# Sight Reduction according to A. A. Ageton

The following calculation scheme may be used to calculate the Altitude "Hc" and the true Azimuth "Zc" of a celestial object from it's Geographical Position (GP) as will be observed at the Estimated Position (EP):

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                                                                          Remarks
EP:  LatEP  =  ±__°__'_ (N/S)          GP:    Dec =  ±__°__'_ (N/S)       (0)
     LonEP  = ±___°__'_ (E/W)                 GHA =  ___°__'_


1.   LHA    = GHA + LonEP   =  ___°__'_
       t    =     - LHA     = ±___°__'_          if( LHA < 180°)           (1)
       t    = 360°- LHA     = ±___°__'_          if( LHA > 180°)
     A(t)   = ________

2.   A(Dec) = ________                       B(Dec) = ________

3.   A(R)   = A(t) + B(Dec) = ________ + ________  = ________
       R    =  __°__'_                        B(R) = ________

4.   A(LatQ)= A(Dec) - B(R) = ________ - ________  = ________
       LatQ = ±__°__'_ (N/S)                                              (4)

5.     dLat = LatEP - LatQ  = ±__°__'_ - ±__°__'_  = ±___°__'_           (5)
     B(dLat)= ________

6.    A(Hc) = B(R) + B(dLat)= ________ + ________  = ________
        Hc  =  __°__'_                       B(Hc) = ________

7.    A(Z)  = A(R) - B(Hc)  = ________ - ________  = ________
        Z   =  __°__'_                                                    (7)

8.      Zc  = ___°__'_                                                    (8)
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Remarks and Instructions

(0) Use the appropriate signs for Latitude, Longitude and Declination:
positive for N and E, negative for S and W.

(1) The meridian angle "t" is calculated from "LHA" according to the following rule:
if LHA < 180° t = - LHA
if LHA > 180° t = 360° - LHA

(4) The sign of the Latitude of "Q" (N/S) depends on the values of "t" and "Dec":
if |t| < 90° LatQ has the same sign as Dec
if |t| > 90° LatQ has the contrary sign of Dec
Where |t| is the absolute value of "t"

(5) The value of "dLat" must be calculated taking the correct signs for "LatEP" and "LatQ" into account. The resulting sign of "dLat" should be recorded correcly (see remark 7).

(7) Select one out of four cases, depending on the value of "|t|" and the sign of "dLat" to determine how to select the value of "Z" from the Tables:

| |t| | |t| < 90° | |t| > 90° |
|---|---|---|
| dLat | - | + | - | + |
| Z | < 90° | > 90° | > 90° | < 90° |

if Z < 90° select Z from the top line - left column of the Table
if Z > 90° select Z from the bottom line - right column of the Table

(8) The true Azimuth "Zc" is obtained from "Z" depending on the sign of "t":
if t > 0 Zc = Z (GP is East of EP)
if t < 0 Zc = 360° - Z (GP is West of EP)