# Map Reading & Compass Basics

A Practical Guide to Navigating with Confidence

## Why Learn Map Reading?

- Digital GPS tools can fail.

- Knowing how to read a map and use a compass is a critical skill for hiking, emergency response, orienteering, and outdoor safety.

- Builds confidence and independence.

## What Is a Compass?

- A compass is a magnetic navigation tool that shows direction.

- It always points to Magnetic North.

- Key parts:

  - Baseplate
  - Magnetic needle
  - Rotating bezel (azimuth ring)
  - Direction-of-travel arrow
  - Orienting arrow/lines

## The Cardinal Directions

- The four cardinal directions: North, East, South, and West

- Intercardinal (Intermediate): NE, SE, SW, NW

- Degrees: Full circle = 360°

  - North = 0°/360°
  - East = 90°
  - South = 180°
  - West = 270°

## How to Use a Compass

Step-by-Step:

1. Hold flat in your hand at waist level.

2. Turn your body until the needle aligns with North (red in the shed).

3. Rotate bezel to set direction (bearing).

4. Use the direction-of-travel arrow to walk a straight line.

## What Is a Map?

- A map is a scaled-down representation of the Earth's surface.

- Types: Road maps, topographic maps, nautical charts, etc.

- Key elements:

  • Title

  • Legend (key)

  • Scale

  • North arrow

  • Grid lines

| 🔺 | Mountain Peak / Elevation |

| 🌲 | Forested Area |

| ▭ | Building / Structure |

| — — — — | Trail or Footpath |

| ▬▬▬▬ | Paved Road |

| ▒▒▒▒ | Marsh / Swamp |

| ▇▇▇▇ | Urban / Developed Area |

| 🔵 | Water Feature (Lake/Pond) |

| ➤ | Direction of Travel |

| 🧭 N | True North Arrow |

## Map Scale & Symbols

- Scale shows the ratio of map distance to real distance (e.g., 1:24,000)

- Symbols represent features: trails, water, elevation, roads, etc.

- Contour lines indicate elevation and terrain features.

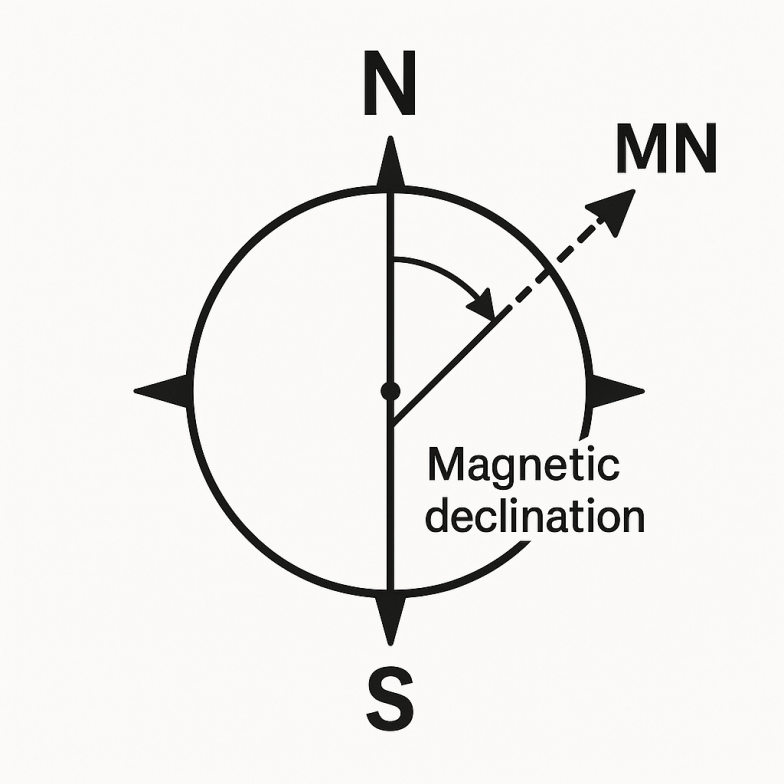
Tip: Close contour lines = steep terrain; wide apart = gentle slope.

## Map Orientation and North

- Most maps are oriented to true north

- Magnetic north differs — adjust using declination

- Orienting the map: use compass to align map north with magnetic north



## Combining Map and Compass

Steps to Find Your Way:

1. Orient map to north with compass.

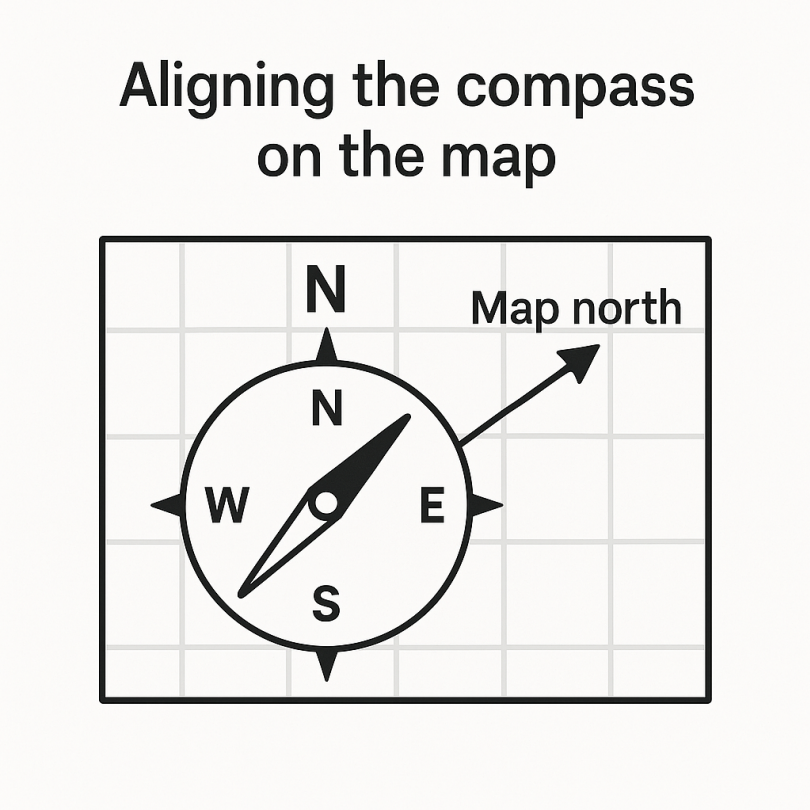
2. Find your location and destination on the map.

3. Place edge of compass from point A to B.

4. Rotate bezel to align orienting lines with map north.

5. Read bearing, follow direction-of-travel arrow.

Tip: Practice in a familiar area first.




With the compass stationary, rotate the map to match the direction of north on the compass.

## Final Tips & Practice

- Practice regularly.

- Always carry a physical map and compass outdoors.

- Know how to estimate distance and recognize landmarks.

## Upcoming Land Navigation / Fieldcraft Topics

1. **Pace Count**
    - Measuring your steps over 100m
    - Adjusting for terrain
    - Using ranger beads or tally counters
2. **Shooting an Azimuth**
    - Using a compass to find direction
    - Converting between grid and magnetic azimuths
    - Maintaining a bearing while moving
3. **Triangulation**
    - Determining your location using known points
    - Resection techniques
    - Cross-bearing from unknown point

**Follow-on and Supporting Topics**

4. **Orienting a Map**
    - With compass and terrain features
    - Using declination diagram

5. **Map Symbols and Legend Interpretation**
    - Understanding contour lines, terrain features
    - Identifying manmade vs natural features
6. **Land Navigation at Night**
    - Red lens discipline
    - Silent movement and checkpoints
7. **Plotting and Measuring Distances**
    - Using a protractor or grid reader
    - Scaling distances with the map's bar scale
8. **Dead Reckoning vs Terrain Association**
    - Pros and cons
    - When to use each
9. **Back Azimuths**
    - How to find your reverse direction
    - Practical field use for return navigation
10. **Navigation in Restricted Visibility**

- Fog, rain, dense woods
- Use of sound and touch

11. **Navigating Around Obstacles**

- 90-degree offset technique
- Drift and correction on detours

12. **Using GPS with Map and Compass**

- Integrating modern tools
- GPS failure planning

13. **Navigational Error Correction**

- Relocation techniques
- Box or sweep search

14. **Building a Route Plan / Strip Map**

- Segmenting legs, noting hazards and checkpoints

15. **Calling a 9-Line or Giving Grid Coordinates**

- Military grid reference system (MGRS)