Calculating Great Circle Courses/Distances (Ageton)

DATA INPUTS

Meridian Angle (t) = _____° ___ E/W — t must be < 90° for these equations to work.

$Lat_{Destination}$/Declination of GP (d) = _____° ___ N/S

$Latitude_{Assumed\ Position}$ of Vessel (A_{Lat}) = _____° ___ N/S

(Enter all angles with decimal fractions rather than minutes)

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1. Sin(t) X Cos(d) = Sin(R) = R°

_____°

2. Sin(d) ÷ Cos(R) = Sin(Q_{Lat}) = Latitude of Q°

_____° ___ N/S — Q_{Lat} has same sign as d.

3. $\Delta^{Q_{Lat}}_{A_{Lat}}$ = diffLat

= _____°

4. Cos(diffLat) X Cos(R) = Sin(Hc) = Hc°

_____°

5. Sin(R) ÷ Cos(Hc) = **Sin(Az)** = Azimuth

___ _____° ___
N/S E/W

Use **N** if Destination (or GP) is N of AP

Use **E** if Destination (or GP) is E of AP

$Course_{360}$ = _____°

Distance = (90°- Hc) * 60

89.60°

-_____°

_____° X 60 = _____

If you take 4 sights of one star, 4 sights of another, and 4 sights of a third star, significant time may have elapsed since between the first usable sight and the last. You can compensate for "motion of observer" by adjusting the Ho for the change in position of the boat during the time Δt. S = speed in knots. t = time in minutes. C = course in degrees. Zn = azimuth in degrees.

ΔHo = (SΔt/60)* cos(Zn-C) If Zn-C > 90, then use -sin((Zn-C)-90)

cos(91°) is exactly the same as cos(89°) but with a negative sign attached to it. It's also identically equal to -sin(1°).
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