BACKPACKING EQUIPMENT 101

Troop 90

"Backpack Equipment 101"

How to Choose a Backpack

Some people need to get out more. Way out, that is — beyond the limits of a day hike, out to lovely, lonely places where a person has the time and space to absorb the deeper satisfactions of what John Muir described as "vast, calm, measureless mountain days."

It takes a backpack to get you there. Modern backpacks, unlike their shoulder-gouging ancestors that you sometimes still see hanging in a neighbor's garage, feature intelligent design concepts that provide surprising comfort and load-carrying efficiency. Such advancements have made the art of self-propelled adventure a much more agreeable pursuit.

Internal-frame packs' narrow, body-hugging profiles are well suited to off-trail travel as they allow you to keep your balance. They tend to be warmer and a bit trickier to pack than externals.

External-frame packs are ideal for hauling loads on easy to moderate trails. They are easier to pack and cooler against your back than internals.

Buy only as much volume as you'll need on your longest trip; packs get heavier as they get bigger! 4,000-5,000 cubic inches are about right for a long weekend trip.

Fit is crucial. Read the fitting tips at the end of this article to make sure your pack will work for you.

Select Your Style: Internal or External

Long-haul backpacks (suitable for 2-day trips or longer) are known as frame packs, meaning a metal or composite frame supports the packbag and helps focus the weight where your body can most effectively carry it — on your hips. Manufacturers offer 2 styles of frame packs: internal-frame packs and external-frame packs.

Internal-Frame Packs

Internal frame

Internals feature a narrow, towerlike profile and integrate their framework inside the pack, behind the shoulder harness. The frame usually consists of "stays," or flat bars, about an inch wide and 1/8-inch thick. Stays are usually aluminum and are configured in a V-shape. Alternative frame materials (such as composites) and stay-alignments (parallel, X-shaped; U-shaped) are sometimes used. Stays are removable and can be shaped to conform to your torso.

Internals are popular packs with many advantages:

Flexibility. Stays make internals stiff, but not rigid. This allows the pack to move in harmony with body movements, a big plus for climbers and skiers.

Balance. Internals hug your body. This holds your equipment closer to your natural center of gravity and helps you keep your balance when it counts — for example, while you're scooting across a log above a stream.

Stability. Compression straps are everywhere on an internal. You use them to cinch down your load and keep individual items bunched together. This keeps them from shifting and throwing you off balance if you make any abrupt moves.

Maneuverability. Because internals feature a slimmer shape, it's easier to swing your arms freely — another reason why these packs are popular with climbers and Nordic skiers. This narrow profile also helps hikers

whenever they have to squeeze through tight spots or when they're bushwhacking through thick brush.

Adjustability. Internals use suspension systems (involving the shoulder harness and hipbelt) that can be adjusted more precisely than external-frame systems.

The downside of internals:

The black hole. Most internals have 1 cavernous main storage compartment, plus a separate section for a sleeping bag. Other than a lid pocket, nearly everything gets stuffed into that single, deep compartment. So, if it's necessary to find 1 particular item during a rest stop, you may have to hunt a while to locate it. Hot stuff. You'll sweat more wearing an internal because it rides so close to your back. The design offers little room for ventilation.

Cost. Internals typically cost more than externals of a similar size.

External-Frame Packs


External frame

Externals connect a packbag to a rigid frame made of aluminum tubing. Externals ruled the backcountry until internal-frame design was introduced in the late 1970s. Internals have surged in popularity, yet externals are still a great choice for transporting heavy loads along trails. With an external, the pack's weight sits more squarely on your hips; with an internal, the back, shoulders and hips share the load.

The advantages of externals:

Cooler to carry. An external's load does not sit flat against your back, allowing air to circulate.

Easier to pack. Externals feature at least 2 main compartments plus several side pockets. You can organize your gear into "zones" and locate it more easily.

Heavy loads won't sag. They might in an internal, depending how you pack it. Plus, since your center of gravity sits higher in an external, it's easier to walk upright.

Cost. You'll pay less for an external.

The shortcomings of externals:

Minimal agility. They tend to make you walk more stiffly, making externals cumbersome when you try to walk off-trail. Attempting to scramble up rocks or hop across a boulder field while wearing one is difficult, even unpleasant.

Poor traveling companions. Sometimes you can squish a loaded internal into a car truck or back seat; an external frame won't give an inch. Plus, in the luggage-transport systems of airports, externals sometimes can take a pounding.

Which people are better suited for an internal?

Climbers/mountaineers

Scramblers/peak-baggers

Skiers

Off-trail (cross-country) hikers covering rough terrain

Why? The snug fit of an internal allows your load to move with you, helping you stay balanced and agile on uneven terrain. Recreational backpackers have also grown to prefer internals, valuing their comfort and versatility. Internals have emerged as very popular general-purpose packs, typically outselling externals by a sizable margin.

Which people are better suited for an external?

Beginning hikers

Hikers hauling heavy loads over easy to moderate trails and terrain

Why? Externals appeal to juniors and beginners because they cost less. For people toting monster loads, the frame becomes an efficient extension of your upper thighs and pelvic region — an area of stout bones and thick muscle groups that are well-suited to the task of bearing the weight of a backpack. Are externals becoming obsolete? Don't count on it. Tradition is on their side, and they're a great bargain.

What Features Should I Look For?

Hipbelt: Generously padded hipbelts (unlike the thin cloth waistbelts found on Sixties-era backpacks) represent a major advancement in pack design and greatly enhance your ability to carry tonnage into the backcountry.

Most consist of various grades of foam: open-cell foam for cushioning, closed-cell or molded foam for firmness. The hipbelt should straddle your "iliac crest" — the 2 prominent bones on the front of your hips. This is the area where your pelvic girdle begins to flare out, providing the hipbelt with a stable, fortified foundation.

Some packs offer interchangeable belts, permitting a more customized fit, and even belts where the angle of the fit can be adjusted. The hipbelt's padded ends should not touch; you need some space to be able to cinch the belt securely. On the other hand, don't tighten a belt excessively. Your hips could be irritated if you do.

Internal-frame models include a lumbar pad. This large pad should offer cushioning yet should not feel spongy. If it does, it could break down quickly under a load.

Framesheet: Some internal packs place a thin but stiff sheet of plastic between you and the packbag. Often this is a material known as HDPE, or high-density polyethylene. This adds stiffness to the frame without adding much weight. Plus, it prevents objects in your pack from poking you in the back.

Internals sometimes include some type of mesh or foam panel that rests near the middle of your back. This is an attempt to separate the pack from your back and encourage some air flow between the two. It offers modest help. Here is a trail-tested truth: Count on having a sweaty back if you tote an internal.

Suspension system: This involves the shoulder straps (padded and contoured), load-lifting straps, a sternum strap and belt-stabilizer straps. These items, and tips for adjusting them, are discussed in our clinic Fitting a Backpack. So-called ladder suspensions typically allow you to reposition the shoulder harness in 1-inch (or, preferably, smaller) increments. The more fine-tuning a pack permits, the better the fit.

Packbags: Common materials are nylon packcloth and Cordura®, a burly nylon fabric with a brushed finish. Both resist abrasion and are coated for water resistance. Cordura is tougher and a bit heavier. Ballistics nylon, a strong, lightweight material, has popped up in newer pack designs and seems to work well. Internals usually offer an "extendable collar" or "spindrift collar" — additional nylon with a drawstring closure that allows the main compartment to stretch higher and hold extra gear.

Detachable pocket: Many internals allow you to detach the "floating lid" pocket from the pack and convert it into a fanny pack or daypack. That's a handy feature when you choose to make day hikes from a backcountry basecamp.

Water-bottle holders/hydration pockets: Externals offer plenty of side pockets where you can stash a water bottle. Internals rarely do, although several now offer elasticized mesh "holsters" on the side where you can keep small bottles handy. Hydration systems (water reservoirs, or bladders, connected to a long sipping hose) have boomed in popularity. Many high-end packs now offer such systems.

Extras and attachments: Lash points allow you to attach even more gear to your pack if you feel the need. A so-called shovel pocket holds items tight against the back of your pack; it's a good place to stash wet things. All of these extras, of course, add weight to a pack.

Loading options: Most internals are "top-loaders," where all gear passes through one big hole at the top of the packbag's main compartment. This requires you to keep quick-access items near the top. Some internals now provide zippered, slit-like openings on the sides of their main compartments. This allows you to stash smaller items (water bottles, for instance) lower in your pack but still have quick access to them. Most externals, meanwhile, are "panel-loaders." In this configuration, a zipper follows a U-shaped track along one side of a

compartment. When unzipped, the compartment's side panel falls away like a flap to give you wide access to the compartment's interior.

How Much Can I Expect to Spend?

REI offers some external-frame packs for less than $100; a few high-end internals sell for nearly $500. Most internals cost between $200 and $300. Externals rarely exceed $200.

If you regularly visit the backcountry and anticipate at least 1 overnight trip per year, invest in a quality pack with a capacity that matches your ambitions. Inexpensive discount-store backpacks are poorly made, rarely last, have inadequate padding and can be miserable to wear. An uncomfortable pack can ruin an otherwise beautiful outing.

Consider renting a pack before buying your first backpack. It will help you become better acquainted with how a pack fits and performs. A good rental shop such as REI's will adjust a pack to conform to your body shape. Nearly every REI store includes a rental shop and offers at least 1 REI-brand internal- and external-frame pack. Call your nearest REI store for details.

What's the Right Capacity?

As the phrase goes, your numbers may vary. But here's a general guide for internals:

- Up to 3,000 cubic inches: Good for day hiking or a 1-night trip in warm weather where your supplies will be minimal.
- 3,000-4,000 cubic inches: Enough space for 1- or 2-night trip. You can go even farther if you team up with a partner who could help carry the load of shared items.
- 4,000-5,000 cubic inches: Generally good for up to 3 days of overnight camping.
- 5,000-6,000 cubic inches: Can accommodate up to 6 days of overnight camping. The lower end of this range is good for most backpackers. Don't buy too large a backpack, though, if you don't anticipate needing the space. The more compact and lightweight your load, the better.
- 6,000-plus cubic inches: For long hauls lasting a week or more.

Keep in mind: Capacity figures for internal and external packs vary significantly. Sleeping-bag storage accounts for the discrepancy. Internals carry sleeping bags in a special compartment behind the hipbelt, and synthetic bags can consume 2,000 or more cubic inches of a pack's stated capacity. With externals, bags are usually strapped to the underside of the packbag. This does not influence the pack's capacity figures.

By the numbers: Not every manufacturer measures cubic inches the same way. So one company's measurement of 4,000 cubic inches may differ a bit from another company's calculation.

Weight: Internals tend to be a touch lighter, but the differences are minimal. Large packs can weigh up to 8 pounds. That's 8 pounds on your back before you add any gear! This should remind you to buy a pack that fits your ambitions. If you hike only modest distances, you don't need a monster pack.

Quick Review

Internal-frame packs, with their body-hugging design and low center of gravity, are ideal for any outdoor activity — mountaineering, skiing, scrambling and hiking on- or off-trail. They offer you good balance and more freedom of movement. Internal packs are the popular choice of most outdoor adventurers.

External-frame packs are good choices for carrying heavy loads over easy to moderate terrain, primarily trails. Their rigid design makes you walk more stiffly and is not the best for rock-hopping or other types of cross-country travel. They cost less than internals.

How to Fit a Backpack

Forget about the color and the fancy logos. What really matters when selecting a new backpack is making sure that it's a good fit for your body.

You want to choose a pack well suited to your individual dimensions, then you need to customize it to your body shape. Here are some tips to help you accomplish that:

Determine Your Torso Length

Torso length is a crucial measurement. It is important to distinguish between your height and the length of your torso. Just because you are a certain height — say a 5' 9" female or 6' male — does not mean you automatically need a "large" or "tall" pack. Your torso length, not your height, determines your pack size. Here's how to measure yours:

Enlist the help of friend. Have that person locate the bony bump at the base of your neck, where the slope of your shoulder meets your neck. (It's known as the 7th vertebra.) Tilt your head forward to locate it more easily.

Using a flexible tape measure, ask your friend to start at that spot and measure down your spine, following the curves of your back along the way.

Place your hands on your hips so you can feel your iliac crest—the twin pointy protrusions on the front of your hips. (The iliac crest serves as the "shelf" of your pelvic girdle, the area that is gripped by your pack's hipbelt.) Position your hands so your thumbs are reaching behind you.

Have your friend finish measuring at the point where the tape crosses an imaginary line drawn between your thumbs. This distance is your torso length.

Generally, your measurement will fall into one of these frame-size categories:

Small: Up to 17 1/2".

Medium/Regular: 18" to 19 1/2".

Large/Tall: 20" and up.

Pack manufacturers typically use general terms (small, medium, large) to identify their frame sizes; look at each pack's technical specifications to find the actual numeric range.

A person with a measurement right on the border (say, 17 3/4") might want to visit a store to try on both a small and medium version of a particular pack.

Determine Your Hip Measurement

While not as crucial as your torso length, your hip measurement is useful to know. It's very helpful if you are considering a pack that offers interchangeable hipbelts.

Take your tape measure and wrap it around the top of your hips, the "latitude line" where you can feel your iliac crest — those two pointy bones just above the front pocket on your pants. A properly positioned hipbelt will straddle your iliac crest, about an inch above and below that line.

Test Fit Your Backpack

A comfortable fit, after all, is crucial to your satisfaction. Ideally, you should visit a store in person and try on some packs. If that's not possible, try the procedure described below at home with any pack you order. If it just doesn't feel right, send it back. To be fair, you need to keep in mind that no fully loaded pack ever feels truly "comfortable." What you are seeking to avoid is any sharp or unreasonable discomfort.

A Good Fit, Step by Step

If possible, start with about 20 or 30 pounds of weight to place inside the pack: sandbags or weighted pillows supplied by the store; items of personal gear packed into stuff sacks; climbing ropes. (If you're able to visit a store, throw some things in a duffel bag and bring them with you.) Distribute these throughout a pack's interior,

keeping the weight close to your body with the heaviest portion near your shoulder blades. Next:

Loosen the pack's shoulder straps, load-adjustment straps and hip belt.

Slip your arms through the shoulder straps.

Position the hipbelt so it basically straddles your hipbones (iliac crest); close the buckle and make the hipbelt straps snug.

Tip: The belt should completely, comfortably cover your hips, but its 2 ends should not touch. If the belt is too loose or too tight, reposition the buckle pieces on the hipbelt straps. If this doesn't give you a secure fit, you may have to try a different pack or hipbelt. Do not tighten your hipbelt excessively. Keep it snug, but if it's too tight or too long on the trail, you'll have sore spots on your hips the next morning.

Cinch the shoulder straps down tightly, then ease the tension slightly.

Look sideways in a mirror. Check the position of your shoulder straps:

For internal-frame packs: The padded sections of the shoulder straps should wrap around the crest of your shoulders comfortably and attach to the frame about 1" below that point. No gaps should appear

For external-frame packs without load-lifter straps: The shoulder straps should attach to the pack frame at a point slightly higher than the top of your shoulders.

For external-frame packs with load-lifter straps: The padded sections of the shoulder straps should wrap around the top of your shoulders comfortably and attach to the frame about 1" below that point.

Check your load-lifter straps. These should attach to your shoulder straps at a point just above your collarbone and just below the top of your shoulders. From there, they should rise up to join with the frame at an angle of between 40 and 50 degrees. If the angle is higher than that, your frame is too long. Any lower and your shoulders will carry too much of the load.

Check the shoulder strap length and width:

The buckle on the strap should be far enough below your armpit that it won't chafe. How far? Try a handwidth.

The straps should be far enough apart that they don't squeeze your neck, but close enough together that they don't slip off of your shoulders during hiking. The width is sometimes adjustable.

Check for a good torso fit. If the pack fits you correctly, you should be able to redistribute the weight of the pack between your shoulders and your hips simply by loosening and tightening your shoulder straps slightly.

Tip: Make any adjustments by moving the shoulder harness up or down, using whatever means the individual pack provides. On a "ladder" system, for instance, you can rethread the webbing and fasten it at a new position on the ladder.

Adjust the sternum strap. Position it about 2" below your collarbone. You should be able to breathe comfortably when the strap is fastened. It is not essential that you keep your sternum strap fastened at all times. It is most helpful when you are negotiating uneven terrain.

Check for comfort:

- Does the pack feel good on your back?
- Does it pinch or bind or unusually restrict your movement?
- Can you look up without hitting the pack with your head?
- Can you squat down without cutting off the circulation to your legs?

This may seem like a lot to keep in mind, but all of the above will become automatic as you gain experience. Now walk around with your pack. Climb and descend a flight of stairs. Hop from spot to spot. Reach. Walk a line. If anything is pinching, try adjusting the various straps.

Additional Considerations

Bending the stays: The stays that serve as the frame of internal-frame packs are almost always removable and can be bent to conform to the contours of your torso. How meticulously and precisely should they be bent? It's a matter of choice. It's usually sufficient to give the stays a modest bending so they follow your spine's natural S-shape. To make sure your stays are not damaged when bending them, it's best to have a trained technician bend them for you.

Breaking in your pack: Ideally, make your first trip with your new pack a short one. You can make some modest adjustments during rest stops. Over time, with regular wear, items such as internal stays and the padded hipbelt will conform to your body configuration.

How to Pack Your Backpack

You've planned, shopped and prepared. Now it's time to load up and head out. What's the smartest way to get all that gear into your backpack?

It depends on what you're carrying (internal-frame pack or external?) and where you're going (on-trail or off-trail?).

Internal-Frame Packs

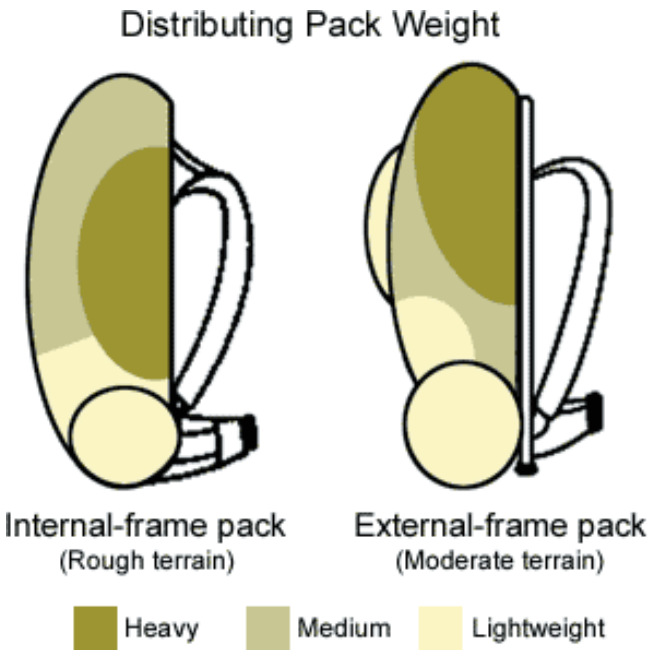
Whether you're traveling on- or off-trail, keep your heaviest items close to your back, centered between your shoulder blades.

For on-trail travel, keep heavy items higher inside your pack. This helps focus more of the weight over your hips, the area of your body best equipped to carry a heavy load.

For off-trail exploration, reverse the strategy. Arrange heavier items lower in the main compartment, starting again from the spot between your shoulder blades. This lowers your center of gravity and increases your stability on uneven terrain.

Stuff your sleeping bag into its lower compartment first. Squeeze in any additional lightweight items you won't need until bedtime (pillowcase, sleeping shirt, but nothing aromatic). This will serve as the base of the main compartment, which you'll fill next.

Tighten all compression straps to limit any load-shifting.



External-Frame Packs

As with an internal, keep your heaviest items close to your back, near your shoulder blades.

Externals are recommended for on-trail travel only. Load heavier items high inside your pack and close to your body. Doing so centers the pack's weight over your hips and helps you walk in a more upright position.

Pack your sleeping bag in its stuff sack. Finish loading your main packbag, then strap the bag to the lash points on the bottom of the packbag. If rain seems likely, consider stuffing your sleeping bag inside a second stuff sack or wrapping it in plastic.

Tips for Either Pack Style

People of short stature often find they prefer to pack the weight low whether they're traveling on- or off-trail, regardless of which pack style they're carrying. You are the ultimate judge of what feels comfortable to you. Experiment with different load arrangements to determine what feels best.

Make sure some items are easily accessible, packed in places where they can be reached with a minimum of digging:

- Map
- Compass
- Sunglasses
- Insect repellent
- Snack food
- Flashlight/headlamp
- First-aid supplies
- Water bottles
- Rainwear
- Packcover

Don't waste empty space. Cram every nook with something. Put a small item of clothing inside your pots, for example. Smaller items, such as food, pack more efficiently in individual units rather then when stored loosely inside a stuff sack.

Split up the weight of large items (a tent, for instance) with other patrol members. Don't make 1 person become an involuntary packhorse.

Cluster related small items (such as utensils and kitchen items) in color-coded stuff sacks to help you spot them easily.

Minimize the number of items you strap to the outside of your pack. Gear carried externally may adversely affect your balance. Secure any equipment you carry outside so it doesn't swing or rattle.

Tips: How about long tent poles, for example? Stow them horizontally with your sleeping pad across the top of an external pack; with an internal, carry them vertically, secured behind the compression straps on one side of the pack with the ends tucked into a "wand pocket" at the pack's bottom. A daisy chain and ice axe loops are designed for specific mountaineering gear; feel free to improvise with them, but don't get so creative that you jeopardize your comfort or stability.

Make sure the cap on your fuel bottle is screwed on tightly. Position it below your food inside your pack in case of a spill.

Carry a packcover. Backpacks, though made with waterproof fabric, have vulnerable seams and zippers. After a few hours of exposure to persistent rain, the items inside your pack could become wet—and thus much heavier.

Quick repair tips: Wrap strips of duct tape around your water bottles; in case a strap pops or some other disaster occurs, a quick fix could keep you going. Take along a few safety pins in case a zipper fails.

Double-check your older gear to make sure it's in good working order.

Pre-load your pack the night before your hike begins. Or, a few days before your departure date, rehearse packing for this trip. If you're missing something, it's better to discover this fact early.

How to Choose the Right Footwear

Choosing the right footwear may be the most important decision you make as a beginning backpacker. The shoes or boots you choose must be comfortable, durable and protective, mile after mile.

Step #1: Consider the Kinds of Trips You Have Planned

Outdoor footwear can be divided into 3 basic categories. Begin your search for the right boots or shoes by focusing on the category that best matches your backpacking plans.

Lightweight hiking - These boots (and trail shoes) are designed for day hiking and very short overnight trips only. They stress comfort, cushioning and breathability. As a result, they are less supportive and durable than the options below.

Midweight hiking/backpacking - These boots are designed for on- and off-trail hiking with light to moderate backpacking loads. They are more durable and supportive than lightweight hiking boots, but they are still intended primarily for short to moderate trips over easy to moderate terrain.

Extended backpacking/mountaineering - These boots are designed for on- and off-trail hiking with moderate to heavy backpacking loads. They are designed with multi-day trips in mind. Durable and supportive, they provide a high degree of ankle and foot protection. Some of these models are designed specifically for rough terrain with heavy backpacking loads. They offer the very best in durability, support and protection. Some are stiff enough to accept crampons for snow/ice travel.

Step #2: Consider the Materials

The materials used in a given boot or trail shoe will affect its weight, breathability, durability and water-resistance. Since boots made of different fabrics can be very similar in performance, however, personal preference is often the key when choosing between them.

Nylon mesh and split grain leather - Nylon and split-grain leather boots are lightweight and breathable, which makes them perfect for warm- to moderate-weather use and short to moderate backpacking trips. They tend to be softer on your feet, they take less time to break in, and they are almost always lighter than full-grain leather boots. They also cost less. Unfortunately, nylon/split grain boots tend to be less water-resistent than full-grain leather boots (although styles that feature waterproof liners can be just as water-tight, if not more so).

Full-grain leather - Full-grain leather is extremely water-resistant, durable and supportive (more so than split-grain leather or nylon). It's used primarily in backpacking boots designed for extended trips, heavy loads and hard terrain. Not as lightweight or breathable as nylon/split grain combinations, but it typically lasts far longer. Full-grain leather usually requires a break-in period..

Waterproof barriers - Lightweight, waterproof barriers (like Gore-Tex¨) are built into many hiking boots to enhance their water resistance. These barriers are available in a variety of boot styles, from lightweight hikers to extended hiking/backpacking models. Waterproof performance depends upon the type of barrier used, the materials protecting it and how well the boots/shoes are taken care of. If cared for correctly, these waterproof barriers often last longer than the boots themsleves.

NOTE: Be careful when shopping for backpacking boots to differentiate between the following:

Waterproof leather -- This is leather that's been treated to be waterproof. It's great stuff to have, but remember -- leaks may still occur (depending on how well the boot pieces are put together).

Waterproof (or water-tight) construction -- This refers to construction techniques designed to keep leaks out (like seam-sealing, special stitches and precise designs). Water-tight construction is typically combined with waterproofed materials.

Waterproof liners -- These are the special waterproof barriers described above that are built right into the boot

to protect you from whatever leaks make it through the boot materials. These liners typically do a great job of keeping you dry. But remember, Gore-Tex (and the others) don't last forever.

TIP: The waterproofness (or water-resistence) of your hiking boots depends significantly on how well you treat them. Be sure to follow all care instructions that come with your boots so that they can perform well and last a long time.

Step #3: Consider the Way the Boots are Constructed

Upper construction

The more seams a boot or shoe has, the higher the risk for leaks and/or blow-outs. Leaking occurs when water seeps through the needle-holes or spaces between the boot panels. Blow-outs occur when general wear, repeated flexing or a snag causes a stitch to break and 2 panels to separate. In general, the less seams an upper has, the more water-resistant and more durable it will be.

The connection between the upper and the sole

Hiking boot soles are either stitched or cemented to the rest of the boot.

Stitching - Durable, reliable, can be undone to replace the sole once it has worn down. Different techniques (Littleway, Norwegian) result in different strengths and stiffnesses.

Cementing - Faster and less expensive than stitching, resulting in lower boot prices. It hasn't always been reliable, but most modern methods produce durable, lost-lasting bonds (depending upon the process and specific glue used). Most cemented boots can now be resoled just like traditional stitch-down models.

Step #4: Test for Fit

Once you've narrowed down your options to a handful of boots or shoes, the best way to decide between them is to try them on. Don't rely solely on your "regular" shoe size when searching for the best fitting boots or shoes. One manufacturer's "9" may vary widely from another's (see below).

Fitting tips:

Begin with a foot measurement - Have an experienced REI salesperson measure both of your feet using a Brannock device. Use these measurements as your starting point for trying on boots. If one foot is larger than the other (which is quite common), fit your larger foot first. You may need to use extra socks or an insert to take up extra space in the other boot.

Pick the right socks - Wear the type of socks and sock liners that you'll be using out on the trail whenever you try on boots.

Check the initial fit - Lace up the boots and stand up. They should feel snug around the ball and instep of your foot, but loose enough that flexing your foot forward is not uncomfortable. Your heel should be held firmly in place. If your foot feels like it's "floating" inside the boot, try a half size down. If your foot feels cramped or your toes make contact with the front or sides of the toe box, try the next bigger size.

Take a walk - Take a walk and see how comfortable the boots/shoes are. Check for any looseness, foot movement and/or heel lift. Good-fitting boots will hold your feet firmly in place without binding or pinching them. New boots may feels a little stiff at first, but they should still be comfortable.

After a quick walk across a flat surface, step onto an incline facing downhill (if one is available) to check for foot slippage. Your feet should not slide forward easily, nor should you be able to move your heel from side to side. If either of these is possible, try a smaller (or lower volume) boot. If your toes make contact with the front of the boot without much forward movement, try a larger size or a different boot.

Investigate your options - Try on a number of boot models before you decide on a single pair, even if the first pair feels good. Every boot model is built around a different "last" (standard foot shape), so each one will grab you a little differently.

Boot Care Basics

Keep your boots and trail shoes clean between uses by brushing off dirt and mud (both can ruin leather over time). Most fabric boots/shoes can be washed on the outside with mild soap and water (not detergent).

If your boots get drenched, stuff them loosely with newspaper and dry them in a warm place. Never rush the drying process by placing them near a fire, heater or other heat source.

Boots, especially leather ones, should be conditioned from time to time to maintain your investment. This is true whether you hike in dry, hot conditions or wet, temperate ones.

How to Choose a Sleeping Bag

On a cool evening in an unfamiliar place, a good sleeping bag seems to work like magic. Slip inside one after a few post-sundown shivers have rattled your body and, within minutes, the chill in your bones is replaced by a warm glow. It's a sweet sensation that assures you of a comfortable night's sleep.

Here are some tips to help you make a smart choice when selecting your own sleeping bag.

Match your bag's comfort rating with the coldest nighttime temperatures you expect to encounter—and maybe even exceed that number for little security.

Bags using down insulation are lighter (providing a higher "warmth-to-weight" ratio) than bags using synthetic fill. They also compress into smaller shapes and last longer.

Synthetic-fill bags can provide some insulation even when wet, and they dry out fairly quickly. Plus, for the same temperature rating, they cost less than down bags.

A bag's shape matters. Mummy-style bags insulate most effectively and are your best choice for colder, high-elevation conditions; rectangular bags give you more room to change sleeping positions but offer more space that your body must heat up.

A good sleeping pad is essential. Your body weight compresses a bag's insulation when you lie on it, so you need a reliable buffer between, your bag and the cold ground.

How Do Sleeping Bags Work?

Sleeping bags keep you warm by trapping and holding a layer of "dead" (non-circulating) air next to your body. This air, which is warmed by your body heat, forms a barrier between you and colder air or cold surfaces.

When evaluating bags, consider these key factors:

- Comfort rating
- Insulation (down or synthetic fill)
- Weight
- Size when compacted
- Shape
- Personal sleeping tendencies (are you, for example, a "cold sleeper"?)
- Comfort Rating

A sleeping bag's temperature or "comfort" rating identifies the most extreme temperature the bag is designed to accommodate. When you hear a bag described as a "+20 bag," it suggests most users should remain comfortable if the air temperature drops no lower than 20 degrees Fahrenheit.

Are such ratings infallible? No. Humans all have different metabolic rates, and no industry standards exist that uniformly determine sleeping bag comfort ratings. Instead, each manufacturer assigns a rating to its bags based on its own research. Therefore, use these numbers as a guide, not a guarantee. If you have trouble deciding between two bags, it's not a bad idea to select one that offers a little more warmth than you think you might need.

Many factors affect your ability to keep warm inside a sleeping bag:

The insulating pad beneath your bag (when sleeping on frosty ground at high elevation, you need a full-length pad to keep you separated from the cold; when sleeping on snow or frozen ground, two pads are recommended)

The presence/absence of a tent (a tent or bivy shelter traps an extra layer of dead air, warming it by up to 10 degrees)

Your metabolism; you might be a "cold sleeper" (and thus one who prefers extra insulation when sleeping) or a "warm sleeper" (someone who kicks the covers off at home)

Clothing worn while inside the bag (dry long underwear and clean socks are good choices on cold nights, plus they help keep body oils off your bag; a cap and neck gaiter keeps body heat from radiating away; fleece pants and jackets help on colder-than-expected evenings)

Adjustments you make while in the bag (keep the bag zipped up and the hood cinched on cold nights; be careful to not breathe into the bag, since moisture has a negative effect on the insulation)

Food in your stomach (the process of digestion helps produce warmth)

Hydration (if you're not well hydrated the food won't help much)

Even experienced campers and backpackers can be surprised by unexpectedly cold overnight conditions, particularly during trips in the spring and fall. It's smart to be prepared.

Tip—To be ready for those extra chilly nights, select a bag with a temperature rating that slightly exceeds the low end of the temperature range you expect to experience. If a +20° F bag sounds right for you, a +10° bag would probably work well, too. On warm nights, you can always vent a bag (by using the double zipper to open the area near your legs) or simply drape it over you, unzipped. It never hurts to be a little over-prepared.

Recognizing that comfort ratings are merely general guides, REI organizes sleeping bags in the following categories:

Bag Type	Comfort Rating (°F)
Summer Season	+35° and higher
3-Season Bag	+10° to +35°
Cold Weather	-10° to +10°
Winter/Extreme	-10° and lower

Please note: Even in summer, a +35° bag may leave you feeling chilly when sleeping in the high country. If you think of yourself exclusively as a warm-weather camper, yet plan to routinely camp at higher elevations (3,000 feet and up), choose a bag with a comfort rating at least in the 20s.

Down or Synthetic Insulation?

The insulation or "fill" inside a sleeping bag largely determines a sleeping bag's:

Weight (and thus its "warmth-for-weight" ratio)

Compressibility

Durability

Down

Down is the wispy, fluffy undercoating found just beneath the outer feathers of geese and ducks. This natural fiber is an extraordinary insulator. Goose down is preferred to down from ducks, prized because it is believed its plumes offer a higher "fillpower" (explained below).

Down's positives include:

- It offers tremendous warmth for surprisingly little weight (thus offering a superior "warmth-to-weight" ratio).
- It can be compacted into very small sizes.
- Its effectiveness outperforms synthetic insulation by years—even decades.

Down, though, does have a downside:

- If it gets wet, it is of no value until it dries—and in the field, that can take a long time.
- It is more expensive (keep in mind, though, that its resistance to deterioration makes it an outstanding long-term value).
- Down is graded according to fill power—meaning the number of cubic inches one ounce of down will displace. The higher the number, the better the insulation.

Synthetic Materials

Synthetic materials are basically plastic threads (extruded polymers, to be technical). The threads are most commonly a continuous filament (a long, single strand). They can also be arranged in short "staples" up to four inches long. Usually the threads are hollow, reducing their weight and enabling them to trap more air.

The advantages of synthetic fill include:

- It still provides some insulation when wet; plus it dries fairly quickly.
- It's less expensive than down.
- It's non-allergenic.

The shortcomings of synthetic fill are:

- It's bulkier than down (so it takes up more space when you're carrying it).
- It's heavier (it takes more weight to get the same warmth down provides).
- The filaments gradually degrade over time.
- The insulating "batts" of filaments are stiffer than down and do not drape over the contours of your body as effectively.

Which is Right for You?

Down works well for just about everyone except people who frequently find themselves in rainy conditions.

Synthetic insulation is a good choice for kids and newcomers to camping and backpacking. It costs less than down and dries out relatively quickly if it gets wet.

Down always wins in terms of weight, compressibility, warmth and durability. Yet the value and performance of synthetic bags makes them very popular. Synthetic bags are improving each new model year, and they're champs when rain is a threat or cost is a factor.

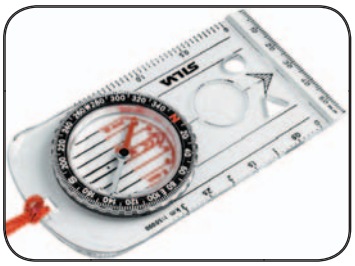
What about length? Do you need a "regular" or "long" model? The general rule is as follows: If you are no taller than 6 feet, choose a "regular" length bag. If you are up to 6-feet-6, you want a "long" bag..

The preceding was adapted from the "Expert Advice" pages of the REI web site.

Other Stuff

Now that the big, expensive items are taken care of, let's move on to the small, expensive items that will fill up the pack.

Compass



A liquid-filled (or liquid dampened) compass with a base-plate is the most useful, especially for orienting topo maps. Although not essential, it is handy if the base-plate has a ruler and a 1:24000 scale on it. Silva makes several types of compasses — the ones without the "Official BSA" logo work just fine and are usually a couple of bucks cheaper!

Flashlight / head lamps

Inevitably, it gets dark on campouts and a lightweight light is indispensable. Monster 3-cell flashlights weigh a lot more than an LED head lamp, which also frees up your hands. Small flashlights that operate off one or two AA-cells are sufficient for a backpacking excursion. If you opt for a head lamp, try and get one where the battery(ies) are contained in the light module — a remote battery pack and the corresponding wire harness can be a nuisance.

Mess Kits & Utensils

If the image that comes to mind is one of a medium-sized pan with an attached folding handle that also clamps a medium-sized aluminum plate into a handy-dandy mess kit, then think about this: Would you trust your meal in a pan that has an awkward and unstable handle as it cooks on a small, single burner stove precariously balanced on a log? If your food survives the cooking, what happens when you serve it up in an aluminum plate? Hot fingers, anyone?

The simple solution is a small, Lexan or heavy plastic, shallow bowl for eating and a set of nesting pots for cooking (the pots can be thought of as "crew gear", so not everyone needs a set). "Shallow bowl" means you can lick the interior clean without getting food on your ears, plastic means your fingers won't burn if the food is hot. And a "spork" is the best way to cut down on weight since you really don't need the interlocking three-piece knife-fork-spoon-in a-pouch. If you're wondering what a spork looks like in real life, just visit your closest Taco Bell! The "Sierra cup" is handy for drinking as the handle not only stays cool when drinking hot chocolate, it serves double duty as belt clip!

Canteens & Hydration

When we arrive at the end of a hike, there may not be any water; that means packing it in. If it holds water, it'll work but try to avoid the heavy, round canteens that have the felt on the sides. They are awkward to carry when backpacking and they are heavy. Get something that will fit in your pack, preferably an exterior pocket so it's easy to get at when taking a break. Water bottles from the grocery store are fine, but take fewer larger bottles as opposed to many smaller bottles (all that extra plastic adds weight). Hydration bags are great — they collapse when empty and can be fitted with a tube to make drinking and hiking a non-stop experience!

If you are looking to buy a canteen, Nalgene offers 1-liter Lexan bottles and they are virtually indestructible. Remember — figure on 1 gallon (4 liters, 4 quarts, 8.35 pounds) of water per day!

Water Filter & Purification tablets

Not necessary. If the troop is planning on a trip that would necessitate this equipment, various members of the Old Goat Patrol will bring whatever is necessary.

Keep in mind though, that there is no groundwater in North America that is considered safe enough to drink without some type of purification.

Stoves

Not really necessary for everyone to own one (think "crew gear"). The Troop has some propane backpacking stoves for use when needed. If you're thinking about purchasing one, consider a liquid-fuel (white gas, Coleman fuel, unleaded gas) stove. They are a little more finicky than propane but work better at low temperatures and high elevations

Clothing

Layers. As the temperature drops, it's easy to add another T-shirt or two, along with a medium-weight rainproof jacket. Throw in a light-weight fleece sweatshirt, rain pants, gloves (or glove liners) and a beanie and you're there. Have a separate (long-sleeved) shirt and long-johns set aside for sleeping. Putting on clean, dry clothes (including socks) sets you up for a warm night in the sack. Use Zip-Loc bags to store your clothes in as it will help keep them drier (the large, 2-gallon size works great).

Extra shoes for knocking around camp are nice, not essential — but they must be a closed-toe style. Nobody wants to schlep out little Johnny (and his equipment) when he jams a stick between his toes!

Sleeping pads & pillows

Pillows are not really necessary (you can use your sleeping bag stuff sack and some clothes) but a pad is truly nice. Do not use the air mattress you use at the pool. It will be cold at night and most likely will deflate around 2 in the morning. Foam pads or foam/inflatable pads (Therm-A-Rest is a good example). Therm-A-Rest also makes covers that will convert the sleeping pads into camp chairs (albeit without legs). Get a pad that is long enough, width is a personal preference.

Lotions & Potions

"Travel" or "sample" sizes for toothpaste, deordorant and sunscreen work great. Wal-Mart and Target sell these items. Bug repellent is best in liquid form, not a spray bottle or an aerosol. Look for 100% DEET. A couple of drops for each arm, a couple of more for your face, neck and ears means it'll last a long time.

Storing & Stuffing

Using different sizes and colors of stuff bags makes packing (and locating) items easier. Compression sacks for larger, bulkier items (clothes, sleeping bags) frees up a tad more space in the bag.

Strapping & Hanging

Not everything fits in a backpack, not even in the extra pockets. Sleeping pads and tents come to mind as these are the items most likely to be hung on the outside of a pack. Bungee cords, string, twine and rope are not the best way to attach anything. (Bungee cords allow stuff to swing, usually out of sync with your gait. Ever try untieing a knot in a wet piece of string with cold, numb fingers?) Use straps with quick-release buckles. They are easier to use when attaching stuff, they are easily cinched down, and they can be opened with cold, numb fingers.

TIP - buy a rain cover for the pack (highly recommended) that will fit over the pack and all of the stuff attached to the outside of it.

Other Questions

Just ask! Ask 5 people, get 5 answers, but now you know 5 times more than any one of them!