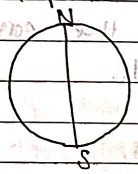
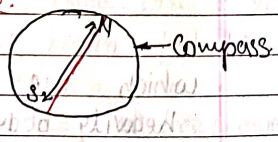
6) Hydrological survey :- Survey under the water (sea water) is known as Hydrological survey.

Compass survey

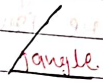
1) Meridian :- It is a line joining the North and South pole is known as Meridian.



2) True Meridian :- Line joining the North and South pole through the observered point is known as true meridian.
   1) It is fixed.
3) Magnetic Meridian :- In compass survey the parallel line of Needle North and south is known as Magnetic Meridian.
   1) It is variable.

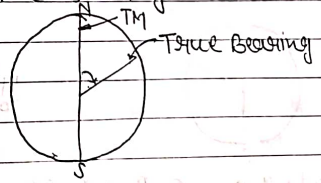


1) Angle :- It is direction between any two line is known as Angle.

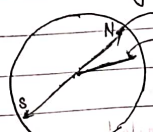


2) Bearing :- It is the Direction of any line from the meridian is known as Bearing.

3) True bearing :- Direction of any line from true meridian is known as True bearing.

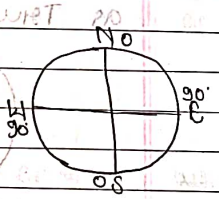
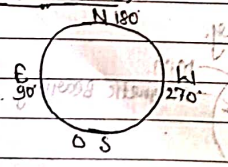
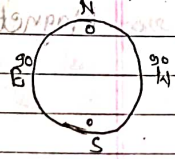


4) Magnetic bearing :- Direction of any line from magnetic meridian is known as Magnetic bearing.



Compass survey:- All the measurement is in only magnetic bearing. We can not measure True Bearing.

Compass

Prismatic compass	Surveyor compass
⇒ Graduated ring attached to the needle.	⇒ Graduated ring is attached to the bore.
⇒ Tripod Not required	⇒ Tripod required.
⇒ It works on Whole circle bearing (WCB).	⇒ It works on Quadratic Bearing (Q.B.)
⇒ Least count (L.C.) = 30' (30 minutes)	⇒ Least count (L.C.) = 15' (15 minutes)
⇒ In WCB we measure (angle) bearing of any line from North direction and clock wise.	⇒ In QB we measure angle either from North or from south.
	
⇒ Reading ⇒ N→0, E→90°, S→180°, W→270°	⇒ Reading ⇒ N→0, E→90°, S→0°, W→90°
⇒ Graduation ⇒	⇒ Graduation ⇒
	
⇒ Ingraved and inverted	⇒ Ingraved and erroected.
⇒ Broad needle is used.	⇒ Edge bar needle is

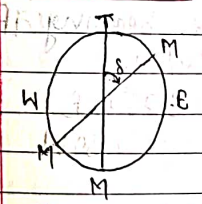
Conversion of W.C.B. to Q.B. ⇒

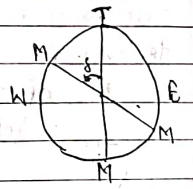
	W.C.B.	Q.B.
a]	35°30'	N 35°30' E QB = WCB.
b]	110°30'	QB = 180 - WCB = 180 - 110°30' = 69°30' = S 69°30' E
c]	190°30'	QB = WCB - 180° = 190°30' - 180° = 10°30' = S 10°30' W
d]	280°30'	QB = 360° - WCB = 360° - 280°30' = 79°30' = N 79°30' W

Q.B. S 10°30' W

W.C.B.
WCB = 180° + QB = 180° + 10°30' = 190°30'

Declination (Magnetic declination) ⇒





⇒ Eastward declination ⇒ Westward declination

So Declination is the angle between true meridian and Magnetic meridian.

$$TB = MB \pm \delta$$

TB → True Bearing.
MB → Magnetic Bearing.
δ → Declination.
+ is use when declination East
− is use when declination West

NOTE:- This formula is applicable for only W.C.B.

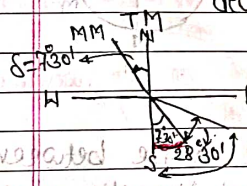
⇒ For Q.B. the true Bearing can be determine by ploting actual diagram.

Que.⇒

MB	declination	T.B.
40°30'	6°30' E	40°30'+6°30' = 47°
55°30'	4°30' E	55°30'+4°30' = 60° Ans
320°30'	2°30' W	320°30'-2°30' = 318°

Que.⇒ Magnetic bearing of a line is S28°30'E calculate the true bearing if the declination is 7°30' W.

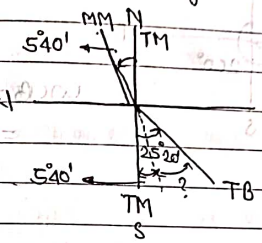
Sol.⇒ MB of a line → S 28°30' E
declination δ → 7°30' W



TB = 28°30' + 7°30'
TB = 36° Ans.

Que.⇒ If the declination is 5°40' W and the True bearing of the line is S25°20'E, Determine Magnetic Bearing of line.

Sol.⇒

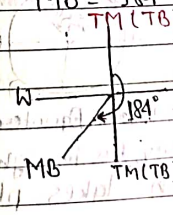


So MB = 25°20' − 5°40'
= 19°40'
= S19°40'E Ans.

13/05/2016

Que.⇒ Determine the declination at a place if the magnetic bearing of the SUN at noon is 184°.

Sol.⇒ MB = 184° δ = ?



At noon TB of the SUN = 0° or 180°

δ = 184° − 180° or 180° − 184°
δ = 4° W Ans.