



Direct Bearing Network Resource

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Contact Information

Publisher

Direct Bearing Incorporated

7466 River Road, RR1

Palmer Rapids, ON

K0J 2E0 Canada

Email: publisher@directbearing.ca

The Direct Bearing Network



The Direct Bearing Network represents a group of people responsible for risk management in their organizations.

Members gain access to risk management related articles, studies, tools, templates and links to quality resources that have been vetted by the Direct Bearing Team.

The Network also serves to put you in touch with other people working in similar areas with challenges not unlike your own.

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Navigation Tips

COORDINATES – LOCATION

Precise locations on a map are identified by coordinates. A coordinate is the intersection of a horizontal (East–West) with vertical (North–South) grid line. The point of intersection can be expressed in latitude and longitude (degrees and decimal minutes) or in UTM (Universal Transverse Mercator).

Both systems divide the globe into sections using vertical lines between the north and south poles and horizontal lines parallel to the equator.

Longitude/Latitude

Latitude is divided into 90 degrees north and 90 degrees south of the equator. Longitude divides the world vertically into 360 units or degrees, 180° west and 180° east of the Prime Meridian. Therefore North America latitude is north of the equator and longitude is west of Prime Meridian.

At each corner of the map the point of intersection is described in degrees and minutes.

E.g. latitude = North 46°15' longitude = West 76°30'. The four corners indicate the area of the world the map represents. Along each axis is a black and white bar graph. Each bar represents 1 minute. One minute of latitude is 1.85km. One minute of longitude is 1.85 km at the equator only. One degree is made of 60 minutes.

There are no grid lines on the map representing latitude and longitude. To be precise grid lines should be drawn on the map to find the point of intersection and minutes should be given as a decimal, e.g. latitude 46°15.00' longitude 76°30.00'.

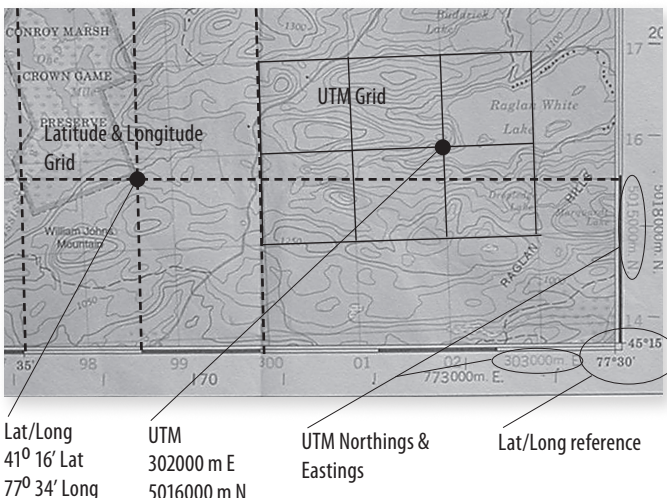
Always give latitude first followed by longitude. Go up the stairs for latitude then across the room for longitude.

UTM (Universal Transverse Mercator)

The UTM system divides the world into 60 zones. Each zone represents an area 889km by 708km. North America is covered by zones 8 to 19 going from west to east. South to north the zones are lettered. The grid zone destination is indicated half way up the right hand side of the topographic map, e.g. Zone 18T

The blue grid (UTM) lines divide the map horizontally and vertically. The lines that run south to north are called eastings and the lines that run west to east are called northings. The vertical lines (eastings) are numbered in the top and bottom margins of the map and the horizontal lines (northings) are numbered up the sides of the map. The Easting reference has six (6) numbers and the Northing has seven (7) numbers, e.g. UTM 18T Easting = E 345000 Northing = N 5069000.

Each blue square is 1 km by 1 km or 1000m by 1000m. If the point of intersection is in the square, then each axis of the square is divided into ten units (10ths) to generate a more precise point e.g. UTM 18T Easting = E 345500 Northing = N 5069700.

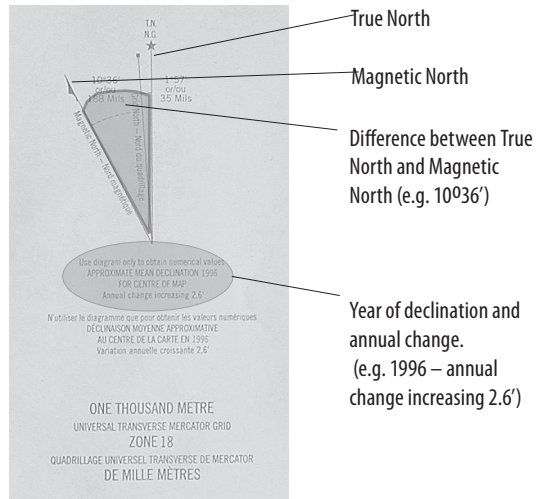


DECLINATION DIAGRAM

The diagram indicates that the declination for this map was $10^{\circ}36'$ in 1996. Let's assume it is now 2006. We need to calculate an adjustment of 2.6' per year since 1996.

$10 \text{ years} \times 2.6' = 26'$ therefore, $10^{\circ}36' + 0^{\circ}26' = 11^{\circ}02'$ (there are 60 seconds in one degree). The declination for this map is currently $11^{\circ}02'$ W.

('W' represents West because Magnetic North is situated West of True North. Therefore, you need to adjust your calculations to take into account your compass points $11^{\circ}02'$ further West of True North.)



TAKING A BEARING FROM THE MAP

Place the long edge of the compass baseplate on the starting point (A) and the destination target (B) with the direction of travel arrow pointing towards the target (picture 1&2).

Turn the compass housing until the orienting arrow is pointing to the top of the map and the orienting or meridian lines are parallel or on top of the map grid lines (picture 3&4).

Add the magnetic declination value to the bearing reading at the bearing marker if the magnetic needle is being deflected to the west. Subtract if the deflection is to the east (picture 5&6).

