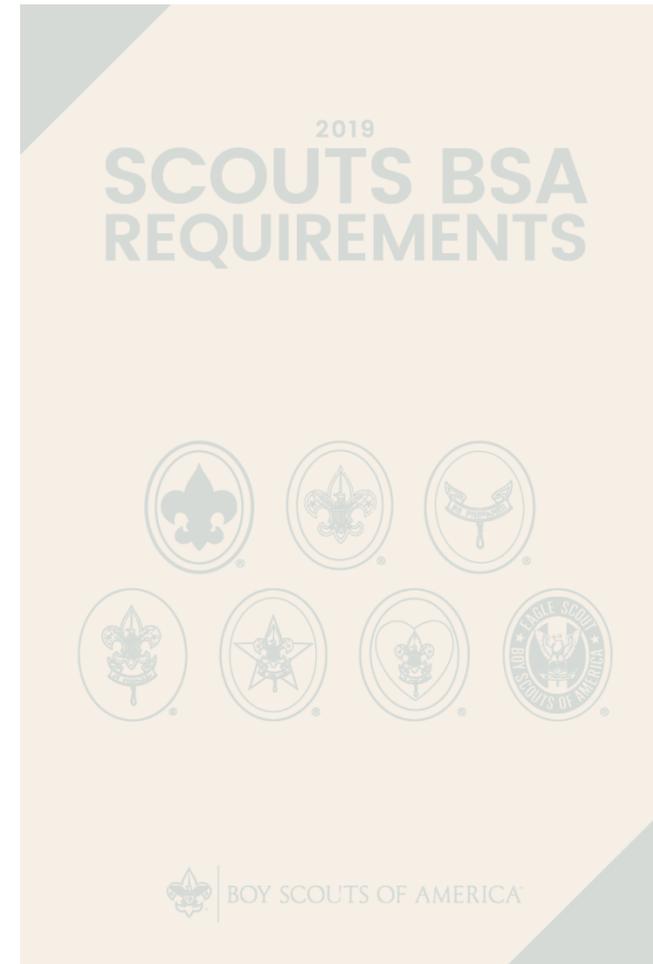


Navigation

Requirement B6c – Staying Found

Explain how to stay found, and what to do if you get lost.

Complete and Fill out Workbook



Navigation

Staying Found – Thumbnail Navigation

- Keep map in pocket and NOT in backpack
- Refer to map often to keep up with location
- Follow map as you move by placing thumb over location
 - Match features you see on the ground with those on the map
 - This keeps you on route
 - Keeps your map skills sharp
 - Unlikely you are going to get lost or stray too far off course

Navigation

Staying Found – Disorientation

- If you find you are unsure of your location
 - STOP
 - Pull out map and sit down
 - Study map and look for landmarks
 - Discuss route with crew
 - Where was your last known point?

Navigation

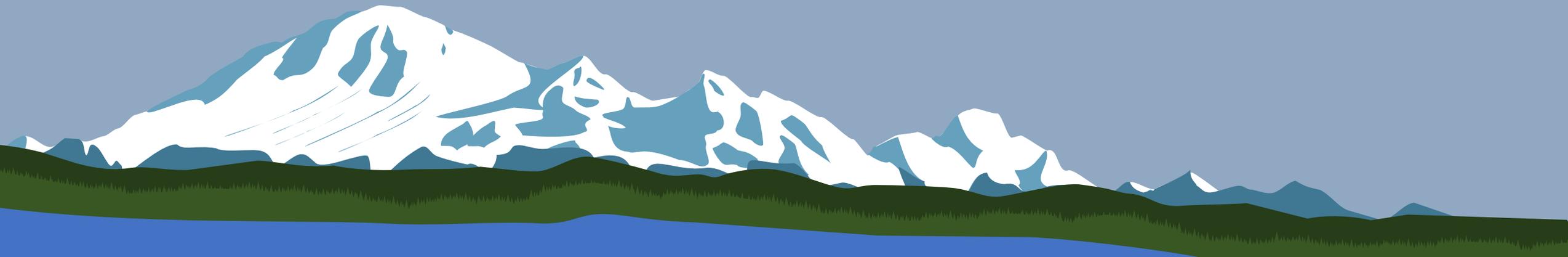
Staying Found – Lost

- If you find you are truly lost
 - Movement will likely move you further off course
 - Set up shelter
 - Wait for search party to find you

1. Hiking Merit Badge Requirements	11. Leave No Trace
2. Backpacking Merit Badge Requirements	12. Hiking Philosophy
3. Camping Merit Badge Requirements	13. Preparation
4. Merit Badge Intro	14. Hiking - Getting Out There
5. Hazards	15. Backpacking - Getting Out There
6. First Aid	16. Camping - Getting Out There
7. Gear	17. Final Thoughts
8. Water	18. Resources
9. Food	19. Instructor's Corner
10. Navigation	



Leave No Trace

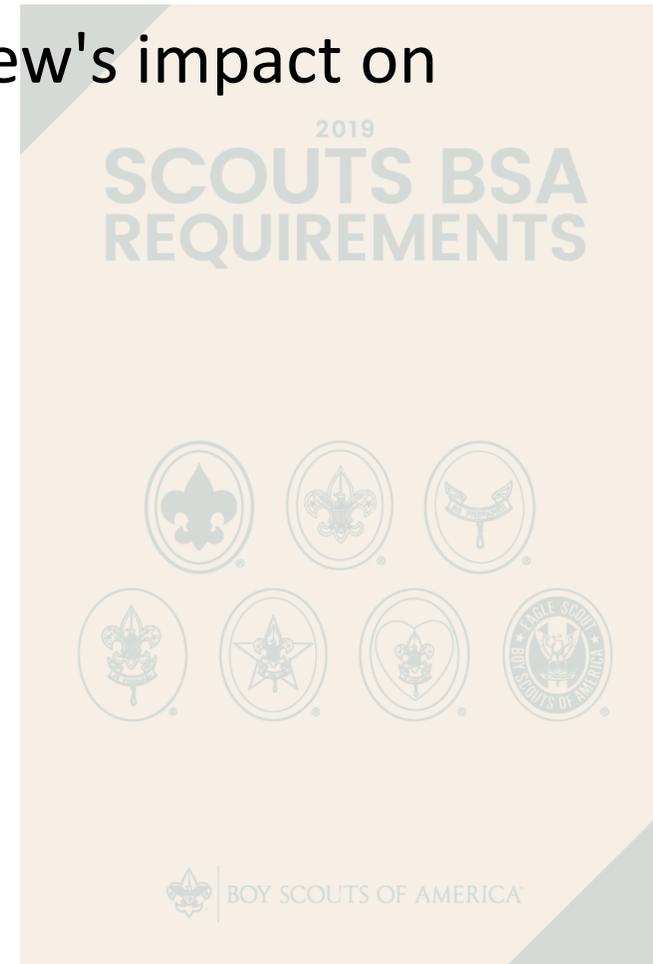


Leave No Trace

Requirement B4a - Leave No Trace

Describe the importance of using Leave No Trace principles while backpacking, and at least five ways you can lessen the crew's impact on the environment.

Complete and Fill out Workbook



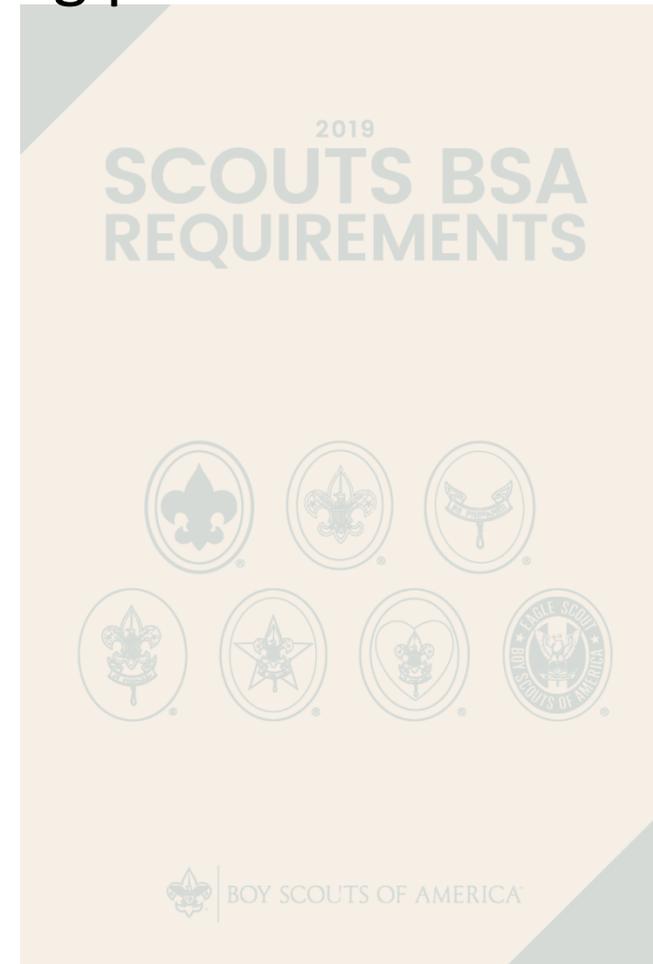
Hiking Philosophy

Requirement H2- Good Hiking Practices

Explain and, where possible, show the points of good hiking practices including:

- Proper outdoor ethics
- Hiking safety in the daytime and at night
- Courtesy to others
- Choice of footwear
- Proper care of feet and footwear

Complete and Fill out Workbook



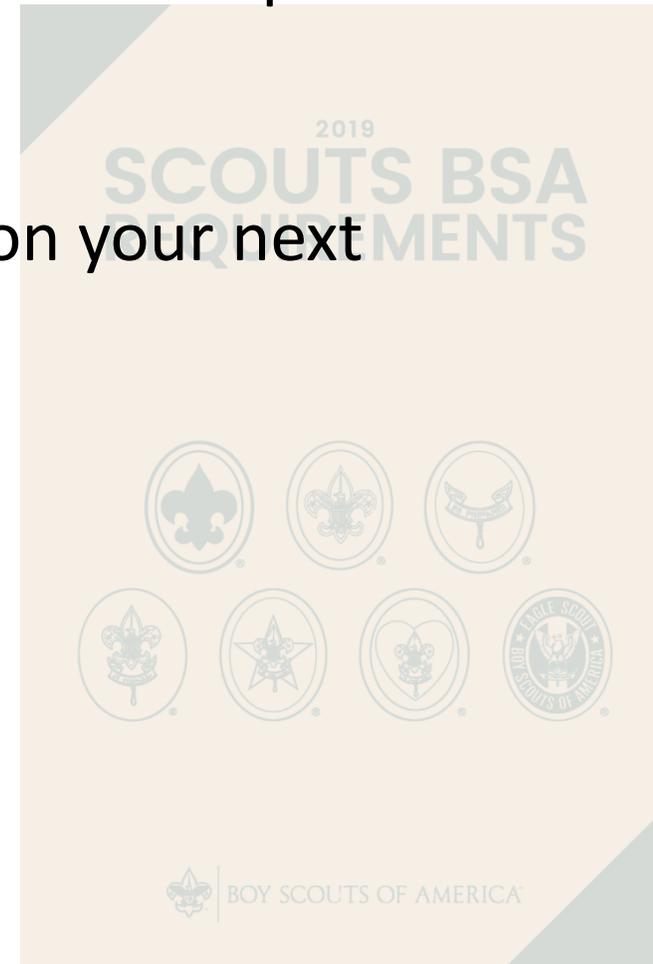
Leave No Trace

Requirement C2 – Leave No Trace

Learn the Leave No Trace principles and the Outdoor Code and explain what they mean.

Write a personal plan for implementing these principles on your next outing.

Complete and Fill out Workbook



Leave No Trace

Leave No Trace

- Plan Ahead and Prepare
- Travel and Camp on Durable Surfaces
- Dispose of Waste Properly
- Leave What You Find
- Minimize Campfire Impacts
- Respect Wildlife
- Be Considerate of Other Visitors

Leave No Trace

Leave No Trace - Plan Ahead and Prepare

- Plan Ahead and Prepare
 - Know the regulations and special concerns of area
 - Prepare for weather extremes, hazards and emergencies
 - Avoid high use times
 - Travel in small groups when possible

Leave No Trace

Leave No Trace - Travel and Camp on Durable Surfaces

- Travel and Camp on Durable Surfaces
 - Walk single file on durable surfaces
 - Trails
 - Rock
 - Dry grass
 - Snow
 - Choose campsite carefully
 - Ideally on a designated campsite
 - Don't camp on vegetation – you will kill it
 - 200 feet away from water

Leave No Trace

Leave No Trace - Dispose of Waste Properly

- Dispose of Waste Properly
 - Pack it in, pack it out
 - Wash site should be 200 feet or more from streams or water
 - Human waste need to be buried or packed out
 - Check with land management agency first for requirements
 - Urinate away from trails and campsites
 - Urinate on rocks instead of plants
 - Don't urinate in small bodies of water
 - Animals will tear up plants to get to salts in urine

Leave No Trace

Leave No Trace - Leave What You Find

- Leave What You Find
 - Rocks
 - Leaves
 - Flowers
 - Bird's nest
 - Archaeological and cultural finds such as arrowheads
- Feel free to pack out trash

Leave No Trace

Leave No Trace - Minimize Campfire Impacts

- Minimize Campfire Impacts
 - Avoid leaving burn scars and evidence of fire
 - Avoid having a campfire if possible
 - Don't leave partially burned debris
 - Burn wood that is as thick as wrist or smaller
 - Burn to ashes
 - After ashes are cooled, spread them out
 - If you don't completely burn your fire to ashes – put it out
 - Pour on water
 - Stir
 - Feel with hand
 - If hot, repeat

Leave No Trace

Leave No Trace - Respect Wildlife

- Respect Wildlife
 - Only observe animals from a distance
 - Don't feed animals
 - Try not to disturb animals
 - It's their home
 - They are trying to survive

Leave No Trace

Leave No Trace - Be Considerate of Other Visitors

- Be Considerate of Other Visitors
 - Be nice
 - Yield to those going uphill
 - Yield to horse
 - Don't make noise

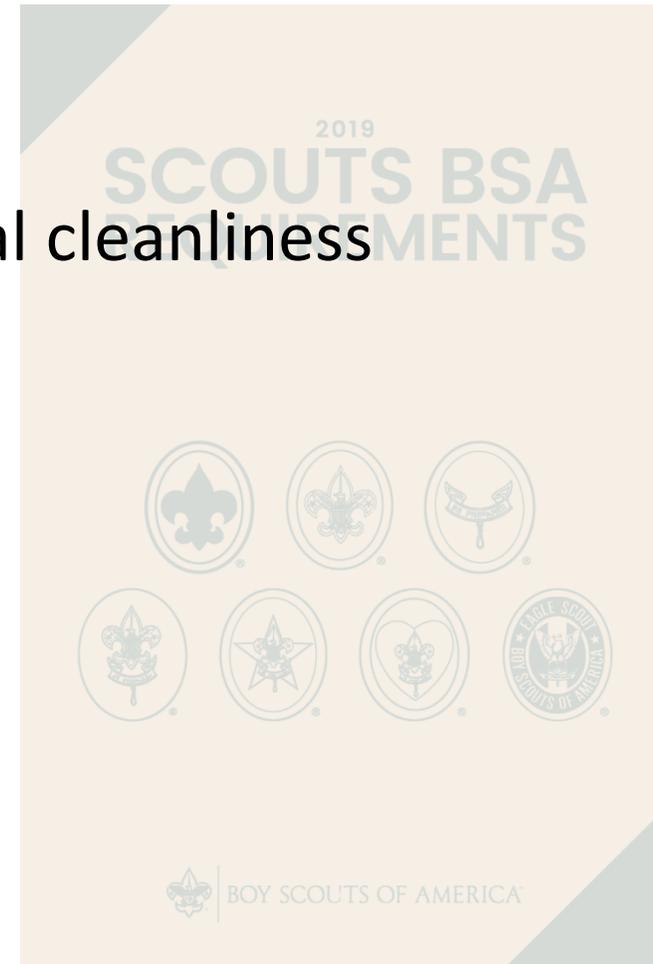
Leave No Trace

Requirement B4b – Human Waste and Sanitation

Describe proper methods of handling human and other wastes while on a backpacking trek.

Describe the importance of and means to assure personal cleanliness while on a backpacking trek.

Complete and Fill out Workbook



Leave No Trace

Human Waste and Sanitation - Poop

- Human waste is a Leave No Trace issue
 - Don't leave poop for other to find – that's just nasty!
- Also important for health
 - Exposed feces is nasty and spreads disease



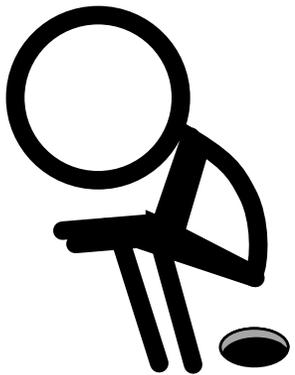
Leave No Trace

Pooping in the Woods

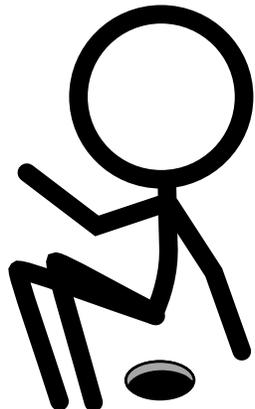
- Maybe your people just don't know how to poop in the woods
 - Dig a hole 6-8 inches deep
 - Poop IN hole – if you miss, use stick
 - Wipe
 - Fill hole

Tools needed:

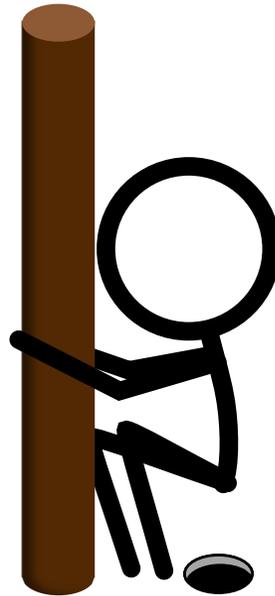
- Trowel
- Toilet Paper
- Stick



The Squat



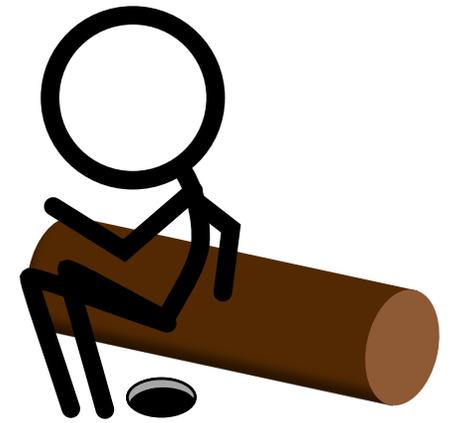
The Tripod



The Tree Hugger



The Tree Back

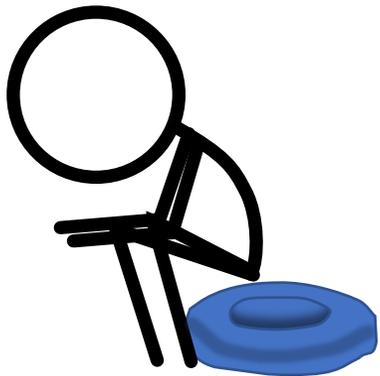
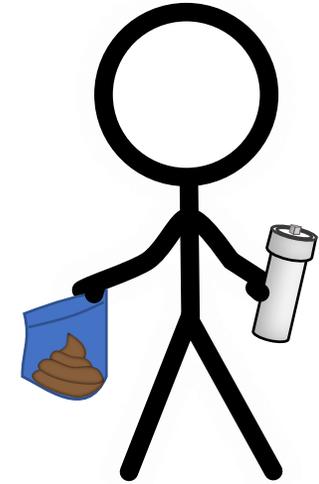


Log Assist

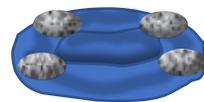
Leave No Trace

Pooping in the Woods – Can't Dig

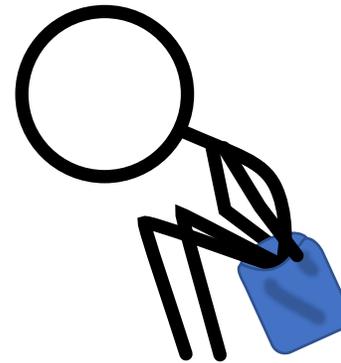
- You may not be able to dig a cathole
 - Deep snow (don't bury for someone to find in spring)
 - Glaciers
 - Narrow river canyons
- Use a sealable bag or Poop Tube to pack out



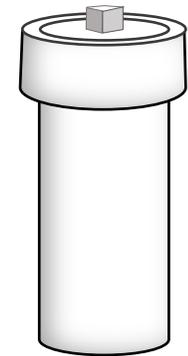
The Wag Bag



Weight Bag for Wind



Butt Bag



Poop Tube

Leave No Trace

Human Waste and Sanitation – Sanitation

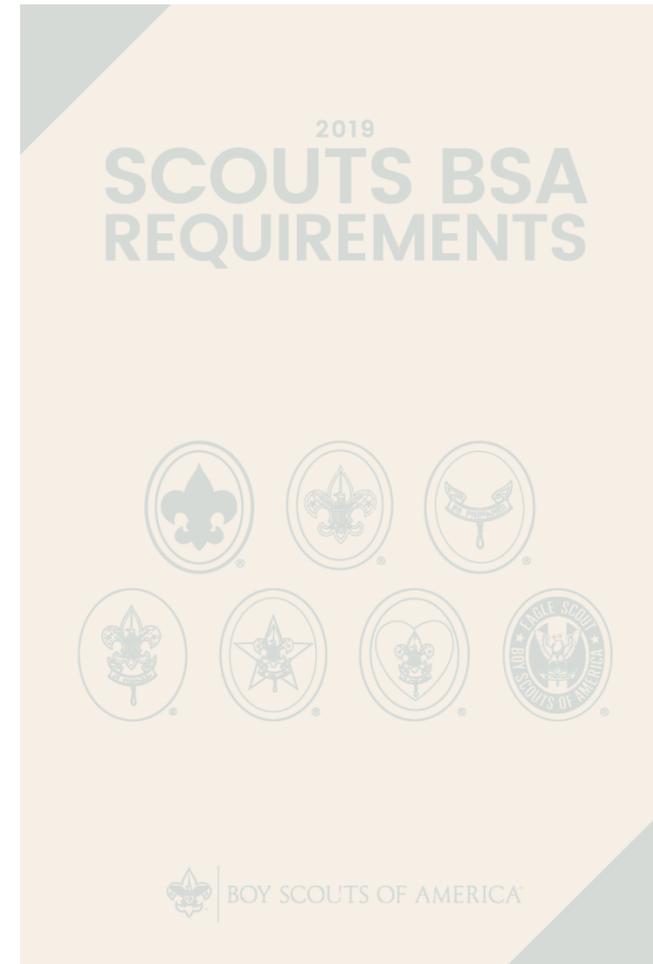
- It is difficult to stay clean on an outing
- Hands, knife and utensils need to be clean before eating
 - See [Food Section](#)
- Use hand sanitizer
 - After returning from latrine or cathole
 - Before and after handling food
 - Before eating

Leave No Trace

Requirement B4c – Campsite Selection

Tell what factors are important in choosing a campsite.

Complete and Fill out Workbook

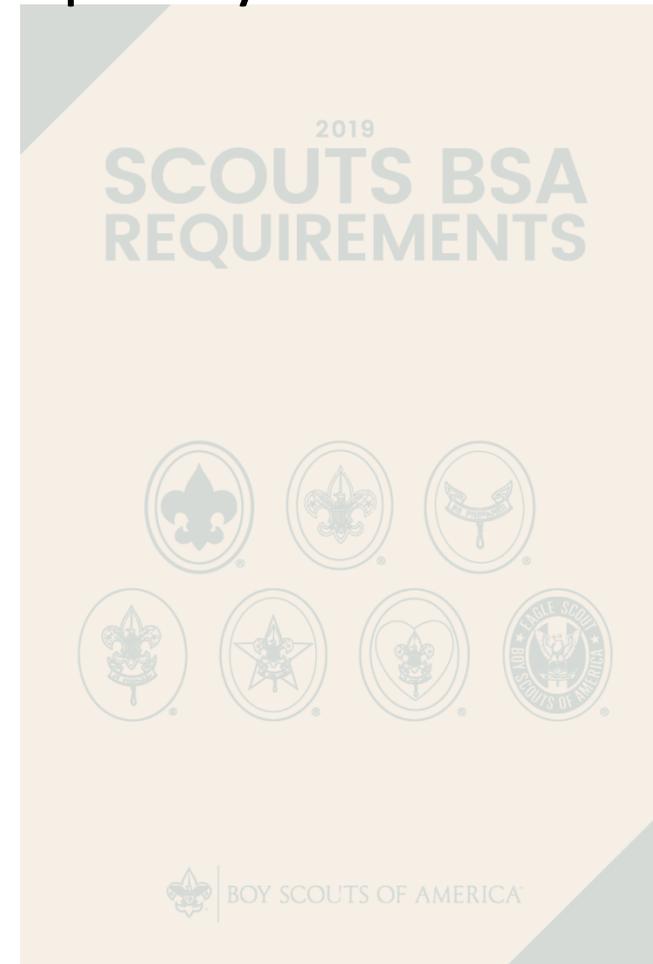


Leave No Trace

Requirement C6c – Pitching a Tent

Describe the factors to be considered in deciding where to pitch your tent.

Fill out Workbook



Leave No Trace

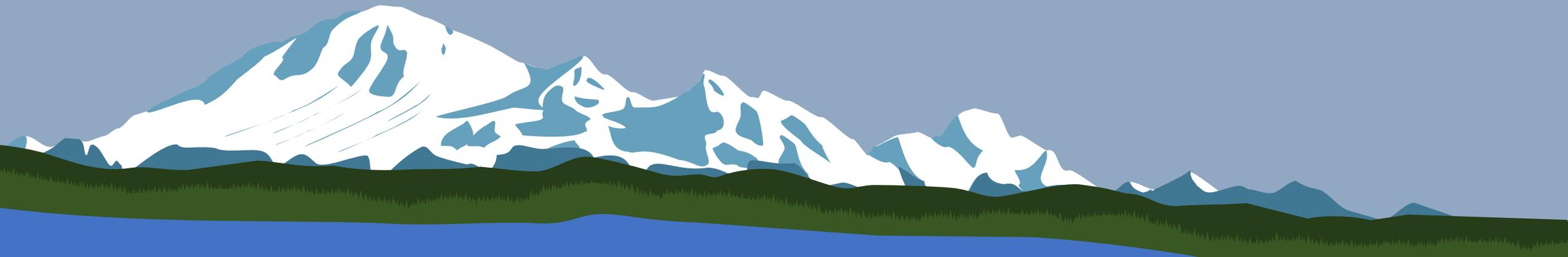
Campsite Selection

- In part, Leave No Trace concerns, but also a safety issue
- Selection:
 - On durable surface – off vegetation
 - 200 feet away from water
 - Consider exposure to wind and sun
 - Plan for flooding
 - Avoid low areas that will flood
 - Avoid dry stream beds – these can be deadly
 - Lightning?
 - Avoid high exposed areas
 - Avoid solo trees

1. Hiking Merit Badge Requirements	11. Leave No Trace
2. Backpacking Merit Badge Requirements	12. Hiking Philosophy
3. Camping Merit Badge Requirements	13. Preparation
4. Merit Badge Intro	14. Hiking - Getting Out There
5. Hazards	15. Backpacking - Getting Out There
6. First Aid	16. Camping - Getting Out There
7. Gear	17. Final Thoughts
8. Water	18. Resources
9. Food	19. Instructor's Corner
10. Navigation	



Hiking Philosophy



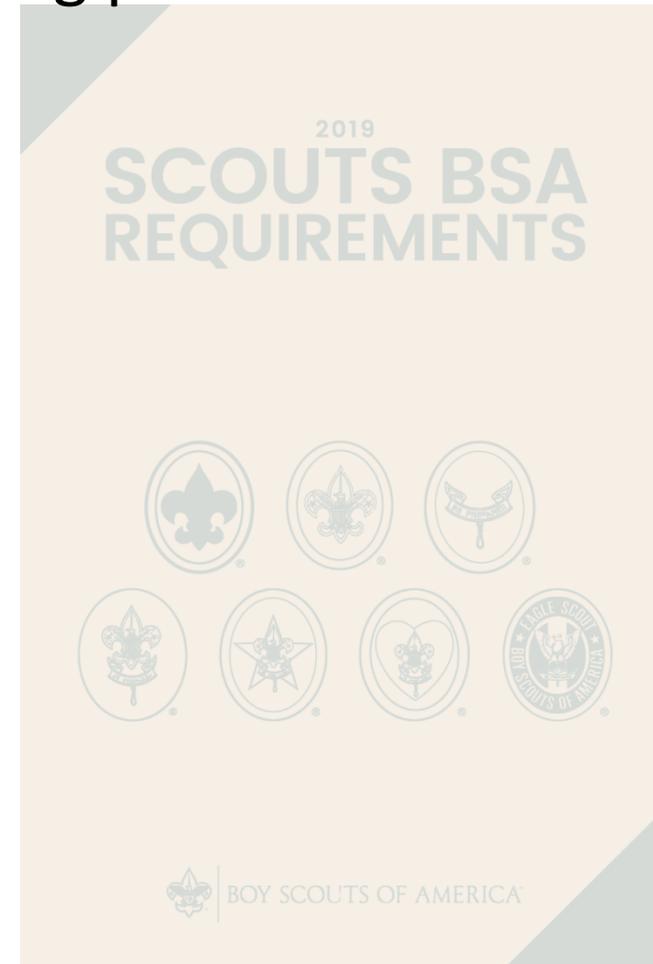
Hiking Philosophy

Requirement H2- Good Hiking Practices

Explain and, where possible, show the points of good hiking practices including:

- Proper outdoor ethics
- Hiking safety in the daytime and at night
- Courtesy to others
- Choice of footwear
- Proper care of feet and footwear

Complete and Fill out Workbook



Hiking Philosophy

Good Hiking Practices - Leave No Trace

- Plan Ahead and Prepare
- Travel and Camp on Durable Surfaces
- Dispose of Waste Properly
- Leave What You Find
- Minimize Campfire Impacts
- Respect Wildlife
- Be Considerate of Other Visitors

Hiking Philosophy

Good Hiking Practices – Hiking Safety – Day

- Be aware of hazards and how to reduce risk
- Set a pace that is comfortable for the slowest member of your group
- Stay in good shape so you are ready for the physical demands of a trek
- Know where you are going and what to expect
- Adjust clothing layers to match changing weather conditions
- Wear proper footwear
- Drink plenty of water
- Take care of gear

Hiking Philosophy

Good Hiking Practices – Hiking Safety – Night

- Night hiking can be fun when you are properly prepared
- Use extra care to stay on your route
- Keep the members of your group together

- If caught out after dark and cannot safely continue
 - It may be best to stop for the night
 - You should be prepared for an overnight stay

Hiking Philosophy

Requirement H3 – Hiking is Exercise

Explain how hiking is an aerobic activity.

Develop a plan for conditioning yourself for 10-mile hikes, and describe how you will increase your fitness for longer hikes.

Complete and Fill out Workbook



Hiking Philosophy

Hiking is Exercise

- The word aerobic means “with oxygen”
- Aerobic activities
 - Increase the rate of your breathing
 - Increase the rate of your heartbeat
 - Push your body to use oxygen more efficiently

Hiking Philosophy

Hiking is Exercise

- Aerobic training
 - Strengthens your circulatory and respiratory systems
 - Adds mass to muscles and bones
 - Burn excess fat
 - Leads to improvements in overall fitness.

Hiking Philosophy

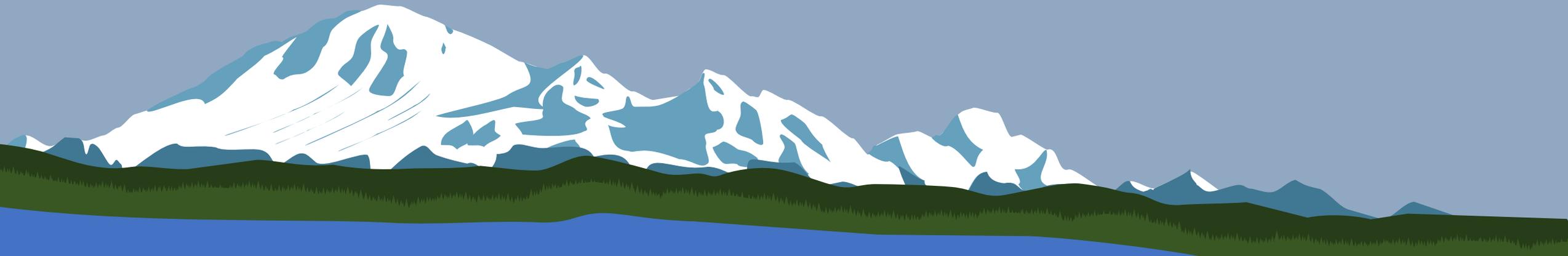
Hiking is Exercise

- For aerobic activities to be effective
 - Need to be half an hour or more
 - At least three times a week
 - Maintain enough intensity to break a light sweat
- Type of aerobic activity doesn't matter as much
 - Easier to do it if you enjoy doing it

1. Hiking Merit Badge Requirements	11. Leave No Trace
2. Backpacking Merit Badge Requirements	12. Hiking Philosophy
3. Camping Merit Badge Requirements	13. Preparation
4. Merit Badge Intro	14. Hiking - Getting Out There
5. Hazards	15. Backpacking - Getting Out There
6. First Aid	16. Camping - Getting Out There
7. Gear	17. Final Thoughts
8. Water	18. Resources
9. Food	19. Instructor's Corner
10. Navigation	



Planning and Preparation



Planning and Preparation

Requirement C7a - Gear Checklist

Prepare for an overnight campout with your patrol by doing the following:

Make a checklist of personal and patrol gear that will be needed.

Complete and Fill out Workbook



Planning and Preparation

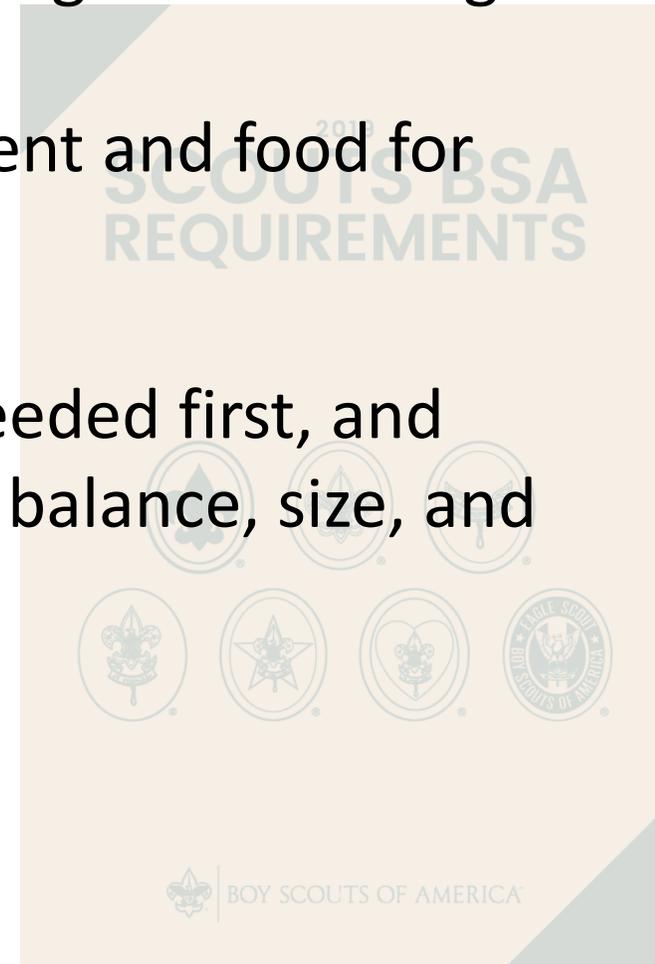
Requirement C7b – Pack your Gear

Prepare for an overnight campout with your patrol by doing the following:

Pack your own gear and your share of the patrol equipment and food for proper carrying.

Show that your pack is right for quickly getting what is needed first, and that it has been assembled properly for comfort, weight, balance, size, and neatness.

Complete and Fill out Workbook

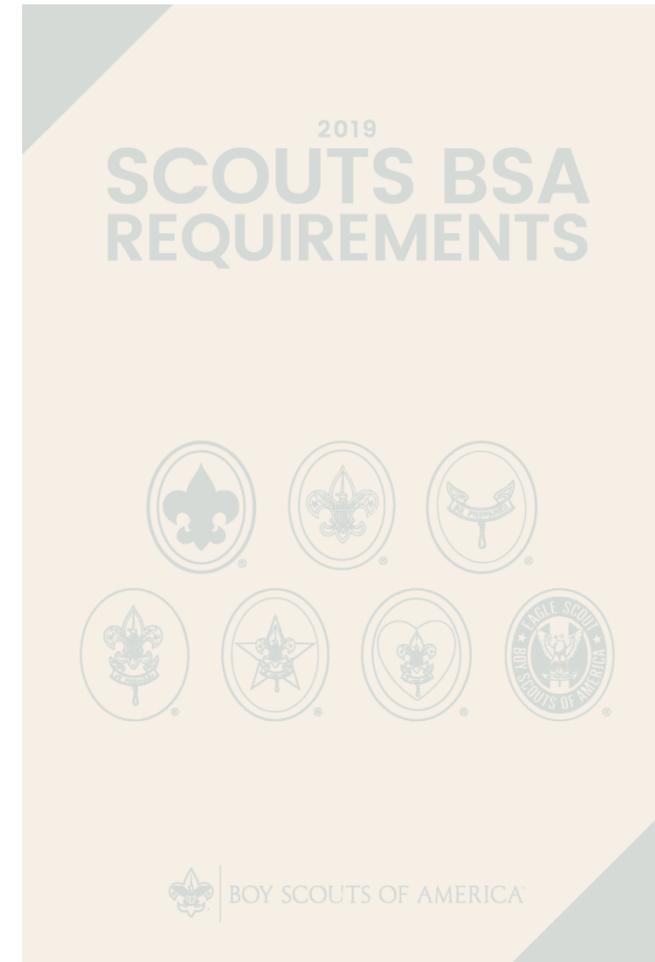


Planning and Preparation

Requirement B3a – Crew Size

Define limits on the number of backpackers appropriate for a trek crew.

Complete and Fill out Workbook



Planning and Preparation

Crew Size

- Large crew is difficult to manage
 - Large impact on campsites and trails
 - Slow moving
 - Needs large campsites

Planning and Preparation

Crew Size

- Small crew is easier to move
 - Less impact on campsites and trails
 - Quick moving
 - Less redundancy of gear and skills
 - What if the one large guy gets hurt – how will we carry out?
 - What if the one Wilderness First-Aid person gets hurt?
 - What if the one group stove breaks?
 - Why is it only one person knows where we are going?
 - How do we send for help with 3 people?

Planning and Preparation

Crew Size

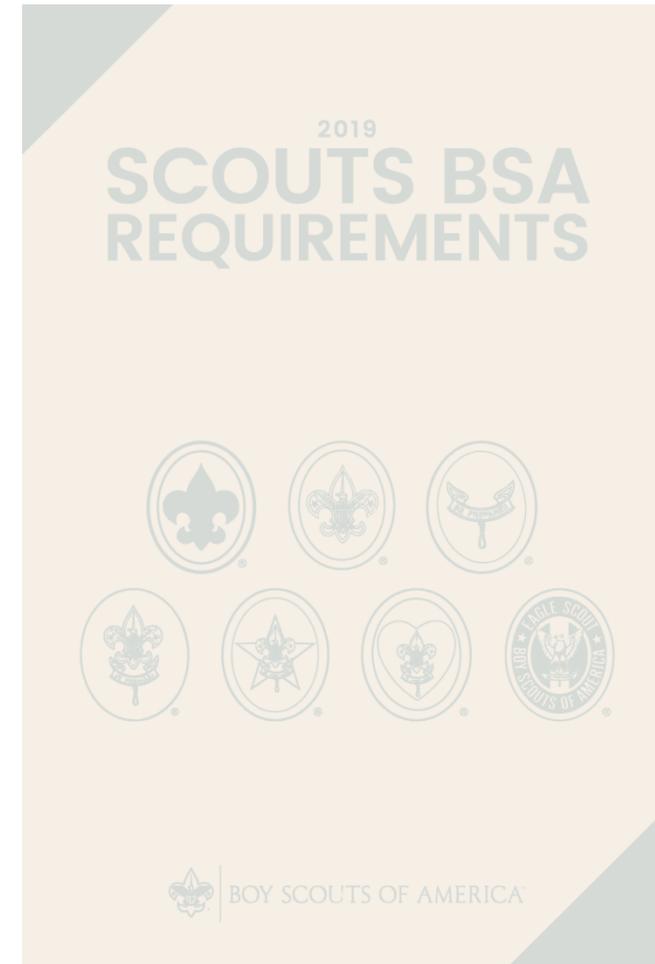
- Some places have a limit on group sizes
- Wilderness Areas require:
 - Fill out and a copy of a self-issue permit
 - Some places require a special permit
 - Max 12 people per group
 - Larger groups must split up and stay 1 mile apart

Planning and Preparation

Requirement B3b – Crew Organization

Describe how a trek crew should be organized.

Complete and Fill out Workbook



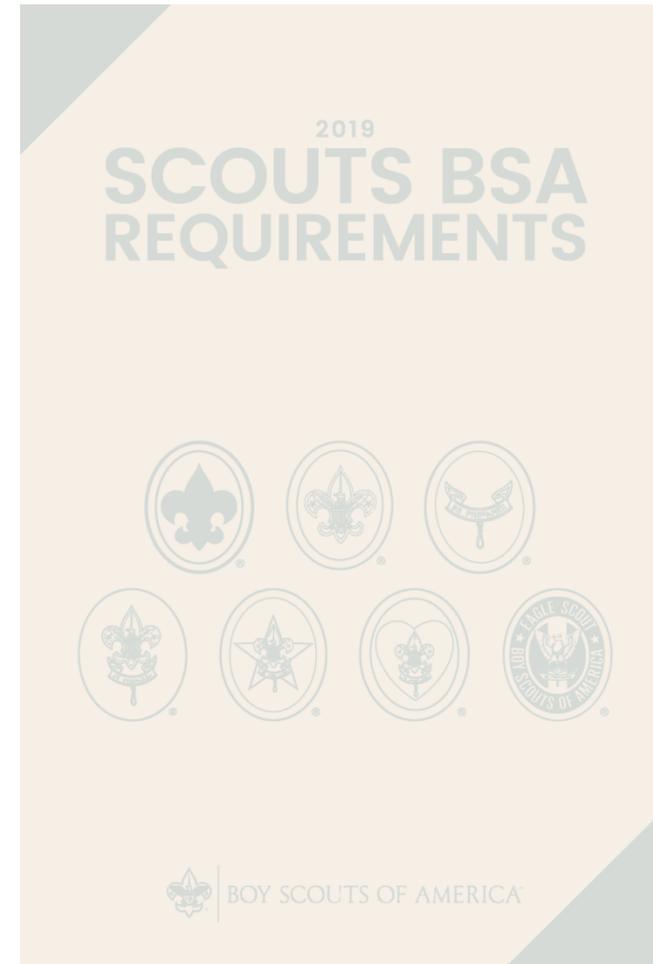
Planning and Preparation

Requirement C4a – Duty Roster

Make a duty roster showing how your patrol is organized for an actual overnight campout.

List assignments for each member.

Complete and Fill out Workbook



Planning and Preparation

Crew Organization

- Patrol leader has many responsibilities
 - Observes how each member is doing
 - Encourages everyone to participate in route and campsite selection
 - Finds opportunities for others to solve problems
 - Needs to support group and individuals
 - Encourage other to develop their outdoor skills

Planning and Preparation

Crew Organization – Chore Chart

- Many trekking groups use a Chore Chart
- Chore Chart
 - Stoves
 - Water
 - Cooking
 - Cleanup
 - Bear Bags



Planning and Preparation

Crew Organization – Duty Roster – Pre/Post Adventure

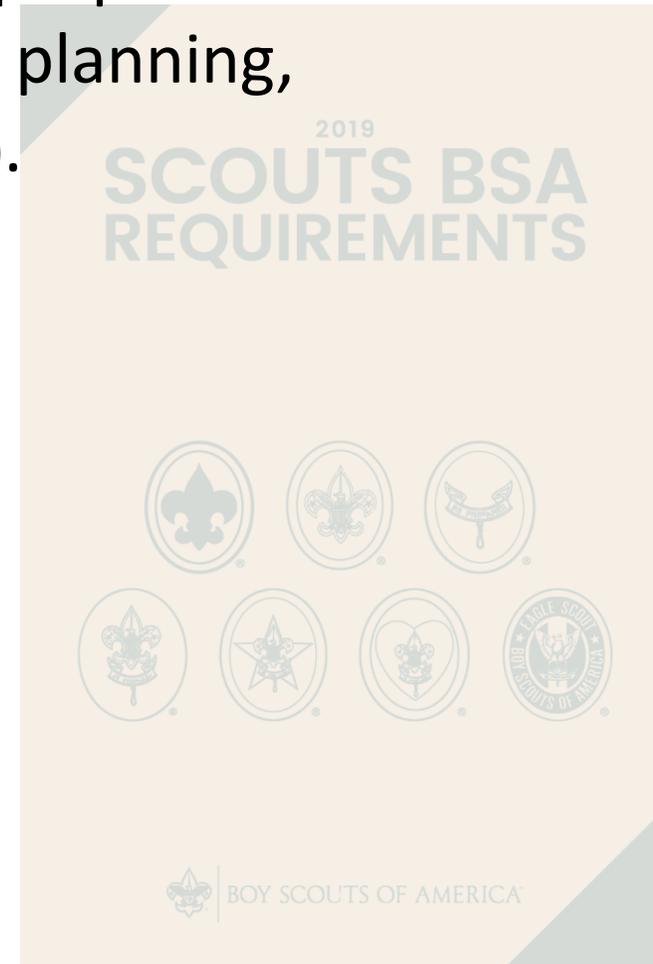
- Pre and post your campout, many things need to get done
- Assignments are necessary to get these done
- Pre/Post Camp duties may include
 - Classes (instructor, students, and gear needed)
 - Inspections
 - Organizing and packing gear from gear storage
 - Purchasing gear and food
 - Inventorying gear
 - Gear storage
 - Running debrief

Planning and Preparation

Requirement C4b – Prepare Unit for Campout

Help a Scout patrol or a Webelos Scout unit in your area prepare for an actual campout, including creating the duty roster, menu planning, equipment needs, general planning, and setting up camp.

Complete and Fill out Workbook

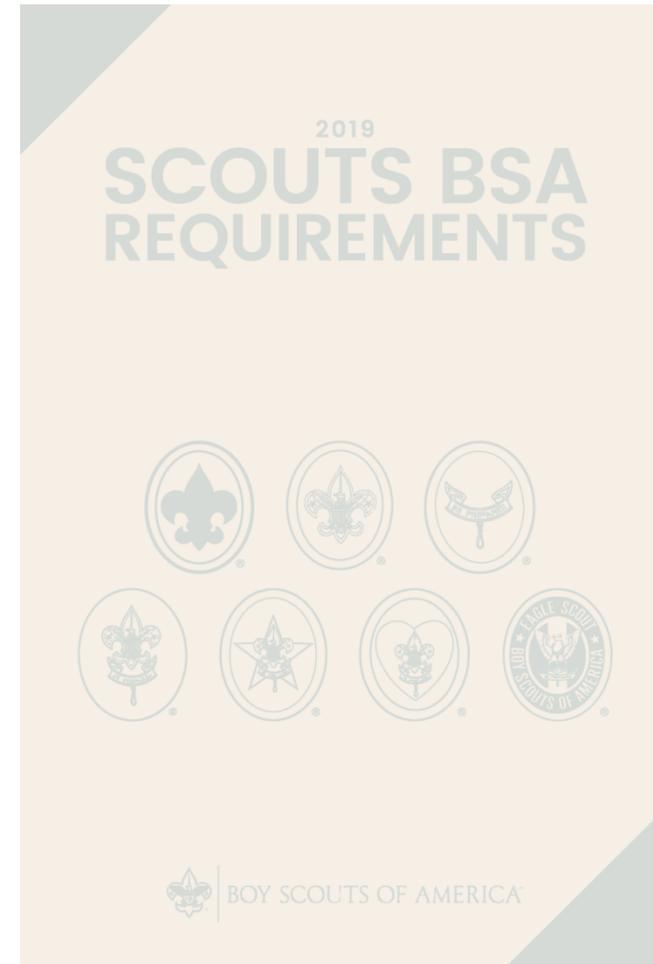


Planning and Preparation

Requirement B3c – Minimizing Risk

Tell how you would minimize risk on a backpacking trek.

Complete and Fill out Workbook

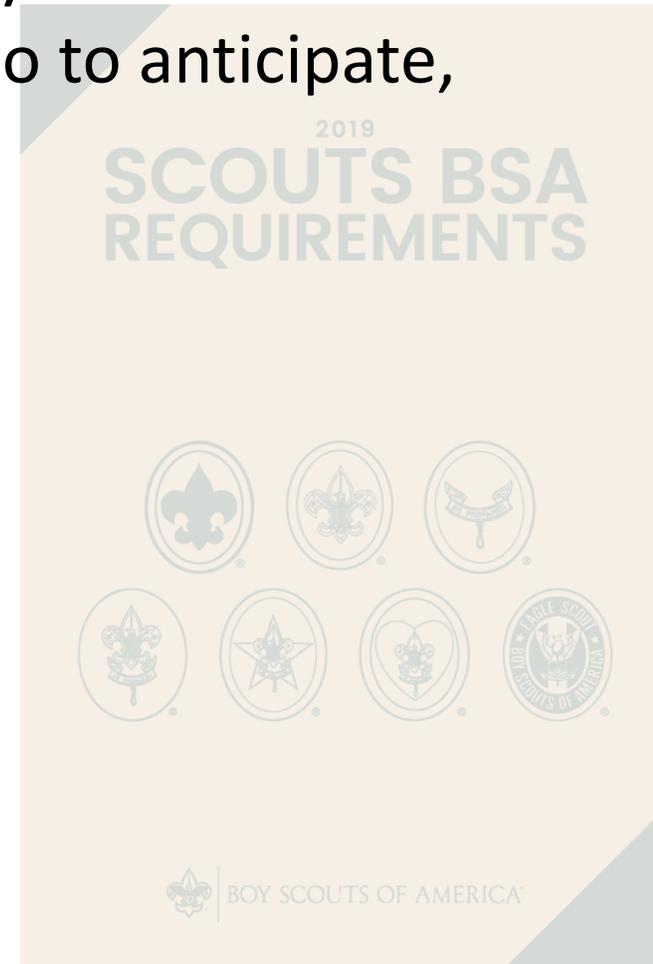


Planning and Preparation

Requirement C1a - Hazards

Explain to your counselor the most likely hazards you may encounter while participating in camping activities and what you should do to anticipate, help prevent, mitigate, and respond to these hazards.

Complete and Fill out Workbook



Planning and Preparation

Minimizing Risk

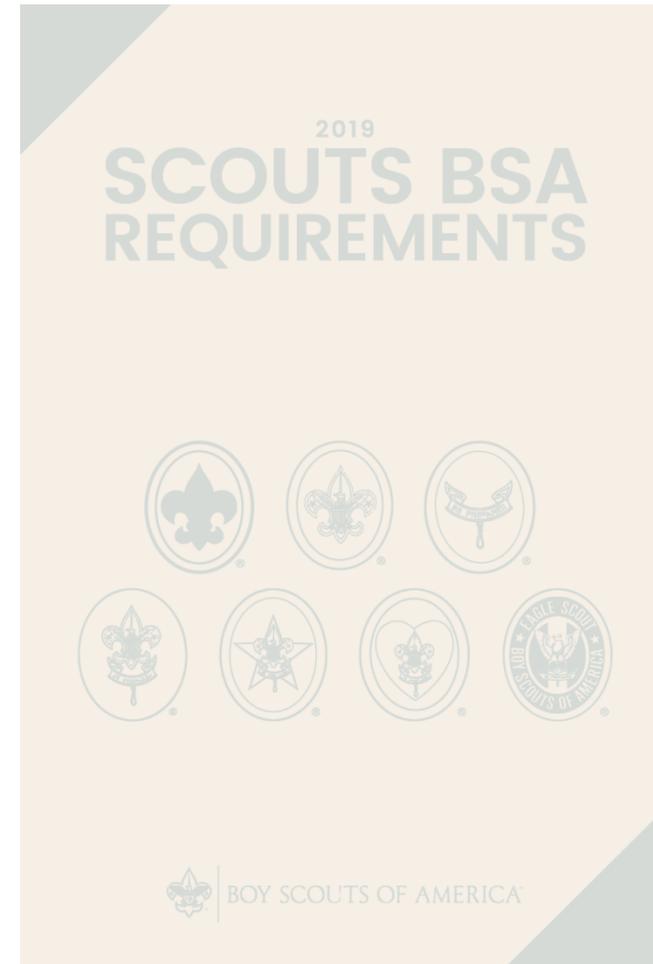
- Check weather and hazards of area
- Know first-aid
- Get in shape
- Pack and adjust clothing as needed
- Stay hydrated
- Pack and care for the correct gear

Planning and Preparation

Requirement B3d – Emergency Response Plan

Explain the purpose of an emergency response plan.

Complete and Fill out Workbook



Planning and Preparation

Emergency Response Plan

- Important is something goes wrong
 - Someone gets hurt
 - Group gets lost
 - Weather halts travel

- Provide folks at home with:
 - Trip Plan
 - Emergency Response Plan

Emergency Response Plan

Dates of trip:

Trip location and description: [See the trip plan.]

Group leader:

Group members:

Medical training level of leaders and members:

Resources:

Location of nearest public telephones:

Group first-aid kit:

Mobile phone number(s):

Emergency contacts:

[Include telephone numbers of land management agencies, BSA council officials, emergency response system, and search-and-rescue alert numbers.]

Conditions for activating an emergency response:

[For instance, if you are a day late.]

Driving instructions to clinics, hospitals, and other health-care facilities:

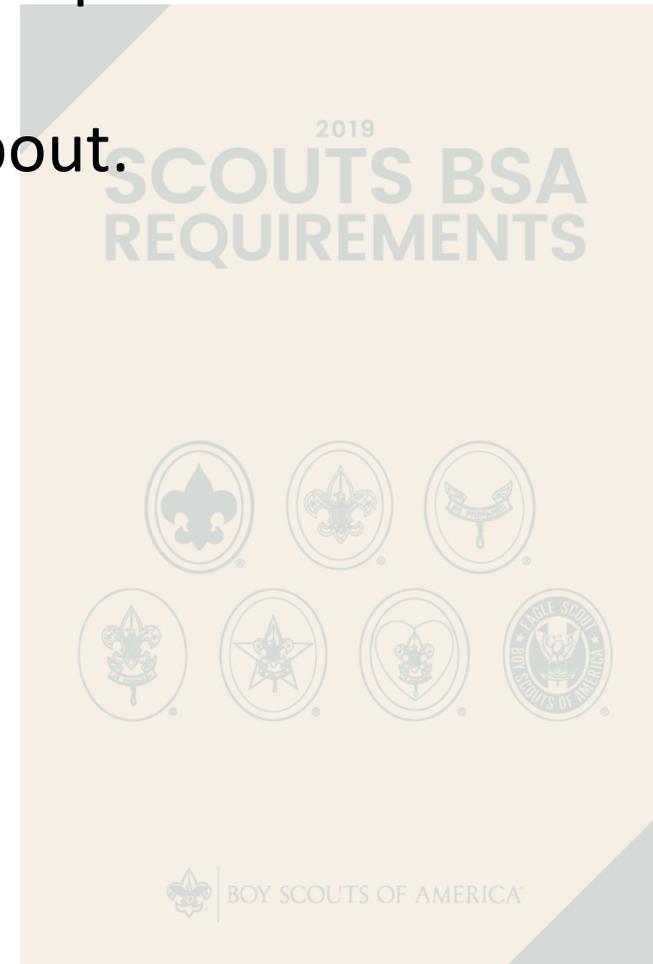
Planning and Preparation

Requirement C4e – Gear – Demonstrate your Knowledge

Present yourself to your Scoutmaster with your pack for inspection.

Be correctly clothed and equipped for an overnight campout.

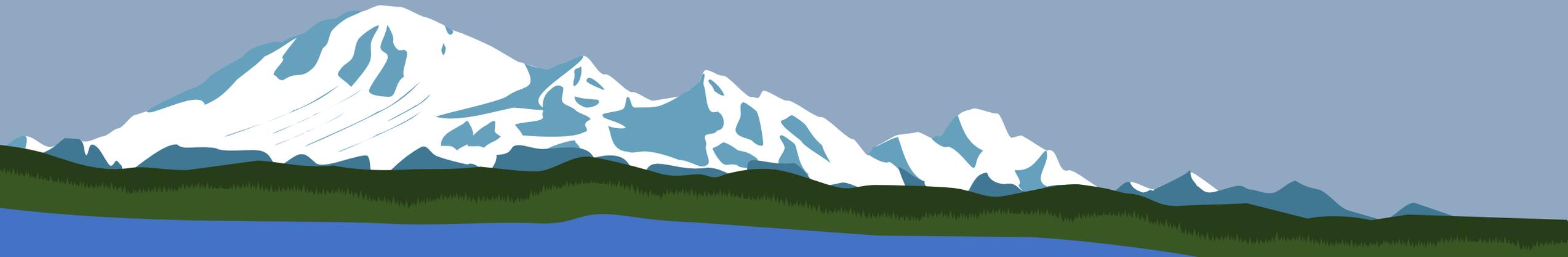
Complete and Fill out Workbook



1. Hiking Merit Badge Requirements	11. Leave No Trace
2. Backpacking Merit Badge Requirements	12. Hiking Philosophy
3. Camping Merit Badge Requirements	13. Preparation
4. Merit Badge Intro	14. Hiking - Getting Out There
5. Hazards	15. Backpacking - Getting Out There
6. First Aid	16. Camping - Getting Out There
7. Gear	17. Final Thoughts
8. Water	18. Resources
9. Food	19. Instructor's Corner
10. Navigation	



Hiking - Getting Out There



Hiking - Getting Out There

Requirement 4 - Initial Hikes

Take the five following hikes, each on a different day, and each of continuous miles.

These hikes MUST be taken in the following order:

- One 5-mile hike
- Three 10-mile hikes
- One 15-mile hike

Need to see Routes and Confirmation from Adult this was Completed

You may stop for as many short rest periods as needed, as well as one meal, during each hike, but not for an extended period (example: overnight). Prepare a written hike plan before each hike and share it with your Scoutmaster or a designee. Include map routes, a clothing and equipment list, and a list of items for a trail lunch. *

* The required hikes for this badge may be used in fulfilling hiking requirements for rank advancement. However, these hikes cannot be used to fulfill requirements of other merit badges.

Hiking - Getting Out There

Requirement 5 – 20 Miler

Take a hike of 20 continuous miles in one day following a hike plan you have prepared. You may stop for as many short rest periods as needed, as well as one meal, but not for an extended period (example: overnight).*

**Need to see Route and
Confirmation from Adult this was Completed**

- * The required hikes for this badge may be used in fulfilling hiking requirements for rank advancement. However, these hikes cannot be used to fulfill requirements of other merit badges.



Hiking - Getting Out There

Requirement 6 – Hike Reflection

After each of the hikes (or during each hike if on one continuous "trek") in requirements 4 and 5, write a short reflection of your experience.

Give dates and descriptions of routes covered, the weather, and any interesting things you saw.

It may include something you learned about yourself, about the outdoors, or about others you were hiking with.

Share this with your merit badge counselor.

Fill out Workbook



1. Hiking Merit Badge Requirements	11. Leave No Trace
2. Backpacking Merit Badge Requirements	12. Hiking Philosophy
3. Camping Merit Badge Requirements	13. Preparation
4. Merit Badge Intro	14. Hiking - Getting Out There
5. Hazards	15. Backpacking - Getting Out There
6. First Aid	16. Camping - Getting Out There
7. Gear	17. Final Thoughts
8. Water	18. Resources
9. Food	19. Instructor's Corner
10. Navigation	



Backpacking - Getting Out There

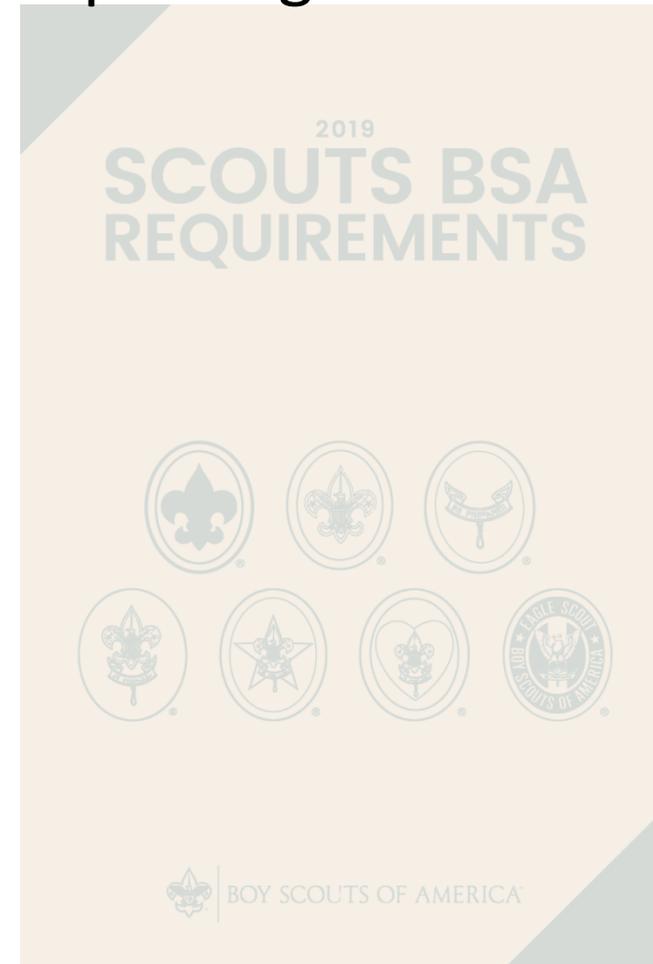


Backpacking - Getting Out There

Requirement B9a – 2-Miler Plan

Write a plan that includes a schedule for a patrol/crew backpacking hike of at least 2 miles.

Complete and log in Workbook

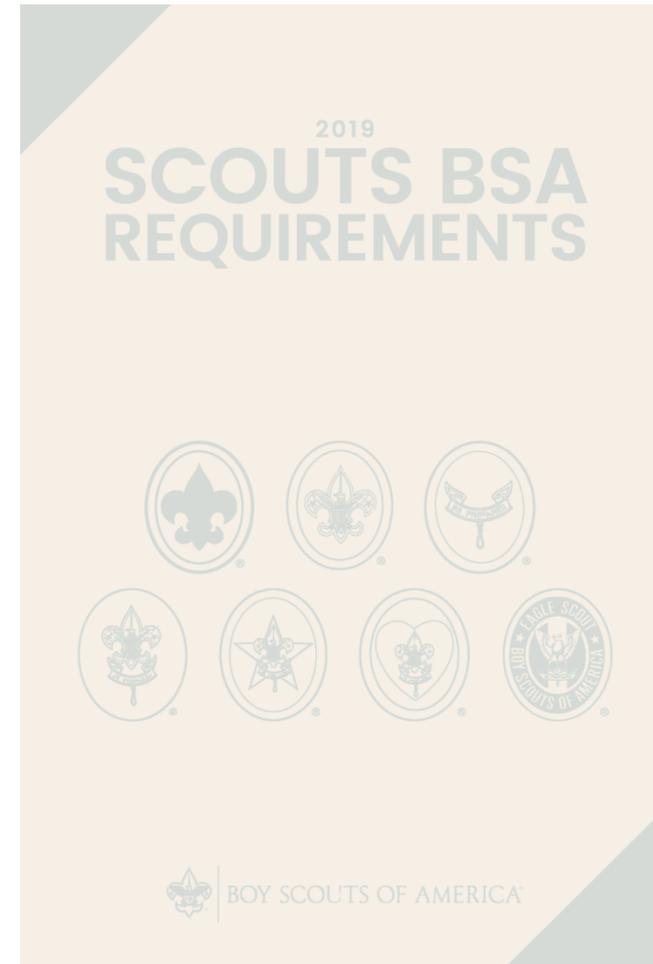


Backpacking - Getting Out There

Requirement B9b – 2-Miler – Prehike Inspection

Conduct a prehike inspection of the patrol and its equipment.

Complete and log in Workbook

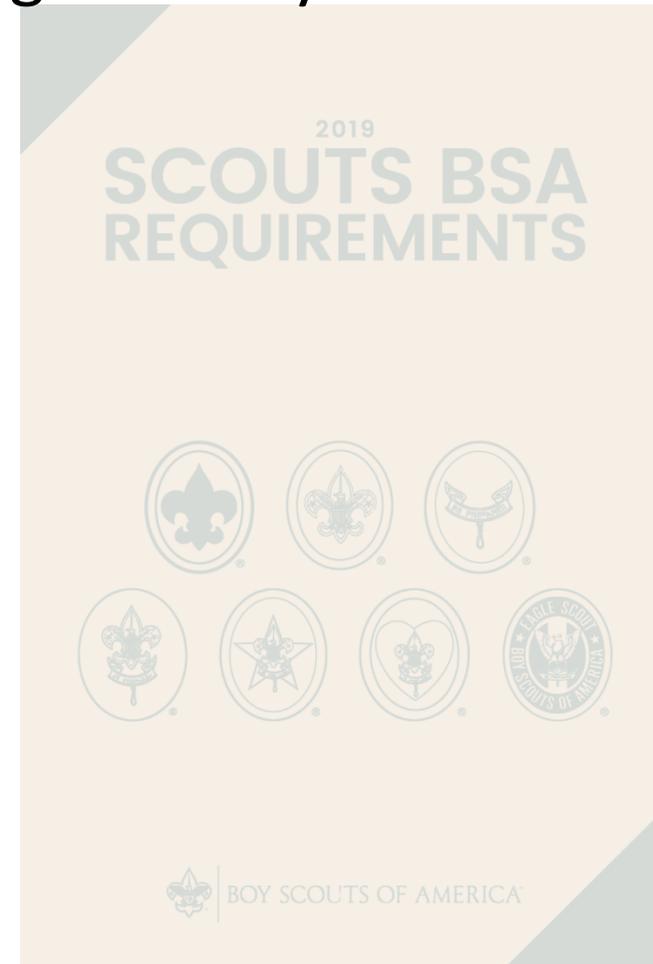


Backpacking - Getting Out There

Requirement B9c – 2-Miler – Pack all that Gear

Show that you know how to properly pack your personal gear and your share of the crew's gear and food.

Complete and log in Workbook

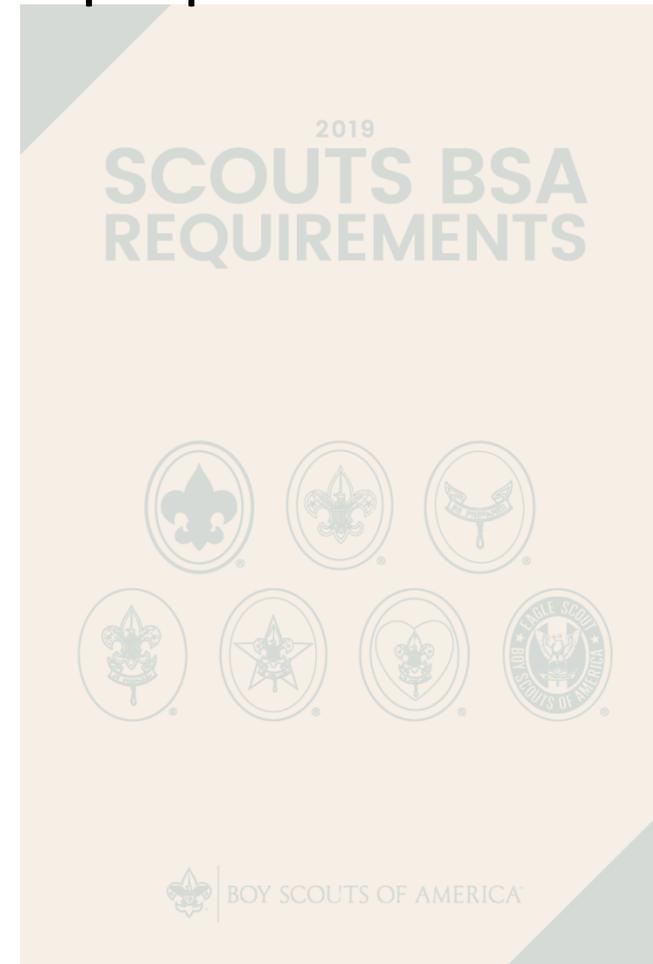


Backpacking - Getting Out There

Requirement B9d – 2-Miler – Wear the Pack

Show you can properly shoulder your pack and adjust it for proper wear.

Complete and log in Workbook

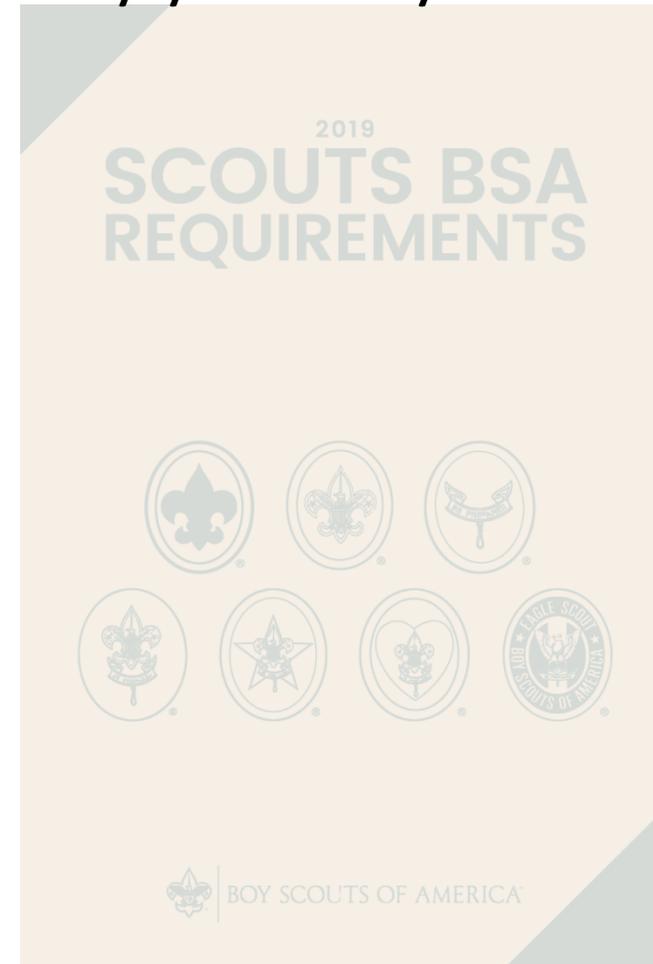


Backpacking - Getting Out There

Requirement B9e – 2-Miler

While using the plan you developed for requirement 9a, carry your fully loaded pack to complete a hike of at least 2 miles.

Complete and log in Workbook



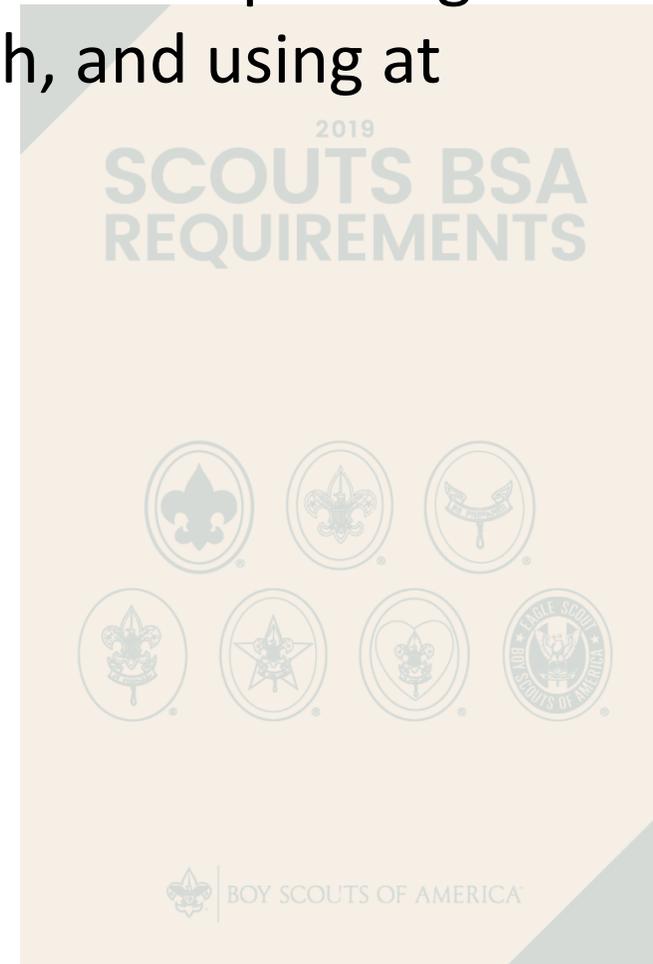
Backpacking - Getting Out There

Requirement B10 – 15-Milers x 3

Using Leave No Trace principles, participate in at least three backpacking treks of at least three days each and at least 15 miles each, and using at least two different campsites on each trek.

Carry everything you will need throughout the trek.

Complete and log in Workbook



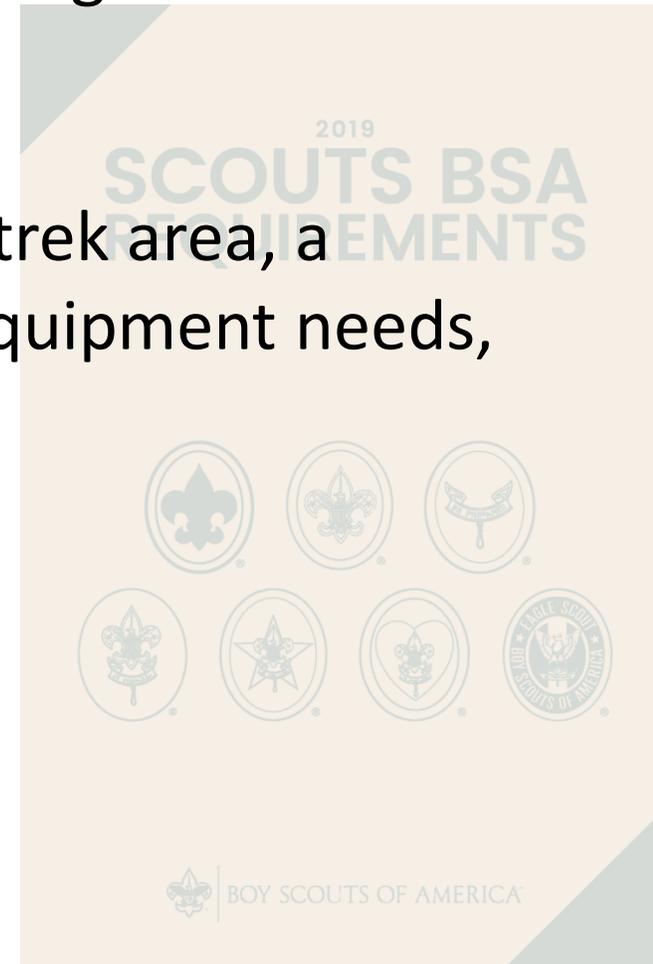
Backpacking - Getting Out There

Requirement B11a – 30-Miler Plan

Write a plan for a backpacking trek of at least five days using at least three different campsites and covering at least 30 miles.

Your plan must include a description of and route to the trek area, a schedule (including a daily schedule), a list of food and equipment needs, a safety and emergency plan, and a budget.

Complete and log in Workbook

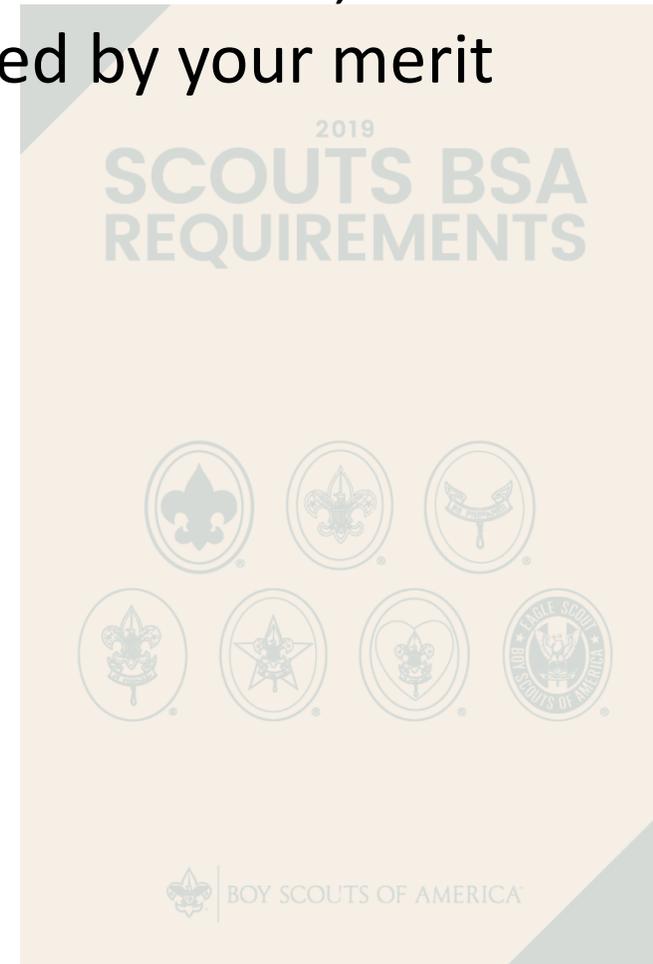


Backpacking - Getting Out There

Requirement B11a – 30-Miler Service Project

Using Leave No Trace principles, take the trek you have planned and, while on the trek, complete at least one service project approved by your merit badge counselor.

Complete and log in Workbook

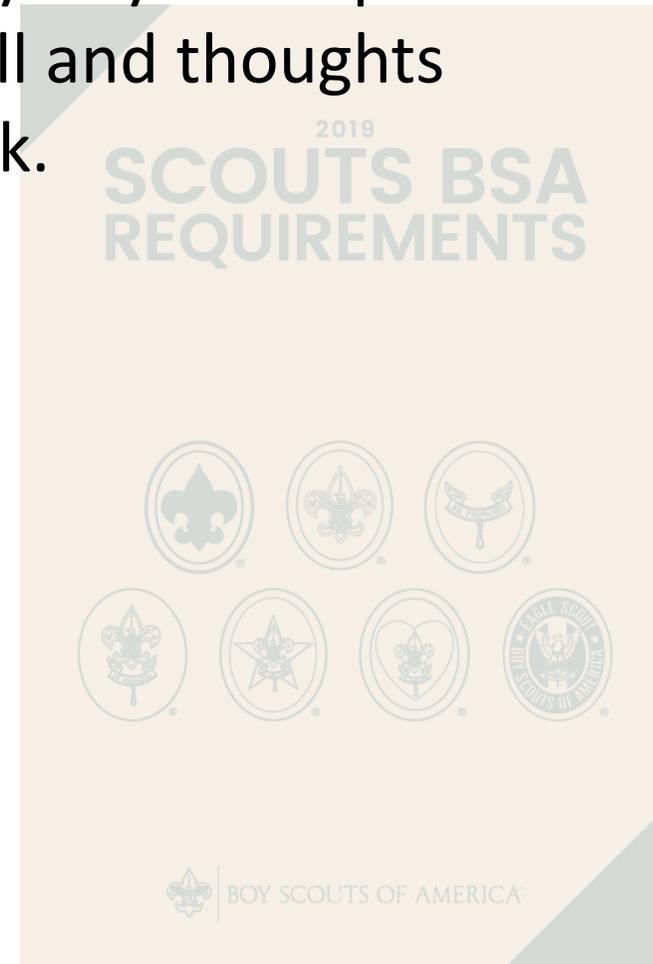


Backpacking - Getting Out There

Requirement B11c – 30-Miler Journal

Keep a daily journal during the trek that includes a day-by-day description of your activities, including notes about what worked well and thoughts about improvements that could be made for the next trek.

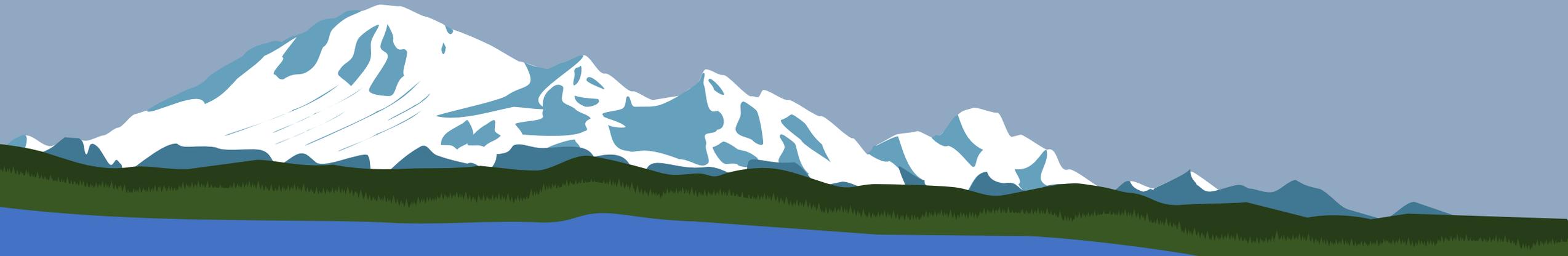
Complete and log in Workbook



1. Hiking Merit Badge Requirements	11. Leave No Trace
2. Backpacking Merit Badge Requirements	12. Hiking Philosophy
3. Camping Merit Badge Requirements	13. Preparation
4. Merit Badge Intro	14. Hiking - Getting Out There
5. Hazards	15. Backpacking - Getting Out There
6. First Aid	16. Camping - Getting Out There
7. Gear	17. Final Thoughts
8. Water	18. Resources
9. Food	19. Instructor's Corner
10. Navigation	



Camping – Getting Out There



Camping – Getting Out There

Requirement 9a – Camping

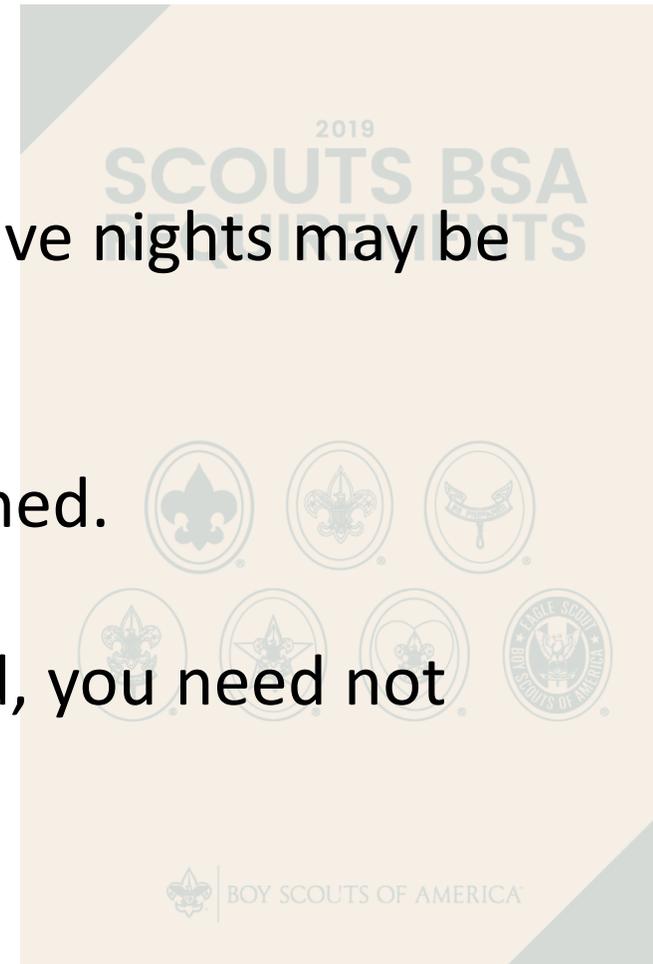
Camp a total of at least 20 nights at designated Scouting activities or events.

One long-term camping experience of up to six consecutive nights may be applied toward this requirement.

Sleep each night under the sky or in a tent you have pitched.

If the camp provides a tent that has already been pitched, you need not pitch your own tent.

Complete and Fill out Workbook



Camping – Getting Out There

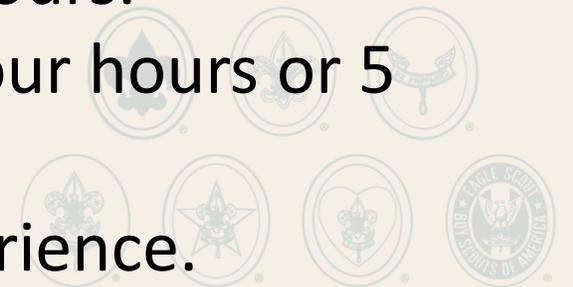
Requirement 9b – Camping Experiences

On any of these camping experiences, you must do TWO of the following, only with proper preparation and under qualified supervision:

- a. Hike up a mountain where, at some point, you are at least 1,000 feet higher in elevation from where you started.
- b. Backpack, snowshoe, or cross-country ski for at least four miles.
- c. Take a bike trip of at least 15 miles or at least four hours.
- d. Take a non-motorized trip on the water of at least four hours or 5 miles.
- e. Plan and carry out an overnight snow camping experience.
- f. Rappel down a rappel route of 30 feet or more.

Complete and Fill out Workbook

SCOUTS BSA
REQUIREMENTS



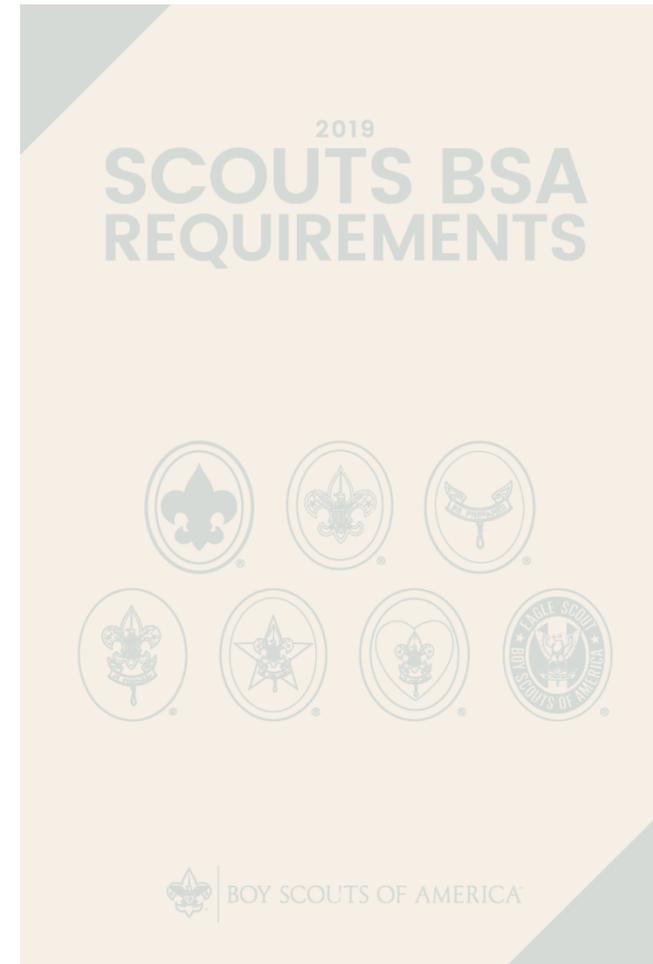
Camping – Getting Out There

Requirement 9c – Conservation Project

Perform a conservation project approved by the landowner or land managing agency.

This can be done alone or with others.

Complete and Fill out Workbook



Camping – Getting Out There

Requirement 10

Discuss how the things you did to earn this badge have taught you about:

- Personal health and safety
- Survival
- Public health
- Conservation
- Good citizenship

In your discussion, tell how Scout spirit and the Scout Oath and Law apply to camping and outdoor ethics.

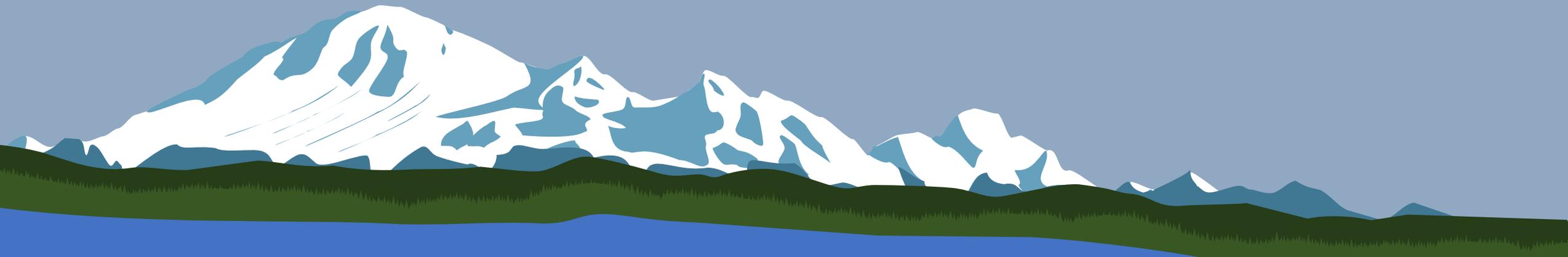
Complete and Fill out Workbook



1. Hiking Merit Badge Requirements	11. Leave No Trace
2. Backpacking Merit Badge Requirements	12. Hiking Philosophy
3. Camping Merit Badge Requirements	13. Preparation
4. Merit Badge Intro	14. Hiking - Getting Out There
5. Hazards	15. Backpacking - Getting Out There
6. First Aid	16. Camping - Getting Out There
7. Gear	17. Final Thoughts
8. Water	18. Resources
9. Food	19. Instructor's Corner
10. Navigation	



Final Thoughts



Final Thoughts

Merit Badge Requirement Checklist

- Show completion of work
Ideally - **Turn in complete Workbook**
- There are obviously requirements that must be done outdoors
Complete these can send confirmation of completion

- [Hiking Workbook](#)
- [Backpacking Workbook](#)
- [Camping Workbook](#)

**If you are unable to fill out a Workbook
Please contact your councilor**



Final Thoughts

Final Thoughts

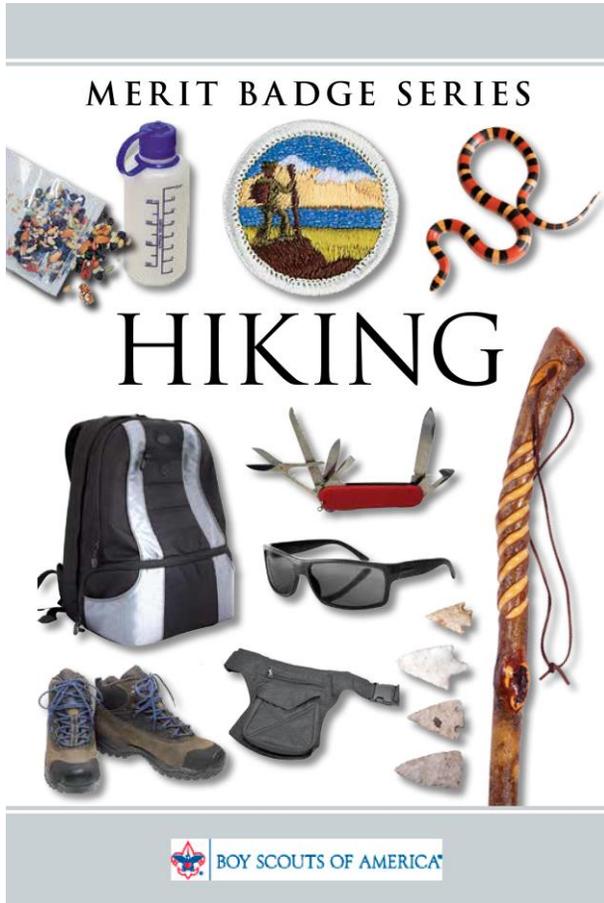
- Hiking, Backpacking and Camping are fun
- Learn how to do it right
- Go out and have some fun

Final Thoughts

Looking for More?

- Merit Badge Pamphlets are great resources

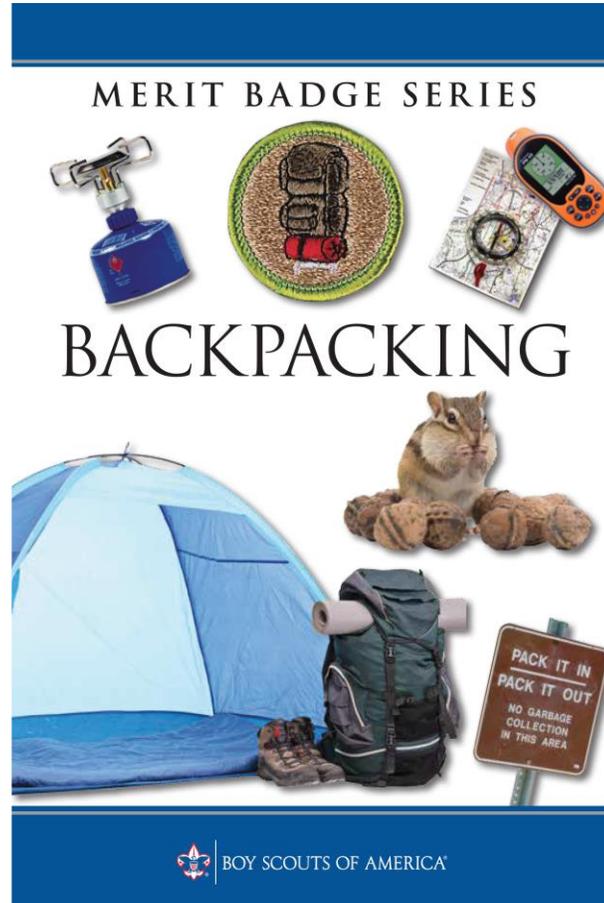
MERIT BADGE SERIES



HIKING

BOY SCOUTS OF AMERICA

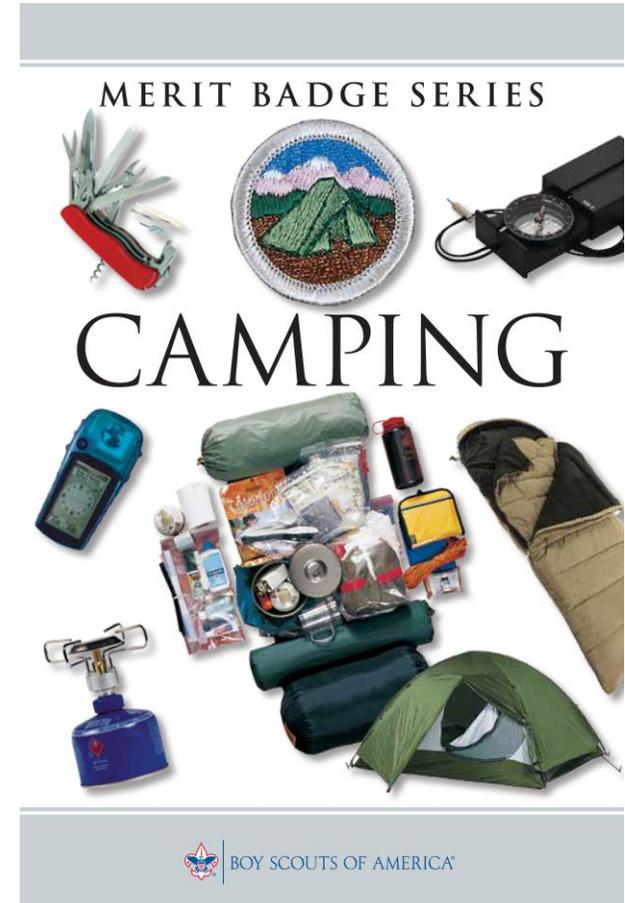
MERIT BADGE SERIES



BACKPACKING

BOY SCOUTS OF AMERICA

MERIT BADGE SERIES



CAMPING

BOY SCOUTS OF AMERICA

Final Thoughts

National Outdoor Awards

100 miles of hiking, backpacking,
snowshoeing, or cross country skiing



10 3-day 20-mile backpacking trips



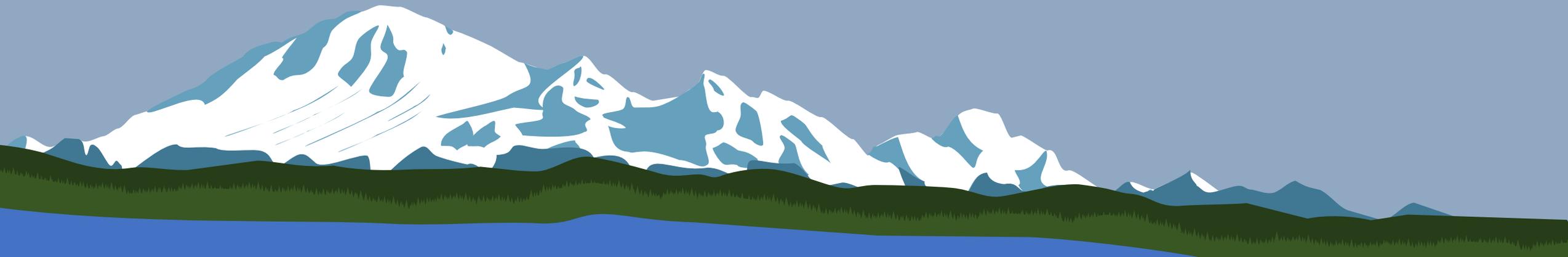
25 days and nights of camping



1. Hiking Merit Badge Requirements	11. Leave No Trace
2. Backpacking Merit Badge Requirements	12. Hiking Philosophy
3. Camping Merit Badge Requirements	13. Preparation
4. Merit Badge Intro	14. Hiking - Getting Out There
5. Hazards	15. Backpacking - Getting Out There
6. First Aid	16. Camping - Getting Out There
7. Gear	17. Final Thoughts
8. Water	18. Resources
9. Food	19. Instructor's Corner
10. Navigation	



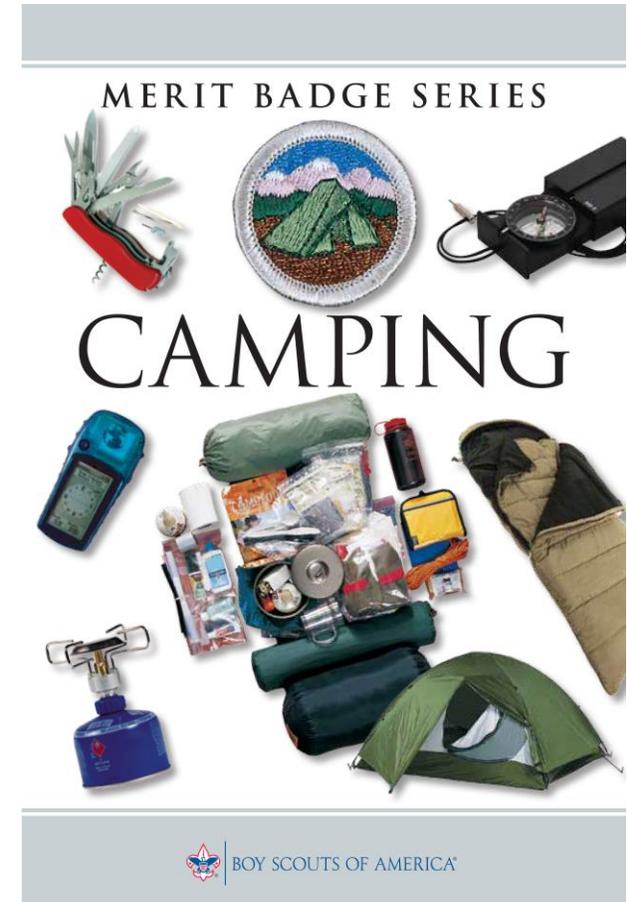
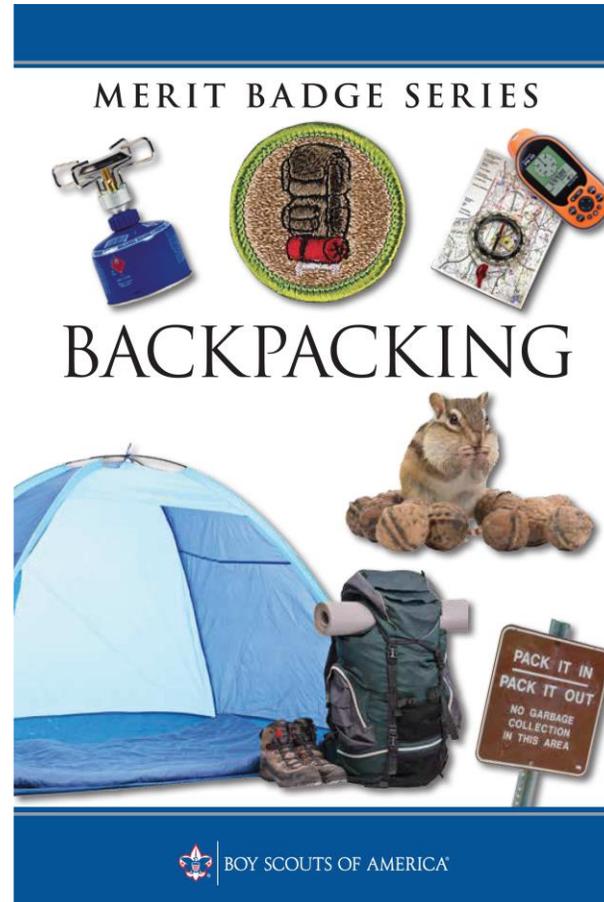
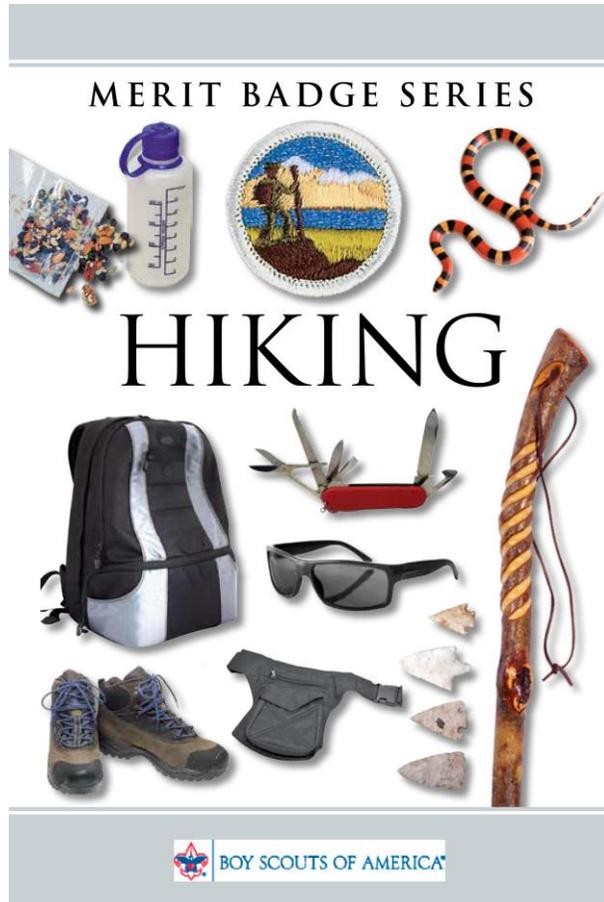
Resources



Resources

Resources

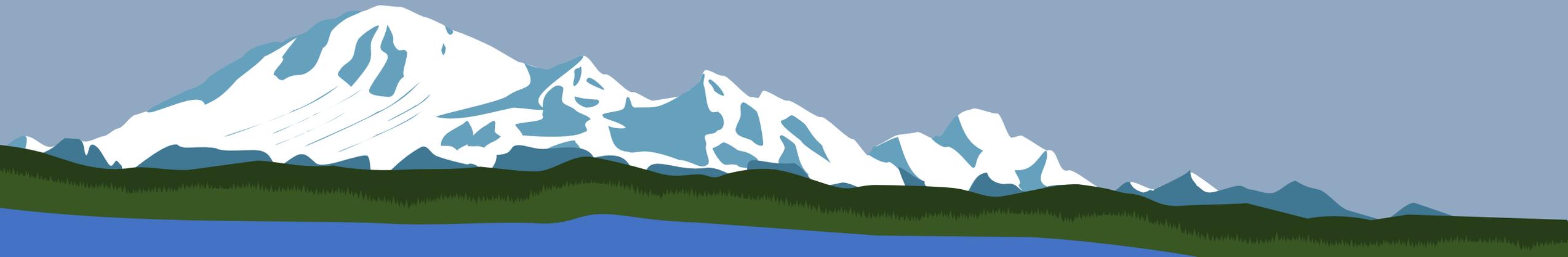
- Merit Badge Pamphlets



1. Hiking Merit Badge Requirements	11. Leave No Trace
2. Backpacking Merit Badge Requirements	12. Hiking Philosophy
3. Camping Merit Badge Requirements	13. Preparation
4. Merit Badge Intro	14. Hiking - Getting Out There
5. Hazards	15. Backpacking - Getting Out There
6. First Aid	16. Camping - Getting Out There
7. Gear	17. Final Thoughts
8. Water	18. Resources
9. Food	19. Instructor's Corner
10. Navigation	



Instructor's Corner



Instructor's Corner

Instructor's Corner

- Thank you for teaching our scouts the Hiking, Backpacking and Camping Merit Badges.
- This Combo lesson resource was created for units looking to prepare themselves of a year of hiking, backpacking and of course camping.
- There is enough overlap in requirements and concepts that combined teaching strategy will prepare scouts for the outdoors in an efficient and complementary way.

Instructor's Corner

This worked in past

Day 1

1. [Merit Badge Intro](#)
2. [Hazards](#)
3. [Gear](#)
4. [Water](#)
5. [Food](#)
6. [Navigation](#)

Day 2

1. [First Aid](#)
2. [Leave No Trace](#)
3. [Hiking Philosophy](#)
4. [Preparation](#)
5. [Hiking - Getting Out There](#)
6. [Backpacking - Getting Out There](#)
7. [Camping – Getting Out There](#)
8. [Final Thoughts](#)