Map & Compass 101

• Parts & Pieces
Map & Compass 101
Reading a Compass

- Needle **ALWAYS** points North
  - If you’re north of the equator, face the sun at lunchtime; whichever end of your compass needle points to the sun is South & the end that points to you is North
- Hold steady & level
- Direction of Travel arrow points straight away from you
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Reading a Compass

- Try This:
- Stand so your compass looks like this:

Which way are you pointing?

Now Turn your body so your compass looks like this:

Which way is the Compass pointing?
...East?

Nope! Gotta put “red in the shed”

We’re really heading (pointing) West
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Finding Your Way

• Taking a bearing
  - The direction you’re going is your HEADING
  - A BEARING is a HEADING you want to follow to go to a certain place
  - Heading and Bearing are pretty much the same thing; here’s a heading/bearing of about 250 degrees:

Try a few bearings:

040°, 120°, 245°, 330°
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Finding your Way – Map Basics

- Reading a Map – Scales & Symbols – **Topo Charts!!**
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Finding your Way - Map Basics

- Topo Charts - some more details
Map & Compass 101 – Using your Map

- Declination – or “Mag North ain’t True”
  - Maps and Charts are printed with TRUE NORTH UP
  - But a Compass works in MAGNETIC - so we have to correct for Declination
  - “East is Least, West is Best” – Learn it, Live it, Love it!!
    - Set it and forget it … or...Mental Math: Add West, Subtract East

Declination 12° East

Try this:
Say you measure a course on your map of 020° from Point A to Point B

If the Declination is 5° East, what Magnetic bearing or heading do you need to take to get from A to B?

What if Declination is 5° West?
Map & Compass 101 - Setting & Reading Headings

• Step by Step 1 - 2 - 3

1 - set your map on the ground; find where U are and where U want to go

2 - set your compass edge along a straight line from where U are to where U want to go

3 - turn the compass dial until The Orienteering lines are Parallel to the North / South Meridian lines on the map. Now you've taken a bearing! The direction you need to go to Get to the mountain is about 85°. That's all there is to it!!
Map & Compass 101 – Orienting Your Map

• Step by Step 1 - 2 - 3

1 - set your map on the ground; turn your *declination adjusted* compass dial so due North is at the index pointer

2 - place your compass on the map with the Edge of the baseplate parallel to the North South meridians on the map

3 - turn the map and compass together until the compass needle is “boxed” (*red in shed*)

That’s it! You’re oriented!
Where am I? How about a little practice?

- You're somewhere along the ridgeline... but where?

- You see 3 mountains in the distance

- First, you orient your map

- Then you take bearings to the mountains and get:
  - $016^\circ$ to Mt. Norris
  - $048^\circ$ to Cache Mountain
  - $112^\circ$ to Saddle Mountain

So you're about here
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Azimuth

An azimuth is an angular measurement in a spherical coordinate system. The vector from an observer (origin) to a point of interest is projected perpendicularly onto a reference plane; the angle between the projected vector and the reference vector on the reference plane is called the azimuth.

An example of an azimuth is the measurement of the position of a star in the sky. The star is the point of interest, the reference plane is the horizon or the surface of the sea, and the reference vector points to the north. The azimuth is the angle between the north point and the perpendicular projection of the star down onto the horizon (see diagram below).
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Azimuth

• Azimuth is usually measured in degrees (°), though other angular units (grad, mil) can also be employed.

• In land navigation, an azimuth is defined as a horizontal angle measured clockwise from a north base line or meridian. Azimuth has also been more generally defined as a horizontal angle measured clockwise from any fixed reference plane or easily established base direction line.

• Today, the reference plane for an azimuth in a general navigational context is typically true north, measured as a 0° azimuth. For example, moving clockwise on a 360° degree circle, a point due east would have an azimuth of 90°, south 180°, and west 270°. The azimuth cannot exceed the highest number of units in a circle - for a 360° circle, this is 359 degrees, 59 minutes, 59 seconds (359° 59' 59'').