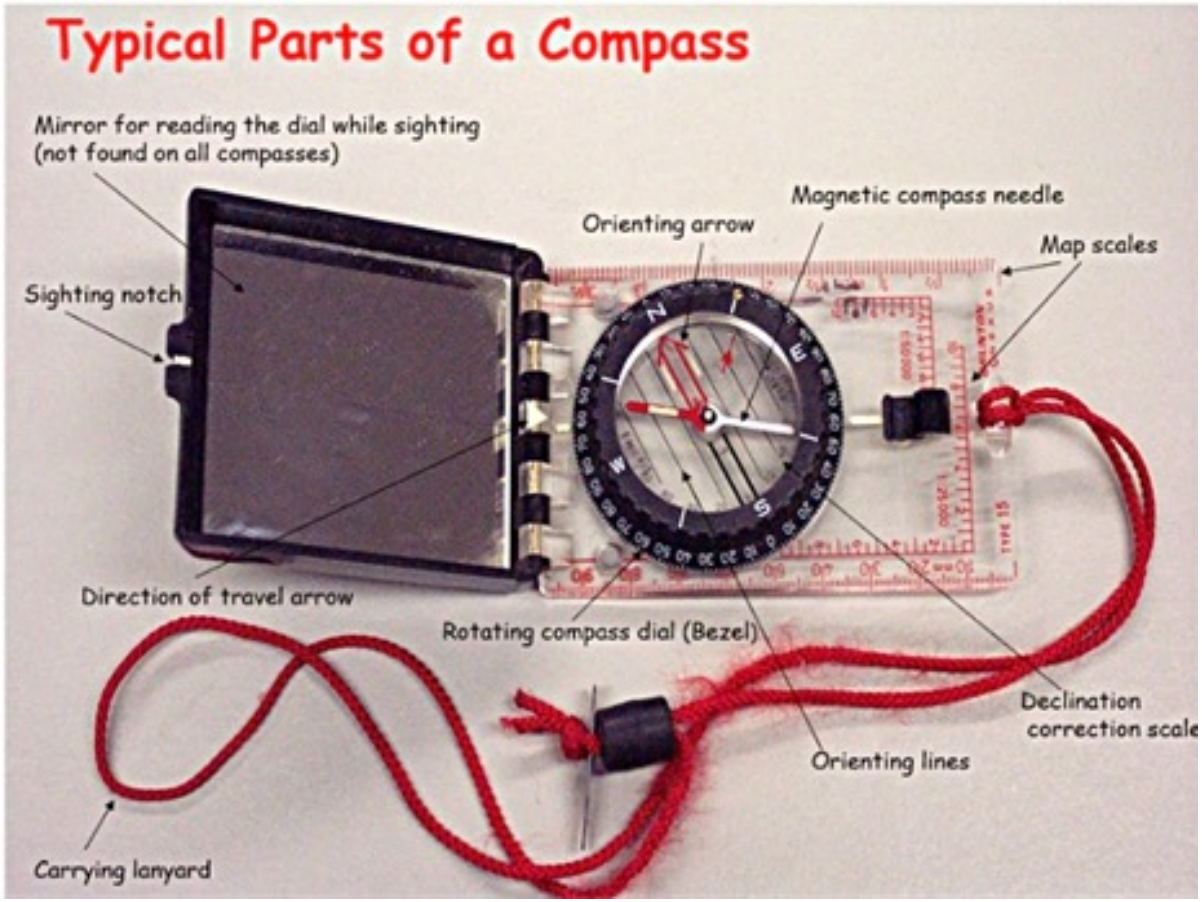
NAVIGATION

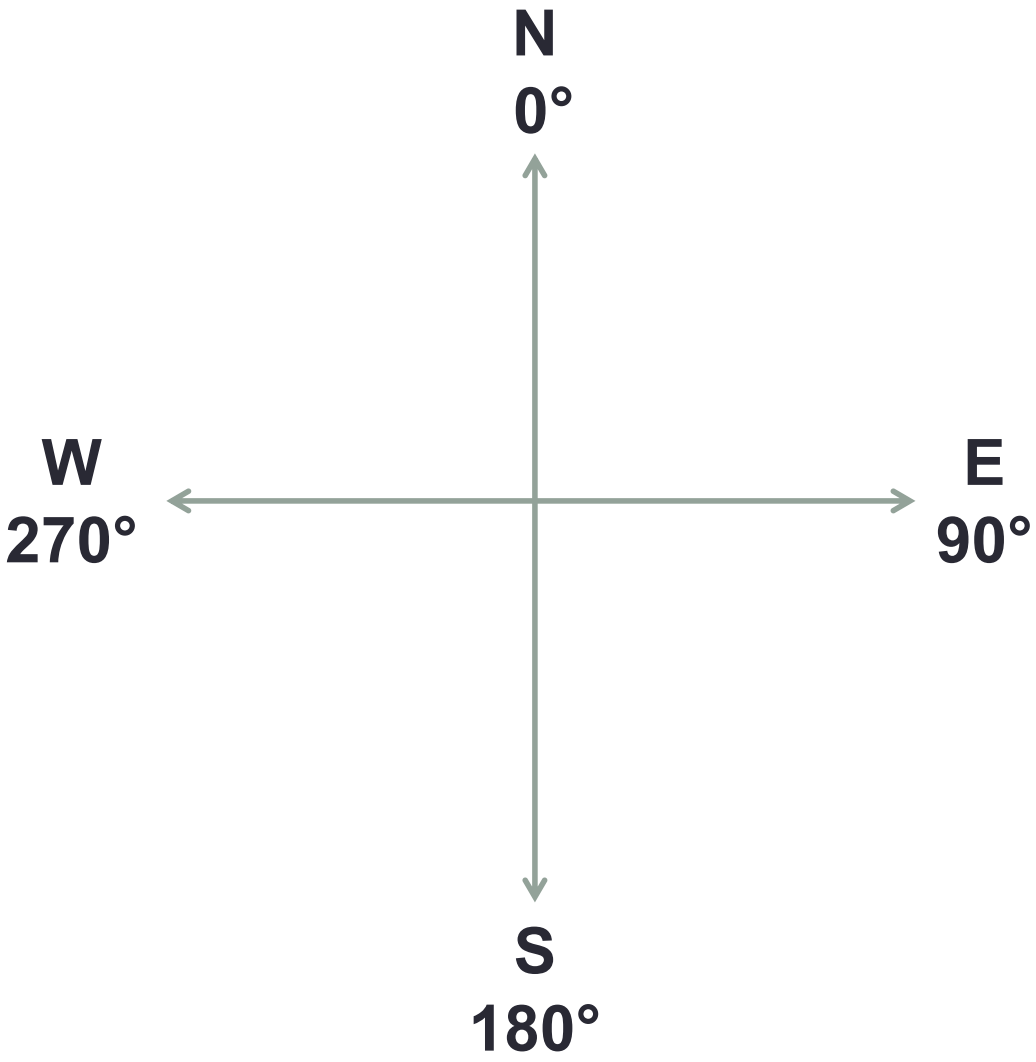
SECTION II-E

- **Compass**

COMPASS


Typical Parts of a Compass
Mirror for reading the dial while sighting
(not found on all compasses)
Magnetic compass needle
Orienting arrow
Map scales
Sighting notch
Direction of travel arrow
Rotating compass dial (Bezel)
Declination
correction scale
Orienting lines
Carrying lanyard

CARDINAL DIRECTIONS

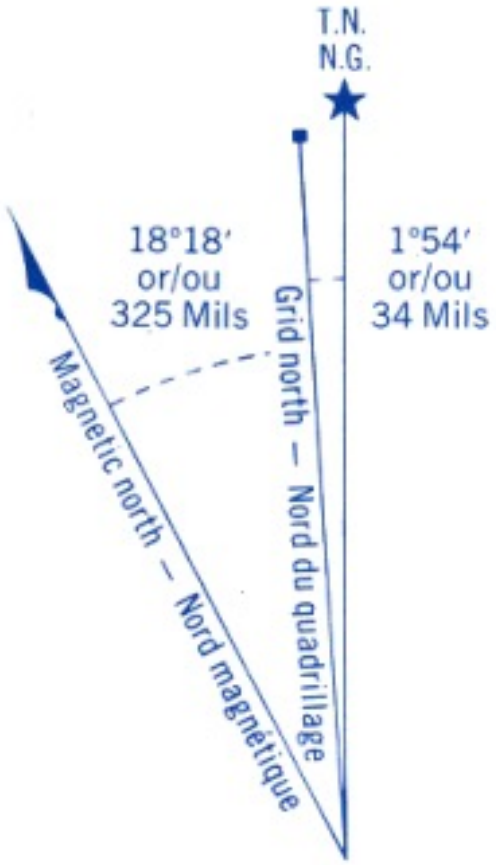


TYPES OF NORTH

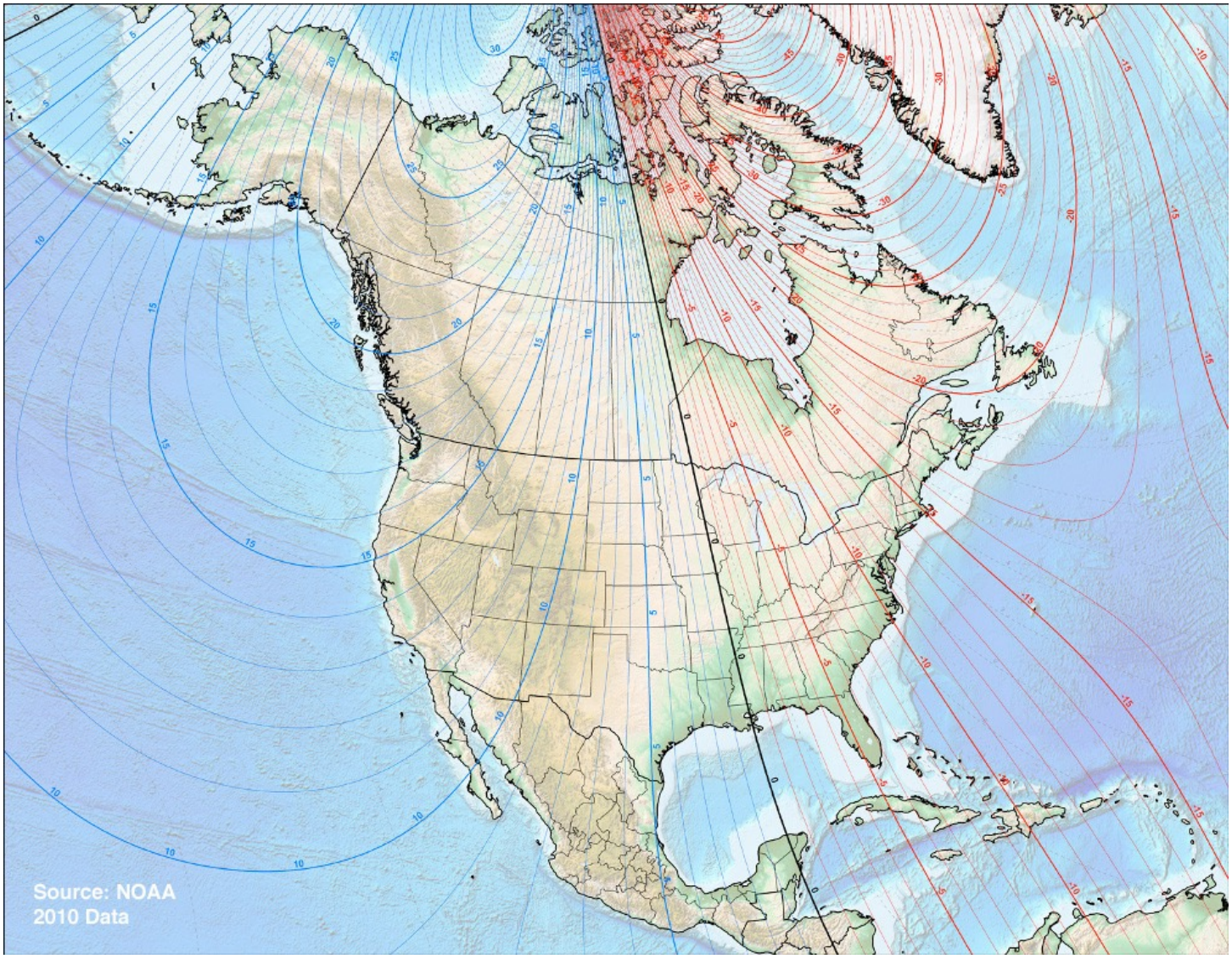
True North
The direction toward the geographic north pole

Grid North
The upward direction on a map

Magnetic North
The direction your compass needle points

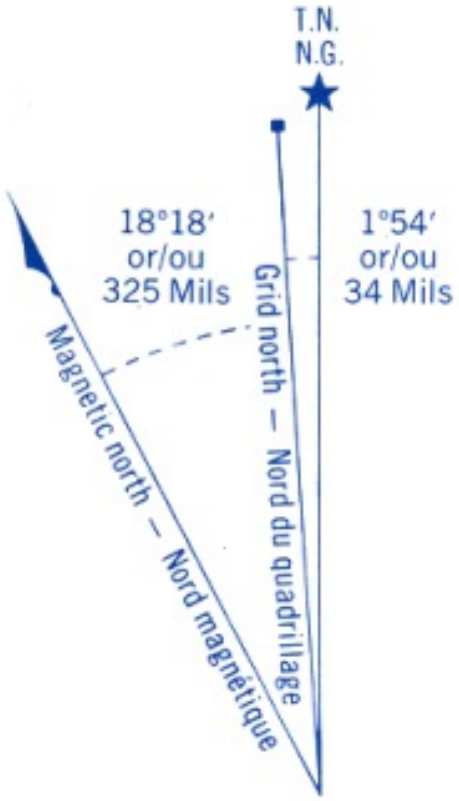


MAGNETIC NORTH



DECLINATION

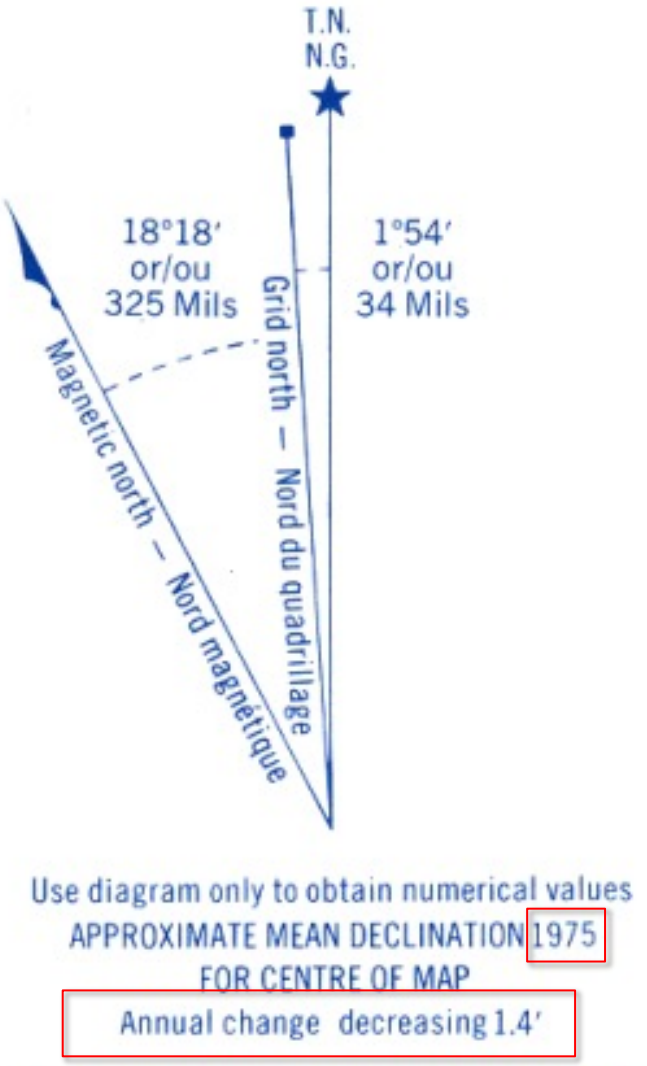
Angular difference between magnetic north and true north



DECLINATION

Location of magnetic north changes over time as the earth's magnetic field shifts.

Maps provide the declination for a specific year and its annual change so you can calculate the current declination



DECLINATION

Applying Declination:

"Declination East, Magnetic Least"

- Magnetic reading is LESS than the true reading

"Declination West, Magnetic Best"

- Magnetic reading is GREATER than the true reading

e.g. Saskatoon's declination is 10°E, so a compass in Saskatoon will give a magnetic reading of 10° less than the true direction.
-- So if a compass in Saskatoon reads 120°, the true reading is 130°

USING A COMPASS

Compass Skills:

- Determining direction on a map
- Shooting a bearing
- Taking a bearing
- Finding a back bearing

DETERMINING DIRECTION (MAP)

Determining direction with a compass on a map:

- Draw line from point A to B and place the long edge of your compass on that line
- Align orienting lines with the map's vertical grid lines by turning the bezel
- Read the angle now indicated on your compass

(indicated by the direction of travel arrow or the index line, not by the magnetic needle)

HOLDING A COMPASS

- Hold away from body (and not in your watch hand!)
- Hold level so needle spins freely

- Hold at eye level so you can see through the sighting hole
- Adjust the mirror so that you can see the needle

SHOOTING A BEARING

Using your compass to travel in a specific direction

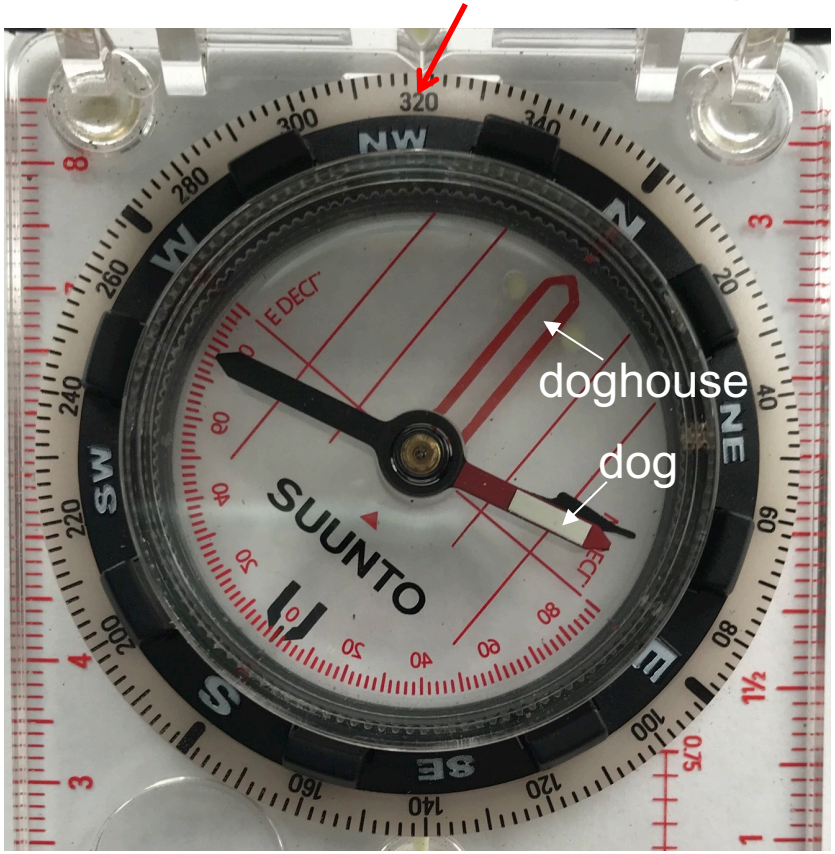
Examples of use:

- Navigate to a point that is located some distance away from you in a known direction (e.g. bearing of 320°)
- Need to search your area from North to South, travelling in a straight line (i.e. stay on a bearing of 180°)

SHOOTING A BEARING

"Put the dog in the dog house"

1. Turn bezel to desired bearing



2. Turn **your body** until the magnetic needle is within the orienting arrow

3. Look through the sighting hole in the lid of your compass – find a landmark you can see through the hole – walk to that landmark and shoot the bearing again

TAKING A BEARING

Using your compass to measure what direction you're facing/travelling

Examples of use:

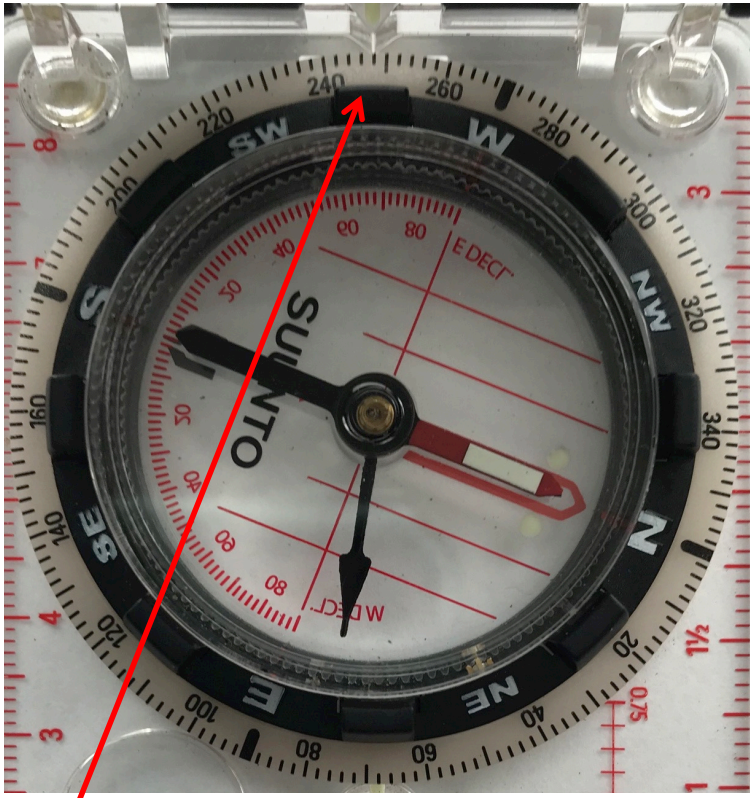
- You need to determine what direction a visible landmark is in relation to your location
- You need to know what direction you're travelling in right now so you can navigate back to your starting point later

TAKING A BEARING

"Put the dog house over the dog"

1. Hold compass in direction of travel

2. Turn **bezel** until the magnetic needle is inside the orienting arrow



3. Read the bearing at the top (248°)

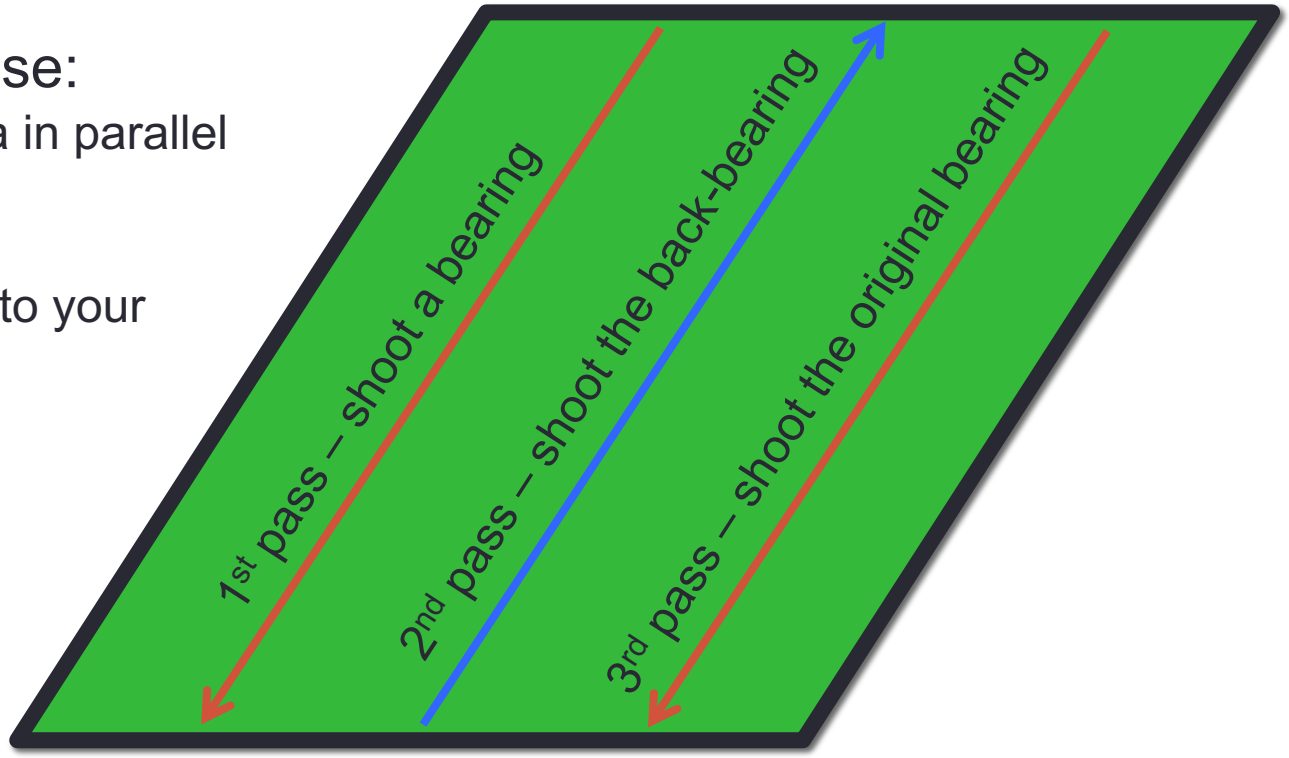
BACK BEARING

The exact opposite direction of a bearing

e.g. the back bearing of 0° is 180°

Examples of use:

- search an area in parallel passes
- navigate back to your starting point



BACK BEARING

Finding a back bearing:

Math

- add or subtract 180°

(answer between 0° and 360°)

25° + 180° = 205°

260° - 180° = 80°

Visual

- directly opposite the bearing on the bezel

BACK BEARING

Using other tools

- GPS track
- flagging tape