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Summer shines with possibilities for fun and learning in BSA packs, troops, and crews. Sharpening outdoor skills will open doors--and tent flaps--to experiences you'll always remember.

Begin by following your compass deep into the adventure of Scouting!

HOW A COMPASS WORKS

A thousand years ago, someone noticed that a magnetized needle floating in a bowl of water would swing around to point in a northerly direction. Soon the needle became the centerpiece of the compass, and travelers had a valuable tool for helping them find their way.

Today's compasses are easy to use. They work equally well in summer and winter, and are accurate at sea level, on mountaintops, and everywhere in between.

Compasses available to Boy Scouts range from those for beginners to instruments for masters of navigation.



Make Your Own Ancient Compass

To build a replica of the world's first compass, you'll need:

- 1 large sewing needle

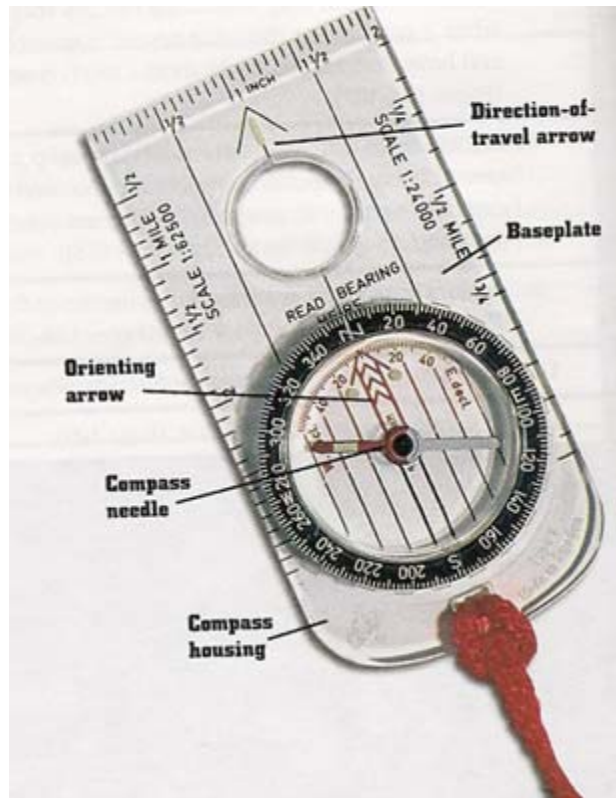
- 1 bar magnet such as those found in school science classrooms
- 1 very small, flat chip of wood.
- 1 bowl of water

1. Magnetize the needle by stroking it a few times with the magnet from the eye toward the point.
2. Float the chip on the water.
3. Carefully place the needle on the chip.

Soon the needle will be pointing toward Magnetic North. Check the direction by looking at a compass. The needle in the compass should match the direction of the needle on the water.

Using a Compass

The magnetized needle of a modern compass is balanced on a pin so that it can swing freely. The needle is enclosed in a housing that rotates on the compass base plate. One end of the needle is drawn toward the Earth's Magnetic North Pole, an area about 500 miles from the true North Pole.



Most compasses have an *orienting arrow* etched on the floor of the housing and a *direction of travel arrow* drawn on the base plate. Numbers on the housing indicate the 360 degrees of a circle.

To find Magnetic North, adjust the compass housing until *N* (North) on the housing touches the direction of travel arrow, as in the photograph above.

Next, hold the compass against your stomach with the direction of travel arrow pointing away from you. Turn your body until the needle is lined up inside the orienting arrow etched on the floor of the compass housing. Your direction of travel arrow is now pointing directly toward Magnetic North.

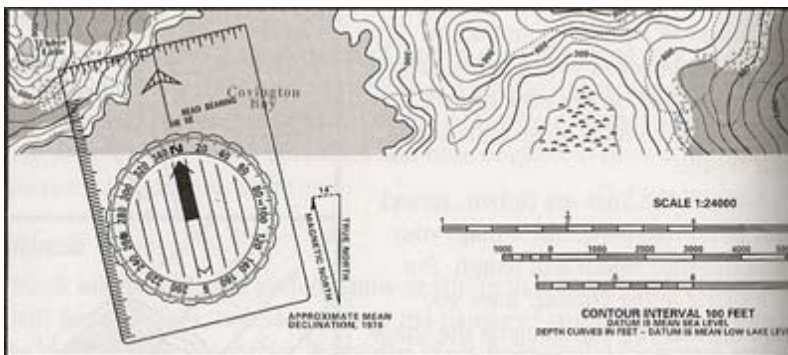
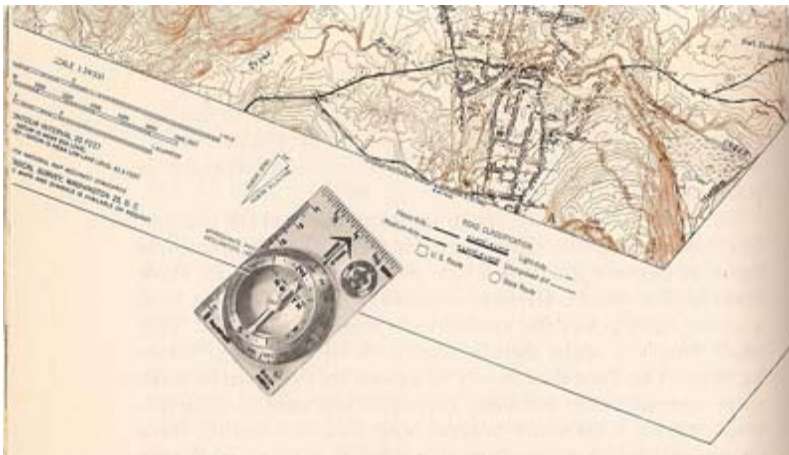
Declination

Compass needles point to Magnetic North. Maps are drawn with True North at the top.

The difference between the direction of Magnetic North (where a compass needle points) and the direction of True North (a line between you and the North Pole) is called *declination*. Declination is measured in degrees -- those numbers on the compass housing.

When you are in much of Wisconsin, Illinois, eastern Arkansas, or Mississippi, the directions toward Magnetic North and the North Pole are in line with one another. A compass pointing at Magnetic North seems to be pointing at the North Pole, too.

Go east or west of those states and the Poles seem to move apart from one another. *Declination* (the difference between the direction to Magnetic North and the way to True North) increases. By the time you reach Seattle, for example, the declination is more than 20 degrees.



Map margins often have two arrows, one pointing toward Magnetic North, the other toward True North. With N on the compass housing touching the direction of travel arrow, set your compass alongside the Magnetic North arrow on a map. Slowly turn the map until the compass needle rests inside the orienting arrow. The compass will be aimed at Magnetic North while the map is oriented to True North.

Digital Compasses

Electronic sensors inside a digital compass pick up on the Earth's magnetic fields and display accurate degree readings. Programmable adjustments automatically solve the challenge of declination.



Some cellular telephones feature a compass application that acts in much the same way as the most advanced electronic route finder--the GPS receiver.

GPS Receivers as Compasses

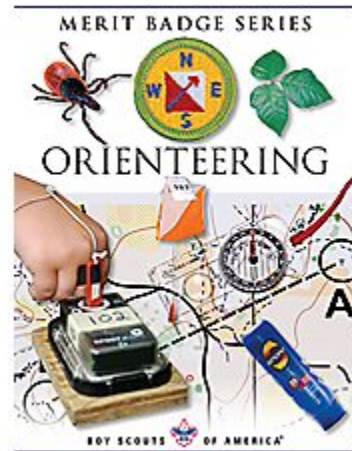
Enter destination data into an automobile Global Positioning System (GPS) receiver and a map will appear on the dashboard screen showing exactly how to get to where you want to go. The GPS unit will also indicate the direction the car is moving.

Handheld GPS receivers can be valuable tools for backcountry navigation, too. Type in destination coordinates and the GPS will show the way. A GPS unit can guide you even when the weather is so bad you can't see a thing.

If its battery dies, a GPS unit or digital compass will be useless. That's why it is so important to learn how to use a traditional compass and to have one handy on all your backcountry adventures.

Orienteering Shows the Way

Scouts earning the Orienteering merit badge have a great time mastering the art of using maps and compasses to travel through unfamiliar terrain.



For more information, consult *Be Prepared® Hiking & Backpacking*, DK Publishing Inc.

Hydration — How and Why

An automobile engine needs coolant to keep it from overheating. If the radiator runs dry, the engine can be ruined.

Bad things happen to people, too, when their fluid levels are low. Blood thickens and becomes more difficult for their hearts to pump. They can feel tired, irritable, and perhaps nauseous. That's called heat exhaustion. Treat it with rest in the shade and sips of water.

Heat stroke strikes when the body's cooling mechanism is so overworked it stops functioning. That's a life-threatening emergency. Cool the victim however you can—with shade and wet cloths, for example, or the air-conditioner in a car. Get medical attention as soon as possible.

Of course, the best way to deal with heat illnesses is to avoid them in the first place. Plan your activities so that you carry all the water you need, or can replenish your supplies along the way.



Drink, Drink, Drink

Thirst is not always the best indicator of your body's need for water. Instead, drink often enough for your urine to remain light-colored or clear.

- In hot weather, refresh your water containers at every opportunity. Drink your fill, then refill your container before leaving a water source.
- Keep water readily available and drink small amounts frequently.
- Don't ration water. If you are thirsty, you need to drink.
- Avoid consuming a lot of caffeinated drinks, which can act as diuretics -- agents that purge fluids from the body.
- Don't underestimate your need for water. During strenuous activities in hot weather, your body might require two to three gallons of water per day.

Remember that carrying water with you isn't enough. You need to drink it, too, in order to stay happy, healthy, and hydrated.

For more information, consult Chapter 14, "Hot-Weather Travel and Camping," of the *BSA Fieldbook, Fourth Edition*.

STOVES FOR CAMP AND TRAIL

A warm cup of soup during a trailside lunch. A camp supper featuring a delicious pot of stew. Hot water for cleanup after a meal.

Stoves make outdoor adventures more enjoyable and extend the range of journeys. They also help Scouts apply the principles of Leave No Trace by lessening their impact on the land.

Lightweight stoves are perfect when you're carrying gear in a backpack. If equipment will arrive by watercraft, pack animal, or an automobile, a heavier stove offers more camp cooking options.

Lightweight Stoves

The Whisperlite is a great example of a backpacking stove that can burn white gas, kerosene, or fuel for automobiles and aircraft. The burner attaches directly to a fuel bottle, giving the unit terrific output per ounce of weight.



Stoves for Camp

When weight doesn't matter, two-burner stoves and charcoal grills offer expanded cooking capacity while fitting with the principles of Leave No Trace.

- **Two-Burner Stoves**

Fueled by propane or white gas, a two-burner stove can be the center of a patrol kitchen for an evening meal or a week of summer camp. Set it up on a picnic table for easy access or attach optional legs.



- **Charcoal Stoves**

A metal grill holding charcoal briquettes can be ideal in camp for turning out hamburgers, hotdogs, and steaks. Put on pots to warm your side dishes or boil ears of sweet corn, and you'll be well on your way to some of the best outdoor cooking of the year.

Stove Safety

The current Boy Scout Handbook includes the following stove safety rules:

- Use, refuel, and store stoves and lanterns only with the supervision of a knowledgeable adult

and only where allowed.

- Operate and maintain stoves and lanterns according to the manufacturer's instructions.
- Store fuel in approved containers. Keep fuel well away from campfires, burning stoves, and all other sources of heat.
- Allow hot stoves and lanterns to cool completely before changing compressed-gas cartridges or refilling from containers of liquid fuel.
- Refill stoves and lanterns outdoors and a safe distance from any sources of heat, including other stoves or campfires. Use cartridges or fuel expressly recommended for your stoves by the manufacturer. Use a funnel to pour liquid fuel into a stove or lantern. Recap the fuel container and the stove or lantern. Before lighting the device, wait until any spilled fuel has evaporated.
- Do not operate stoves or lanterns inside buildings with poor ventilation. Never fuel, light, or operate a gas stove or lantern inside a tent, snow cave, or igloo.
- Place a stove on a level, secure surface before lighting. On snow, place the stove on an eight-inch-square piece of plywood or other flat surface to insulate it from the cold and lessen its tendency to tip.
- Have stoves and lanterns checked periodically by knowledgeable adults to make sure they are in top working condition.
- Follow the manufacturer's instructions for lighting a stove. Keep fuel containers and extra canisters well away. Keep your head and body to one side in case the stove flares up.
- Never leave a lighted stove or lantern unattended.
- Do not overload a stove with a heavy pot or large frying pan. When cooking requires a pot capacity of more than two quarts, set up a separate grill with legs to hold the pot, then place the stove under the grill.
- Carry empty fuel containers home for proper disposal. Do not place them in or near fires, or in trash that will be burned.