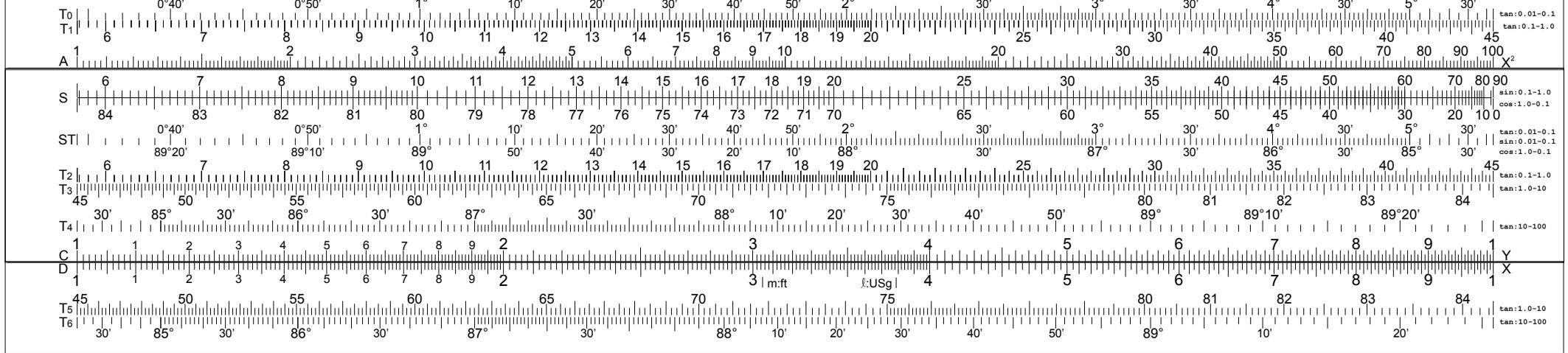


Serial Num: 1

### Mark 1 Navigator's Slide Rule

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**TACKLING DOWNWIND**

Course to Dest. relative to dead downwind =  $\gamma$   
 Course sailed relative to dead downwind =  $\theta$   
 Distance Factor  $DF = \cos(\gamma) / \cos(\theta)$   
 Speed on course  $\theta = S\theta$   
 Speed Factor  $SF = S\theta / S\gamma$   
 Time Factor  $TF = DF / SF$   
 Ideal Course = Course with smallest TF

**CHART SCALES AND DISTANCE**

Nautical Miles Per Inch = Reciprocal of Chart Scale  $\div 72,900$

Inches



**GREAT CIRCLE CALCULATIONS**

Meridian Angle (H) = \_\_\_\_\_<sup>°</sup>  
 My Latitude (L) = \_\_\_\_\_<sup>°</sup>  
 Latitude of destination (d) = \_\_\_\_\_<sup>°</sup>

1.  $\tan(d) \div \cos(H) = \tan(W)$
2. Ignore the sign of X (i.e. -60 = 60)
  - If  $H < 90^\circ$  then then use [+ W] if d has the same name as L. Use [- W] if d has opposite name as L.
  - If  $H > 90^\circ$ , use [- W]. $(90^\circ - L) \pm W = X$
3. If  $X < 90^\circ$ , then  $X = Y$ .  
 If  $X > 90^\circ$ , then  $180 - X = Y$

4.  $[\cos(W) \div \cos(Y)] * \tan(H) = \tan(Az)$   
 $Az = \frac{\text{N/S}}{\text{E/W}}$   
 Use N if destination is north of you.  
 Use E if destination is east of you.
5.  $\cos(Az) * \tan(Y) = \tan(Hc)$
6.  $D = (90^\circ - Hc) * 60$

If doing sight reduction, d = declination of celestial object. L = latitude of AP.

If meridian angle  $> 90^\circ$  then...  
 Use alternate data input:  $180^\circ - MA = H$   
 Use alternate Step 2:  $(90^\circ - L) - W = X$   
 Use alternate Step 6:  $D = (90^\circ + Hc) * 60$