



# **Compass Surveying Formulas**

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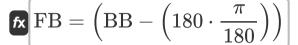




# **List of 10 Compass Surveying Formulas**

# Compass Surveying

1) Fore Bearing in Whole Circle Bearing System



Open Calculator

$$\texttt{ex} \left[ 50.85841 \mathrm{rad} = \left( 54 \mathrm{rad} - \left( 180 \cdot \frac{\pi}{180} \right) \right) \right]$$

2) Included Angle from Two Lines

$$\int \mathbf{f} \mathbf{x} \, \theta = \alpha - \beta$$

Open Calculator

ex 
$$60\degree=90\degree-30\degree$$

3) Included Angle when Bearings are Measured in Opposite Side of Common Meridian

fx 
$$\theta' = \beta + \alpha$$

Open Calculator

ex 
$$120\degree=30\degree+90\degree$$



# 4) Included Angle when Bearings are Measured in Same Side of Different Meridian

 $\theta = \left(180 \cdot \frac{\pi}{180}\right) - (\alpha + \beta)$ 

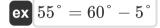
Open Calculator 🚰

$$oldsymbol{\mathsf{ex}} 60^\circ = \left(180 \cdot rac{\pi}{180}
ight) - \left(90^\circ + 30^\circ
ight)$$

## 5) Magnetic Bearing given True Bearing with East Declination

MB = TB - MD

Open Calculator



## 6) Magnetic Bearing given True Bearing with West Declination

fx MB = TB + MD

Open Calculator

 $oxed{ex}65\degree=60\degree+5\degree$ 

#### 7) Magnetic Declination to East 🖸

MD = TB - MB

Open Calculator

 $oxed{ex}5^{\circ}=60^{\circ}-55^{\circ}$ 

### 8) Magnetic Declination to West

fxMD = MB - TB

Open Calculator

 $oldsymbol{\mathsf{ex}}$  -5 $^\circ$  =  $55^\circ$  -  $60^\circ$ 







### 9) True Bearing if Declination is in East

TB = MB + MD

Open Calculator 🗗

- $oldsymbol{\mathsf{ex}} oldsymbol{60} \circ = 55 \circ + 5 \circ$
- 10) True Bearing if Declination is in West



 $oxed{ex} 50\degree = 55\degree - 5\degree$ 

Open Calculator 🗗



#### Variables Used

- **BB** Back Bearing (Radian)
- **FB** Fore Bearing (Radian)
- MB Magnetic Bearing (Degree)
- MD Magnetic Declination (Degree)
- **TB** True Bearing (Degree)
- α Fore Bearing of Previous Line (Degree)
- β Back Bearing of Previous Line (Degree)
- θ Included Angle (Degree)
- **0** Included Angle when Bearings are in Opposite Side (*Degree*)





## Constants, Functions, Measurements used

- Constant: pi, 3.14159265358979323846264338327950288
  Archimedes' constant
- Measurement: Angle in Radian (rad), Degree (°)
   Angle Unit Conversion





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