

# Sight Reduction Formula TI-30Xa

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- All angles must be converted to decimal degrees (2nd, DMD-DD)
- Southern latitudes and declinations entered as negatives
- Hc will be decimal degrees and must be converted to degrees-minutes-tenths of minutes. Zn is OK as decimal degrees.

L = Latitude, Assumed Position (AP) or DR/EP

Lo = Longitude, Assumed Position (AP) or DR/EP

dec = declination (North+, South -)

LHA = GHA ± Assumed Longitude (- West, + East) from 0 to 360 +/- d

$$Hc = \sin^{-1} (\sin d \sin L + \cos d \cos L \cos LHA)$$

$$Z = \cos^{-1} \left[ \frac{\sin d - (\sin L \sin Hc)}{\cos L \cos Hc} \right]$$

Enter time past hour,  
convert to decimal hours  
STO 1 in memory (STO 1)  
(Use this to compute d and  
v corrections. When  
calculated add to GHA/LHA  
and declination using 2nd,  
SUM, memory slot number.

RCL 1, SIN  
X  
RCL 3, SIN  
+  
RCL 1, COS  
X  
RCL 2, COS  
X  
RCL 3, COS

Enter SHA, 2nd DMS-DD  
(If star)  
STO 2

=  
2nd, SIN [THIS IS Hc]  
STO 2

Enter GHA, 2nd DMS-DD  
2nd, SUM, 2  
Enter Lo AP, 2nd DMS-DD  
± (-W Lo, +E Lo)  
2nd, SUM, 2  
(adjust to 0-360)

RCL 3, SIN  
-  
RCL 1, SIN  
X  
RCL 2, SIN

Enter dec, DMS-DD  
STO 3

=  
÷  
(  
RCL 1, COS

Calculate v and d, add to  
register 2 & 3 (v2, d3)

X  
RCL 2, COS  
)

Enter L, 2nd DMS-DD  
STO1

=  
2nd, COS [THIS IS Z]  
STO 1

Inspect sign of SINE LHA  
If SIN LHA <0, Zn = Z  
If SIN LHA ≥0, Zn = 360-Z