

Tools of the Trail (STEM Principle: Science)

By: Matt Paulson

When you go hiking or camping, it's important to be prepared for your trip, and anything that happens. Good hikers make sure they're ready for just about anything. This also helps ensure that your trip is a fun one. First, you're going to need a compass. Because the earth is so big, it acts like a giant magnet. Like all magnets, it has both a North and a South pole, and it pulls on everything magnetic on earth – including a compass. If you hold it flat and level, the compass will point one end toward the North pole no matter where you are.

Next, you'll need to make sure you have a map of the area. You can usually get one at the visitor's center of any park you're visiting, if you don't already have one. Map and compass skills are essential to outdoors orienteering. If you can master this skill, you'll avoid getting lost. First, try to use landmarks and map features to figure out where you are, and what's around you. Then, adjust the compass to your map. Since maps are flat and the earth is round, North on the map is a little different than true (magnetic) North. To have your compass point true North, turn the face of the compass the number of degrees the map tells you to. This is called declination. You can look up the declination for your area at <http://magnetic-declination.com/>.

Orienteering is the skill of using a map and compass to navigate outdoors. To begin orienteering, place your map on a flat surface, and put the adjusted compass right on top of where you are on the map. Turn the compass so that it lines up with true North. Together, carefully turn the whole map until the needle points north. Now, draw an imaginary line from where you are to where you're going on the map. Find which degree on the compass that direction lines up with, and that's the direction you should go. To stay in a straight line, have your child pick out a landmark off in the distance, like a tree or a rock. Walk directly toward it. Once you get there, choose another marker in the same direction, and repeat until you get there!

You will also need to make sure everyone is carrying water and food – like trail mix. The peanuts, chocolate and fruit in trail mix provides lasting energy through protein and fat. Fruits like oranges pack easily and carry additional hydration value with them. Believe it or not, hydration is more important than food. But for little kids, having enough snacks to keep the blood sugar up is arguably just as important. Make sure everyone is carrying their own water container or packable pouch, grown-ups and kids.

The original Ten Essentials list was compiled by the Mountaineers, a Washington outdoors organization founded in 1906. While the list has been adapted and revised many times, the whole idea has always been to prepare people to do two things: 1) respond in an accident or emergency; and 2) spend a night or two outdoors safely while waiting for help. Here is the updated list, courtesy of The Mountaineers:

1. Navigation (map and compass)
2. Sun protection (sunglasses and sunscreen)
3. Insulation (extra clothing)
4. Illumination (headlamp/flashlight)
5. First-aid supplies
6. Fire (waterproof matches/lighter/candles)
7. Repair kit and tools
8. Nutrition (extra food)
9. Hydration (extra water)
10. Emergency shelter