# Compass diagrams

Part 1 of Hold the watch horizontally. This trick can be used anywhere in the Northern Hemisphere during the day, when the sun is visible. Lay the watch flat and face-up in your palm so that its face is parallel with the ground. Point the hour hand in the direction of the sun. Turn the watch, your hand, or your entire body so that the hour hand of your watch is pointing directly at the sun. The time on the watch doesn't matter, as long as it's accurate. If you're having a hard time lining the hour hand up with the sun exactly, you may want to use a narrow object's shadow to help you. Stick a twig or narrow post into the ground so that the shadow it casts is clearly visible. Then, line the shadow up with the hour hand of your watch. An object's shadow is cast away from the sun, so lining your hour hand up with a narrow shadow is essentially the same as lining it up with the sun itself. Bisect the angle between the hour hand and the 12 o'clock mark to find South. This is the tricky part. Find the middle point of the angle between your hour hand and the 12 o'clock mark on your watch. Before noon, you'll have to measure clockwise from your hour hand to the 12 o'clock marking, while afternoon, you'll have to measure counterclockwise from your hour hand to the 12 o'clock marking. The middle point between the two marks South , while the point directly across from it marks North. For example, if it's exactly 5 o'clock in the afternoon and you've lined up your hour hand with the sun, South is the direction exactly between the 2 and 3 o'clock marks and North is the spot across from this point exactly between 8 and 9. Note that during Daylight Saving Time, your watch is most likely one hour "off" from the "real" time. If this is the case, substitute 1 o'clock for 12 o'clock before finding your North-South line. Part 2 of Hold the watch horizontal. As in the Northern Hemisphere, you should take off your watch and lay it flat in your hand when you're in a location where you're able to see the sun. Point twelve o'clock in the direction of the sun. The key difference between the Northern and Southern Hemispheres when it comes to using a watch as a compass is that in the Southern Hemisphere, it's the 12 o'clock mark, rather than the hour hand that you must line up with the sun. Reversing the orientation of your watch relative to the sun allows you to account for the difference in the sun's orientation between the two hemispheres. If you're having a difficult time getting a bead on the sun, you can use the same shadow trick as in the Northern Hemisphere to ensure your 12 o'clock mark is precisely lined up. Bisect the angle between the hour hand and the twelve o'clock mark to find North. The exact middle of the angle between the 12 o'clock mark and the hour hand on your watch marks North , while the point directly across the face of the watch from it marks South. For example, if it's 9 o'clock in the morning and we line the 12 o'clock mark on our watch up with the sun, the midpoint between the 10 and 11 o'clock markings is North and the point across from this between the 4 and 5 o'clock markings is South. If your watch is set to Daylight Saving Time, use the 1 o'clock marking on your watch as your benchmark, rather than the 12 o'clock mark, as you would in the Northern Hemisphere. Part 3 of Use a map to find your hemisphere at home. The makeshift watch compass described in this article uses the position of the sun in the sky to determine North and South. Because the sun is in a different part of the sky in the Northern Hemisphere the part of the earth north of the equator than it is in the Southern Hemisphere the part of the earth south of the equator , it's important to account for this difference to ensure your compass is accurate. It's usually easy to tell whether you're in the Northern or Southern Hemisphere simply by virtue of knowing what country you're in for instance, The Southern Hemisphere includes most of South America, Sub-Saharan Africa, and Australia. If you're at home or otherwise near civilization , use a map, a globe, or an online geographical resource to find your position relative to the equator. Use the North Star to find your hemisphere in the wilderness. If you're truly lost - for instance, in a life raft in the middle of the ocean, you may not have access to maps, encyclopedias, or the internet. Luckily, if you're deep in the wilderness

and you don't know which hemisphere you're in, you can still determine whether you're in the Northern or Southern hemisphere by searching for Polaris, the North Star , in the night sky. This star is visible from the Northern Hemisphere, but if you're even slightly below the equator in the Southern Hemisphere, you won't be able to to see it. Note that the watch compass described in this article works best in the Autumn and Spring and can be inaccurate near the equator. In the spring, you move your clock forward one hour. In the fall, you move it back one hour. Not Helpful 5 Helpful It's in the tail of the Little Dipper, if you can find that. Another method would be to locate the Big Dipper – the two stars farthest from its tail point to the North Star. Not Helpful 21 Helpful As long as you are north of the equator, this method should work. Not Helpful 16 Helpful 9. It depends on the watch. Most mechanic ones need to be wound in certain intervals. A watch with a battery in it does not. Not Helpful 8 Helpful 8. Include your email address to get a message when this question is answered. By using this service, some information may be shared with YouTube. The further away from the equator you are the more accurate your results will be, as the sun will cast a longer shadow. Helpful 59 Not Helpful If you have a digital watch, refer to the previous tip and quickly draw and use a watch face, being careful to accurately draw to hourly digits in the correct placements. If needed, wait for a time which is quarter past or until, or on the hour or half. Helpful 14 Not Helpful 1. If it's cloudy or overcast find an open area as far from sun obstructions as possible and hold up a stick, branch, ruler, pole or other straight object. A slight shadow will be cast in all but the worst conditions. Helpful 31 Not Helpful For best results set your watch to "true" local time, in other words without adjustments for daylight savings time. Helpful 40 Not Helpful You don't need an actual watch, you can draw a watch face on a piece of paper and the hack works just fine. It's nothing to do with the watch itself, but rather, knowing the time. Helpful 2 Not Helpful 0. Submit a Tip All tip submissions are carefully reviewed before being published. The correct understanding of how to use a map and compass should always be the first priority in navigation if venturing into the unknown and potentially dangerous. Helpful 14 Not Helpful 8. A quick trick like this is good but do not rely on this information in life-critical situations. Helpful 12 Not Helpful Related wikiHows How to. How to. Co-authors: Updated: May 7, Categories: Watches Compasses. Italiano: Usare un Orologio Analogico come Bussola. Deutsch: Eine analoge Uhr als Kompass benutzen. Nederlands: Een analoog horloge gebruiken als kompas. Thanks to all authors for creating a page that has been read , times. The tips and warnings were very apropos as well. I love that possible challenges were discussed daylight savings time, clouds and how to deal with them. Josephine Olugbake May 11, Reading all the related articles to get a better understanding. Really appreciate all the people that put this together. Graham Mount May 18, Had NSEW on it. Used to be a scout leader but at age 70 plus, forgot some of this essential stuff. Thanks for the refresher course. Ian Haines May 18, I have every intention of trying this system out next time I can see the sun. Suat Gumrukcu Jul 5, Knowledge is a precious thing. Rated this article:. Mariner Aug 7, Oscar James Nov 16, I also liked the suggestions. Herb Loch Nov 1, Intishar Anzum Aug 7, Dennis Atkins Oct 29, Aurelio Hernandez Aug 23, Genevieve Montcombroux Aug 7, Anonymous May 26, More reader stories Hide reader stories. Did this article help you? Cookies make wikiHow better. By continuing to use our site, you agree to our cookie policy. About This Article Co-authors: Richard Fowell Feb 13, Share yours! More success stories Hide success stories. Related Articles How to. By signing up you are agreeing to receive emails according to our privacy policy. Follow Us. Get all the best how-tos! X Help us do more We've been helping billions of people around the world continue to learn, adapt, grow, and thrive for over a decade. Let's do this! Parts of a Compass There are many types of compasses ranging from tiny thumb compasses to complex high-tech gadgets. For most hikers and outdoors guys like us, an orienteering compass works just great and that is what we'll discuss here. Not all compasses include each of these parts and some compasses include even more. Baseplate hard, flat surface on which the rest of the compass is mounted. It has a rulers on its edges for measuring distances on maps. It's edge is straight and useful for laying lines on a map Scales each edge of a compass may have different rulers for use with different map scales Direction-of-Travel Arrow marked on the base plate. You point this the way you will be traveling Magnifier for seeing small map features better Index Pointer butt end of the direction-of-travel arrow. It ends right at the edge of the dial and is where you take degree readings Dial ring around the housing that has degree markings engraved. You hold the dial and rotate it to rotate the entire housing Declination Marks use to orient the compass in an area with known declination Orienting Arrow marked on the floor of the housing. It rotates with the housing when the dial is turned. You use it to orient a compass to a map Orienting Lines series of parallel lines marked on the floor of the housing and on the base plate Needle magnetized piece of metal that has one end painted red to indicate North. It sits on a fine point that is nearly frictionless so it rotates freely when the compass is held fairly level and steady Housing main part of the compass. It is a round plastic

container filled with liquid and has the compass needle inside Bubble a bubble of air in the housing liquid is useful for making sure you are holding the compass fairly level Mirror lets you see the compass face and distant objects at the same time. Useful for emergency signaling Sight Improves aiming your compass at distant objects. How a Compass Works There is a huge magnetic field around the earth. It is huge, but it is not very strong. The magnetized needle in a compass is aligned with this magnetic field. As the image below shows, the composition of the earth acts as a huge bar magnet sitting upside down in the middle of the planet. Since its South end is at the north pole and its North end is at the south pole, the North end of a compass needle is pulled north. Your compass has to have a very light needle sitting on a pivot that has almost no friction. This is because the earth's magnetic field is weak and would not be able to turn the needle. You can even make your own compass just for fun. The Tate's Compass company manufactured over 1 million compasses a year. But, one day the red and white paint got mixed up so all their compasses pointed the wrong way. The company went out of business and the well-known saying was created: " He who has a Tate's is lost! Next: Reading a Compass. Search Google News for more 'Lost Hiker' news items. Bill - Yes, you can adjust the orienting arrow for declination. See Declination page. This website is awesome. I have learn a lot about compasses. A thousands of thanks. Did I understand correctly? South of the equator, the red painted end of a compass needle points to the South Pole? If so are Scouts in Australia taught to orient everything and read maps based on everything pointing south? Ralph - No, the red end always points to magnetic north, wherever you are. Hello, thanks for the page. Festus - No, the dial turns the housing which includes the orienting arrow depending on declination. Then, bearings are taken by putting "red in the shed". You might read the Orienting Map and Compass Use pages. Recent Comments Tanya on Map Symbols. It's edge is straight and useful for laying lines on a map. It ends right at the edge of the dial and is where you take degree readings. You hold the dial and rotate it to rotate the entire housing. You use it to orient a compass to a map. It sits on a fine point that is nearly frictionless so it rotates freely when the compass is held fairly level and steady. It is a round plastic container filled with liquid and has the compass needle inside. Useful for emergency signaling. Jeep Compass 4wd Workshop Manual L We'll send you a quick email a new Jeep Compass document is added. Spam free: Maximum of 1 email per month. Donations are totally optional, if you can't afford a few dollars right now please don't feel pressured, but if you can Pretty please could you help? Show full PDF. Get your hands on the complete Jeep factory workshop software. Check out our popular Jeep Compass Manuals below:. Summary of Content. Disconnect and isolate the battery negative ground cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment. Install and tighten the screw 2 that secures the SKREEM mounting bracket to the boss on the top of the ignition lock housing. Tighten the screw to 2 Nm 20 in. Reinstall the right multi-function switch onto the integral mounting bracket 1 on the right side of the clockspring. Reconnect the battery negative cable. Below is a list of general warnings that should be followed any time a vehicle is being serviced. An automatic transmission should be in park. A manual transmission should be in neutral. WARNING: To prevent serious burns, avoid contact with hot parts such as the radiator, exhaust manifold s , tail pipe, catalytic converter and muffler. Gases are always present in and around the battery. In order to effectively use the wiring diagrams to diagnose and repair DaimlerChrysler Corporation vehicles, it is important to understand all of their features and characteristics. All switches, components, and modules are shown in the at rest position with the doors closed and the key removed from the ignition. Components are shown two ways. A solid line around a component indicates that the component is complete. A dashed line around the component indicates that the component is being shown is not complete. Incomplete components have a reference number to indicate the page where the component is shown complete. It is important to realize that no attempt is made on the diagrams to represent components and wiring as they appear on the vehicle. For example, a short piece of wire is treated the same as a long one. In addition, switches and other components are shown as simply as possible, with regard to function only. The enable signal received from the power outlet enables the inverter to convert the received voltage and pass it to the power outlet to power external devices. Remove the fuel pump sending unit from the Pump module. The SKREEM is located on the right side of the steering column near the ignition lock cylinder housing and is concealed beneath the column shrouds. The molded black plastic housing for the SKREEM has an integral molded plastic halo-like antenna ring 1 that extends from one side. When the SKREEM is properly installed, the antenna ring is oriented around the circumference of the ignition lock cylinder housing. An integral molded plastic mounting tab 2 on the SKREEM housing has a hole in the center through which a screw passes to secure the

unit to the steering column lock housing. The SKREEM is connected to the vehicle electrical system through a single take out and connector of the instrument panel wire harness. The ITM also communicates with the alarm siren module over a dedicated serial bus circuit. The ITM microprocessor continuously monitors inputs from its on-board motion sensor circuitry as well as inputs from the EMIC and the alarm siren module. The on-board ITM motion sensor circuitry transmits ultrasonic signals into the vehicle cabin through a transmit transducer, then listens to the returning signals through a receive transducer as they bounce off of objects in the vehicle interior. If an object is moving in the interior, a detection circuit in the ITM senses this movement through the modulation of the returning ultrasonic signals that occurs due to the Doppler effect. The ITM will signal the alarm siren module to provide a single siren chirp as an audible confirmation that the motion sensor function has been disabled. If movement is detected while the VTA is armed, the ITM sends an electronic status message to the EMIC over the CAN data bus and sends an electronic message to the alarm siren module over a dedicated serial bus line to sound the siren. When the EMIC detects a breach in the perimeter protection through a hard wired door or liftgate ajar switch input or receives a hood ajar switch input from the TIPM, it sends an electronic message to the ITM and the ITM sends an electronic message to the alarm siren module over a dedicated serial bus line to sound the siren. An active fault only remains for the current ignition switch cycle, while a stored fault causes a DTC to be stored in memory by the ITM. The ITM is connected to the vehicle electrical system through the headliner wire harness. These connections allow the ITM to remain operational, regardless of the ignition switch position. The hard wired circuits of the ITM may be diagnosed using conventional diagnostic tools and procedures. Refer to the appropriate wiring information. However, conventional diagnostic methods will not prove conclusive in the diagnosis of the ITM or the electronic controls or communication between modules and other devices that provide some features of the VTA. The most reliable, efficient, and accurate means to diagnose the ITM or the electronic controls and communication related to ITM operation requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information. Connect battery and test all affected systems. Place a piece of adhesive lined heat shrink tubing on one side of the wire. Make sure the tubing will be long enough to cover and seal the entire repair area. Place the strands of wire overlapping each other inside of the splice clip 1. Solder 3 the connection 2 together using rosin core type solder 1 only. The export premium version of the VTA is only available in vehicles built for certain markets, where the additional features offered by this system are required. The ITM is integral to the rear dome lamp housing 1 located in the passenger compartment, on the lower surface of the headliner near the center of the vehicle. The ITM is concealed within the dome lamp housing. Only the black grilled openings 4 for the ITM ultrasonic transmitter and receiver are visible on the outside of the housing, one each ahead and behind the dome lamp lens 3. The entire module is secured to the headliner by a fixed retainer 5 integral to the left side of the housing and a hinged retainer 2 on the right side that is integral to the dome lamp lens. A notch 6 in the housing at the left edge of the lens affords access for service removal. Concealed within the housing is the electronic circuitry of the ITM which includes a microprocessor, and the ultrasonic transmit and receive transducers. A molded plastic connector receptacle on the circuit board is connected to the vehicle electrical system by a dedicated take out and connector of the headliner wire harness that is integral to the headliner. The ITM unit cannot be adjusted or repaired and, if ineffective or damaged, it must be replaced. The dome lamp lens and bulb are available for separate service replacement. Install the jumper hose kit 6. Re-Connect battery 7. Start vehicle and check for leaks 8. Re-install Fuel Pump Cover 9. Re-install padding and rear seat bottom Return vehicle to customer. Position the TIPM positive cable onto the mounting stud and install the retaining nut. Torque nut 9 - 11 Nm 80 - in. Connect each of the TIPM wire harness connectors. Connect the battery negative cable. Close hood. Insert the ignition key and turn it to the "RUN" position and wait twelve seconds. After twelve seconds turn the ignition key to the "OFF" position and then back to the "ON" position and verify proper vehicle systems operation. This is a Battery Feed circuit, level two, eighteen gauge, light blue with a yellow tracer. Some connectors are serviced only with a harness. A typical example might be the Supplemental Restraint System connectors. Always check parts availability before attempting a repair. Insert the fixed retainer on the left side of the ITM housing up into the left side of the mounting hole in the headliner. Swing the notched end of the lamp lens 2 into position against the lamp housing, then press upward on the lens firmly and evenly until it snaps into the housing. Disconnect and isolate the battery negative cable. Remove but do not disconnect the right multi-function switch from the integral mounting bracket 1 on the right side of the clockspring and position it so that the Sentry Key REmote Entry Module SKREEM mounting screw 2 may be accessed. The molded plastic TIPM housing is located in the left front corner of the engine compartment, just behind the air cleaner housing

and the battery. The TIPM housing has a molded plastic cover. The TIPM cover is easily removed for service access and has a convenient fuse layout label affixed to the inside surface of the cover to ensure proper component identification. All of the TIPM outputs are through the integral engine compartment wire harness. The cable is secured to the TIPM stud with a nut. Refer to Wiring Diagrams for complete circuit diagrams. The fuses and TIPM housing assembly are available for service replacement. To identify which circuit code applies to a system, refer to the Circuit Identification Code Chart. This chart shows the main circuits only and does not show the secondary codes that may apply to some models. Open hood. Remove the TIPM positive cable retaining nut and remove the cable from the stud. Depress the three mounting clips to disengage and remove the TIPM housing from its mounting bracket. Remove the TIPM from the vehicle. Position the TIPM onto the mounting bracket and push down until the mounting clips are fully seated. If this antenna ring is not mounted properly around the ignition lock cylinder housing, communication problems between the SKREEM and the transponder may arise. These communication problems will result in Sentry Key transponder-related faults. However, the use of this strategy also means that replacement of either the SKREEM or the PCM units will require a system initialization procedure to restore system operation. The diagnostic scan tool will alert the technician during the SKIS initialization procedure if new Sentry Keys are required. When the key is inserted into the ignition switch and when the ignition switch is turned to the ON position, the SKREEM transmits an RF signal to excite the transponder in the ignition key. If the response received identifies the key as invalid or if no response is received from the key transponder, the SKREEM sends an invalid key message. It is important to note that the default condition in the PCM is an invalid key; therefore, if no message is received from the SKREEM by the PCM, the engine will be disabled and the vehicle immobilized after two seconds of running. However, conventional diagnostic methods will not prove conclusive in the diagnosis of the SKREEM or the electronic controls or communication between other modules and devices that provide some features of the SKIS. Disconnect and isolate the negative battery ground cable, then wait two minutes for the airbag system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the airbag system. Failure to take the proper precautions could result in accidental airbag deployment and possible personal injury or death. Disconnect and isolate the negative battery cable. Remove the shift bezel. Remove the center bezel from the instrument panel. Remove the fasteners from the mounting brackets of the inverter module. Disconnect the electrical connectors and remove the inverter module. WARNING: Disable the airbag system before attempting any steering wheel, steering column, seat belt tensioner, side airbag, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative ground cable, then wait two minutes for the airbag system capacitor to discharge before performing further diagnosis or service. Failure to take the proper precautions could result in accidental airbag deployment and possible personal injury. Install cover to TIPM. Connect battery negative cable. Use care to properly align tab to prevent binding that could result in tab breakage. Position the right front seat to the full rearward position. Disconnect the wire harness connector 4 from the heated seat module 3. Unsnap the heated seat module retaining tab 2 from the seat pan 1. Remove the heated seat module 3 from the vehicle. Using special tool C 1 , grip the relay 2 by the sides and pull upward with an even effort. These symbols are consistent with those being used around the world. Disconnect the battery. Locate the diode in the harness, and remove the protective covering. Remove the diode from the harness, pay attention to the current flow direction 1 2 3. Remove the insulation from the wires in the harness. Only remove enough insulation to solder in the new diode. Install the new diode in the harness, making sure current flow is correct. If necessary, refer to the appropriate wiring diagram for current flow. Solder the connection together using rosin core type solder only. Do not use acid core solder. Tape the diode to the harness using electrical tape. Make sure the diode is completely sealed from the elements. Re-connect the battery and test affected systems. Follow steps for removing terminals described in the connector removal section. Cut the wire 6 inches from the back of the connector. Select a wire from the terminal repair kit that best matches the color and gage of the wire being repaired. Splice the repair wire to the wire harness see wire splicing procedure. Insert the repaired wire into the connector. Preform the repair as described below. The ABM utilizes a way electrical connector on the vehicle wiring harness. The ICU is located in the engine compartment on the inboard side of the right body frame rail behind the strut tower. For information on the ICU. It has a single electrical connector 1 and a push pin style retainer that secures it to the seat pan. The module can be accessed from under the front left seat with the seat in the full back position. The CCN receives inputs from the heated seat switches and in turn signals the heated seat module to operate the heated seat elements for both front seats. Position the connector locking finger away from the terminal using the proper special tool. Pull

on the wire to remove the terminal from the connector. Insert the removed terminal in the same cavity on the repair connector. Repeat steps for each terminal in the connector, being sure that all wires are inserted into the proper cavities. For additional connector pin-out identification, refer to the wiring diagrams. When the connector is re-assembled, the secondary terminal lock must be placed in the locked position to prevent terminal push out. Replace dress cover if applicable. In addition, SS numbers are located in the engine compartment. Multiple connectors on a component use a C1, C2, etc. If a component is most likely found in a particular group, it will be shown complete all wires, connectors, and pins within that group. For example, the Auto Shutdown Relay is most likely to be found in Powertrain Management, so it is shown there complete. It can, however, be shown partially in another group if it contains some associated wiring. Splice diagrams show the entire splice and provide references to other sections the splices serves. Splice information contains splice diagrams that are not shown in their entirety somewhere else in the wiring diagrams. Connector Pin-outs shows each connector and the circuits involved with that connector. Disconnect battery. Release Connector Lock 2. Remove the dress cover if applicable 1. Any diagnosis of the heated seat system should begin with, the use of a scan tool and the appropriate diagnostic service information. Refer to the appropriate wiring information for complete circuit schematic or connector pin-out information. NOTE: Vehicles equipped with the heated seat option utilize a low voltage cut-off feature. This feature turns off power to the heated seat system anytime vehicle voltage is below Be certain to check the vehicle electrical system for proper voltage anytime the power seat system appears inoperative. Before any testing of the heated seat system is attempted, the battery should be fully-charged. Insert the tip of a small flat bladed screwdriver into the notch 4 between the rear dome lamp lens 2 and the housing 1 on the left end of the lens. Gently pry the end of the lens outward until it unsnaps from the housing. Swing the lens outward until it is perpendicular to the housing. Pull the lamp away from the headliner mounting hole far enough to access and disconnect the wire harness connections from the back of the lamp and from the Intrusion Transceiver Module ITM. Remove the ITM from the vehicle. The normal base braking system will remain operational at that time. The ABM continuously monitors the speed of each wheel through the signals generated by the wheel speed sensors to determine if any wheel is beginning to lock. The coils then open and close the valves in the HCU that modulate brake fluid pressure in some or all of the hydraulic circuits. The ABM continues to control pressure in individual hydraulic circuits until a locking tendency is no longer present. Install the heated seat module 3 into the vehicle. Position the retaining tab 2 with the mounting hole in the seat pan 1. Firmly apply even pressure to the module 3 until the mounting tab is fully seated. Connect the wire harness connector 4 to the heated seat module 3. Check for proper heated seat system operation. Release the Secondary Terminal Lock, if required 1. The module is grounded to the body at all times through the electrical connector. Inputs to the module include Local Interface Network LIN data bus messages and standard hardwired 12 volt power and ground. In response to the LIN inputs the heated seat module will control the battery current to the appropriate heated seat elements. When a heated seat switch LIN data bus signal is received by the heated seat module, the module energizes the selected heated seat element. Pressing the switch once will select high-level heating. Pressing the switch a second time will select low-level heating. Pressing the switch a third time will shut the heating elements off. Get notified when we add a new Jeep Compass Manual Notify me. Get notified when we add a new JeepCompass Manual, Notify me. We cover 60 Jeep vehicles, were you looking for one of these? Thanks for visiting my little site! Can you help keep us online? Or add your coupon if you have it? Thank you for visiting OnlyManuals. Those who explored and mapped out our great nation had no GPS, only the maps they made and a compass to guide them. Knowing how to use a compass, map and basic navigational skills will make getting lost far more difficult and make it easy to find the way home when the GPS decides to get lost or stop working. Maps should be cared for by placing them in a ziplock bag or map case and by covering with a waterproof coating or material. Maps that are made from waterproof paper can be purchased. Maps come in several different scales, Scale is represented by two numbers such as , This means that 1 cm on the map represents 50, cm metres on the ground. The higher the second number the larger an area the map shows. For example a , scale map will show a smaller area in greater detail than a , scale map. For general wilderness navigation a , map is a popular choice but if exploring a small area a , or , map are good choices as well. Maps downloaded online can be printed to show only the area required, but care must be taken to make sure the scale does not change during the printing process. To measure distance using the scale, simply place a piece of paper along the intended route, then mark on the paper the start point and destination. Line up the start point at zero on the map scale, then find which distance the destination lines up with. If the destination goes beyond the scale then use the scale to place a mark on the paper every kilometre until reaching the

destination on the paper. The first section of the scale will be in hundreds of meters to help in measuring part kilometres. Topographic maps contain brown lines that represent changes in the elevation of the ground. These are referred to as contour lines, and are used to demonstrate what three dimensional terrain will look like using only two dimensions. The closer together contour lines are the steeper the slope and the further apart the lines are the gentler the slope. Elevation will be indicated along some contour lines and at points on the map such as peaks. With practice and experience it is possible to visualize accurately how the terrain will look by just looking at the contour lines and it is important to pay attention to contour lines when planning a route. Pay attention to the counter interval, which is the difference in elevation between the lines. This will bring a greater understanding of the changes in elevation along a route. A declination diagram can be found on maps and looks like the one shown. Magnetic declination is the difference between true north and magnetic north and is absolutely essential to map and compass navigation. Declination must be accounted for by either adding or subtracting it from bearings or by using a compass with adjustable declination. It is preferable to use a compass with adjustable declination because this virtually eliminates mathematical errors in determining bearings. Determining declination and adjusting the compass will be covered in the next section. There are many different styles of compass, but for the average outdoor adventurer either a baseplate compass or a sighting compass are more than sufficient. A sighting compass with a rotating bezel and adjustable declination will make navigation more accurate, especially when dead reckoning or doing a resection. Personally I use a Silva Ranger model , which is a good compass at an affordable price. When it comes to purchasing a compass, it is best to purchase the highest quality compass budget will allow for, after all this is the tool that will make travel in the woods as precise as possible. Taking proper care of a compass will result in decades of service. The first step is to set the declination provided the compass used has adjustable declination. This means current declination needs to be calculated mathematically. To determine declination as of today, multiply the annual change by the number of years old the map is and either add or subtract it from the declination listed on the map according to whether the change is increasing or decreasing. Usually declination will be represented in degrees, while the rate of change is represented in minutes so when doing the math it is important to remember that one degree has 60 minutes. An example for determining declination would proceed as follows:. Before using a compass to navigate, note the orienteering arrow, which is normally red in colour, and the north half of the magnetic needle, which is also red in colour. When adjusting declination the orienteering arrow will move showing the offset between true north and magnetic north. When north on the bezel is at the index point and the red north end of the magnetic needle is inside the orienteering arrow, the compass is now pointing at true north. To take a bearing from the map, first orientate the map to the ground. Rotate the bezel until north is at the index point, then lay the map and compass on the ground. Align the edge of the compass with the edge of the map or the north south grid lines with the meridian lines inside the bezel and rotate the map and compass together until you have red in the bed. The map is now orientated to the ground. To take a bearing from the map place the bottom corner of the compass on the start point and line up the destination with the same edge ensuring the compass points in direction of travel. Rotate the bezel to get red in the bed and then read the bearing at the index point. It is critical that the compass point in the direction of travel. To orientate the compass to a bearing, either take the bearing off the map or turn the bezel until it reads the correct bearing at the index point. The compass is then brought up to eye level with the sighting mirror tilted at an angle to see when red in the bed has been established. Turn around with the compass until seeing red in the bed, the compass is now orientated to that bearing. To shoot a bearing off of an object, tilt the mirror to be able to see red in the bed and bring to eye level like before. Aim the compass at an object using the sight then rotate the bezel until red in the bed is established. The bearing at the index point is the bearing to that object. Pace counting is used to determine distance by counting paces. The key is to know the number of paces in meters of travel. This is done by counting every time the right foot strikes the ground while walking meters on flat ground, this number will be different for every person and will change based on terrain. With experience and practice the pace count can be adjusted mentally to account for terrain. Pace beads also know as ranger beads are used to keep track of pace count. Pace beads two sets of beads on a piece of cord. Every time meters has been travelled, slide one of the nine beads down, and at one kilometre slide down one of the five beads. This way the possibility for error in trying to maintain a count over long distance is minimized, because the pace beads act as a reference. A good place to keep pace beads is attached to the compass, in place of a lanyard. Dead reckoning uses a bearing and distance taken from a map and allows a person to travel along that bearing while pace counting from point A to B without actually seeing the destination. Once a bearing has been transferred from

the map to the compass, look through the compass sight, turning around until red is in the bed. Using the sights, find an object in the distance that can be walked to. Travel to that object, keeping track of the pace count and repeat the process until destination has been reached. Never attempt to navigate by holding the compass and walking at the same time, the movement of walking will throw the needle off and result in flawed navigation. A baseline is a straight terrain feature such as a road where navigation will start. This should run perpendicular to direction of travel so that no matter where you are traveling in the area, is it is possible to walk along a predetermined bearing to return to it. Handrails are a terrain feature that runs in the direction of travel. For example, a pipeline, river, road, power lines or any other easily distinguishable feature can be used as a handrail. Handrails are used by either walking in the same direction as them while keeping them in sight or actually walking along them. A backstop is a terrain feature that again runs perpendicular to travel and is used to denote when travel has gone too far. Using a backstop is handy so that the distance required to backtrack to find a point can be kept to a minimum and also to remove guesswork in whether or not a point has indeed been missed. There are times when missing a point on a linear terrain feature, even by a small margin of error, will result in walking straight past it. For example, navigating to a sharp bend in a road or river. Aiming off is used to intentionally navigate to one side of the point knowing that once reaching this feature turning left or right depending on which direction the aiming off was taken will lead straight to the desired point. This way when reaching the river simply turning either left or right depending on which direction was used to aim off it is easy to walk straight towards the bend without having to guess which way to go. A resection uses triangulation to determine a location on a map. By knowing at least two terrain features, a location can be easily determined. First orientate the map to the ground. Then find a known terrain feature and shoot a bearing on it. Transfer that bearing to the map by placing the top corner of the compass on the terrain feature used on the map and rotating the compass around that point, getting red in the bed. Draw a line down the side of the compass and repeat for all known terrain features. If multiple features are used then where those lines intersect is the current location. If only one is used then the location is located at some point on that line. Before leaving civilization, making note of baselines or handrails that can be used to navigate to safety if lost and unable to do a resection. For example, knowing that there is a highway that runs north-south situated to the east, means that to reach civilization requires only to walk in a straight line to the east. Even with lateral drift the highway will still be reached because as long as the direction of travel is generally east then the highway will act as a backstop and be easily found. There are many ways to navigate without a compass but the best way to return to civilization in an emergency is to always have at least two backup compasses. Have a button compass on a watchband or paracord bracelet and another inexpensive compass in a zippered pocket. For good measure, a magnetized needle taped to a knife sheath is a good last resort. The most important step to becoming proficient in map and compass navigation is to practice and gain confidence not only in ability, but also in equipment. This was just the barest of essentials and there are many resources online and in books to aide in improving navigation skills. So put the GPS away, and get back to basics. Necessary cookies are absolutely essential for the website to function properly. This category only includes cookies that ensures basic functionalities and security features of the website. These cookies do not store any personal information. Any cookies that may not be particularly necessary for the website to function and is used specifically to collect user personal data via analytics, ads, other embedded contents are termed as non-necessary cookies. It is mandatory to procure user consent prior

acura tl service manual
2006 ford taurus belt diagram
jeep grand cherokee headlight bulb replacement

to running these cookies on your website. Start typing to see results or hit ESC to close. See all results. You will be sent an opt-in email to confirm that you would like to receive emails from us. We use cookies on our website to give you the most relevant experience by remembering your preferences and repeat visits. Do not sell my personal information. Manage consent. Close Privacy Overview This website uses cookies to improve your experience while you navigate through the website. Out of these, the cookies that are categorized as necessary are stored on your browser as they are essential for the working of basic functionalities of the website. We also use third-party cookies that help us analyze and understand how you use this website. These cookies will be stored in your browser only with your consent. You also have the option to opt-out of these cookies. But opting out of some of these cookies may affect your browsing experience. Necessary Necessary. Non-necessary Non-necessary.