Name _____

British Columbia Offshore Sailing Association
Sight Reduction Form

Time & Date

1
- Watch Time (1) — h m s
- Watch Error (Slow +, Fast -) (2) — h m s
- Zone Diff +W -E (3) — h m s
- UTC (4) — h m s / h m s
- Local Date (5)
- UTC Date (6)

Dead Reckoning: Where I think I am

2
- DR Latitude (1)
- DR Longitude (2)

Sextant Data

3
- Body (1)
- Height of Eye ft. m. (3)
- Hs (2)
- Dip (4) —
- Hs corr. (5)
- Index Err +off -on (6)
- Ha (7)

Almanac

4
- GHA h (1)
- GHA + min/sec (6)
- v (moon/planets) (2)
- v corr: will be pos. if v is pos & neg if v is neg. (8)
- Use Incr. & Corr. Page for getting v corr.
- v for moon or planets
- SHA + (10)
- SHA for Stars
- GHA (11)
- Dec (3)
- d corr: will be pos. if d is pos. & neg. if d is neg. (7)
- Dec (9a / 9b)
- Use Incr. & Corr Page for getting d corr.
- d + - (4)
- HP (moon) (5)

Assumed Position & Meridian Angle

5
- aL (1) — For aL, use nearest whole degree from DR latitude (box 2.1).
- aλ (2a / 2b) — For aλ, transfer the hemisphere and whole-number degrees from the DR longitude (box 2.2) to 12a. For the minutes in 12b, select a number such that GHA Δ aλ comes out to a whole number of degrees.*
- t (LHA) (3) — t = MA = LHA = difference between aλ and GHA. With sun, t is west if it is after local apparent noon where you are.

If GHA > aλ, then t is west.
If GHA < aλ, then t is east.

a is difference between Hc & Ho

If Hc > Ho then a is **A**WAY

If Ho > Hc then a is **T**OWARD

Collect Data For 249

6 (From 5.1)
- aL (1)
- From 4.9a: Dec (whole deg) (2)
- From 5.3: t (LHA) (3)

Same / Contrary

These are the3 pieces of data you use to enter Pub. 249

Pub. 249

7
- tab Hc (1)
- d + - (2)
- Z (3)
- d corr: will be pos. if d is pos. & neg. if d is neg. (5)
- Dec min (4) — Pub. 249 already "knows" about 9a. Tell Pub 249 about 9b by entering it here.
- Hc (6)

For 7.5, top row of Table 5

For 7.5, side column of Table 5.

Ho & Hc

8
- Main corr. for refraction; all sights (see Almanac, p. A2) (1)
- From 4.5: Additional corr. Moon (i.e. HP), or Mars, or Venus (2)
- Upper limb moon: subtr 30' (3)
- Ho (4)
- From 7.6: Hc (5)

Plotting Data

9
- Intercept T A (a) = Hc Δ Ho (1)
- Zn (2) — If object is E of you, transfer from 7.3. If object is W of you, Zn = 360° - Z, then transfer into 9.2.
- aL (3) — From 5.1
- aλ (4) — From 5.2

*For DR in west longitude, aλ minutes = minutes of GHA. E.g.
DR λ = W 53° 27'
GHA = 137° 23'
aλ = W 53° 23'
t = W 84°.

*For DR in east longitude, aλ minutes = (minutes of GHA) minus 60. E.g.
DR λ = E 130° 14'
GHA = 310° 41'
aλ = E 130° 19'
t = W 81°

Foldout Definitions and Explanations

a = altitude intercept = intercept
aλ = assumed longitude
aL = assumed latitude
AP = assumed position(aL + aλ)
d = difference in declination from hour to hour
GHA = Greenwich hour angle (=λ). GHA and Declination define GP of body
GP = geographic position of body, where GHA is equivalent to λ and declination is equivalent to lat.
Hc = height-corrected (corrected altitude)
Ho = height observed/observed alt.
HP = horizontal parallax
Hp = Height Precomputed (can compare directly with hs)
Hs = height sextant
IC = Index correction
LHA=Local Hour Angle = angle from the AP longitude to the GHA, measured westward
MA = Meridian angle = angle from the AP longitude to the GHA, measured east or west
MA 10°E = LHA 350°
MainCorr = refraction+semi-diameter combined correction
Tab = tabulated
v = variation in GHA compared to sun
Z = azimuth angle
Zn = azimuth

d will be negative if Dec is decreasing hour by hour.

d will be positive if Dec is increasing hour by hour.

Box 4.2 - If a planet, look down to the bottom of the column for v.

If the moon, look to the right for v.

aλ= assumed longitude

aL = assumed latitude

d answers the question "How far to the north or south does the object move in an hour?"

v answers the question, "How much faster or slower does the object move than the sun?"
If we know this, we can use the incremental change in the sun's E/W position, and simply apply a correction for the object.

v - planets and moon always positive unless explicitly noted
d - positive if decl. increasing negative if decl. decreaing
HP - Moon only - always pos.

Box 8.1 - Use page A2 for sun/stars/planets.

Use moon pages in Almanac (pp. xxxiv-xxxv) for moon.

Almanac may have detachable yellow card for one or both of above.

Alternate way to notate Lat/Long

In latitude, positive values = north of the equator.

Negative values = south of the equator.

In longitude, positive values = east of Greenwich. Negative values = west pf Greenwich.

10°, -05° is equivalent to N 10°, S 5°

Meridian Angles, east and west

YOUR DR IS IN EAST HEMISPHERE

The GHA is between 180° 00.0' and 259° 59.9', then convert GHA to east longitude by subtracting the GHA from 360°.

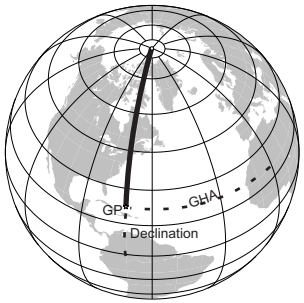
Then use an AP with λ minutes = GHA minutes, and subtract the smaller from the larger.

The GHA is between 0° 00.0 and 179° 59.9', then use an AP with λ minutes = 60 minus GHA minutes. Then ADD the AP λ to the GHA.

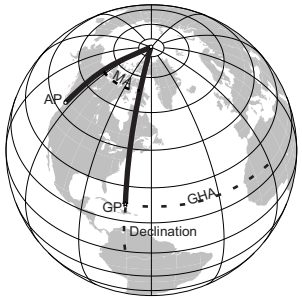
YOUR DR IS IN WEST HEMISPHERE

Use an AP with λ minutes = GHA minutes, and subtract the smaller from the larger.

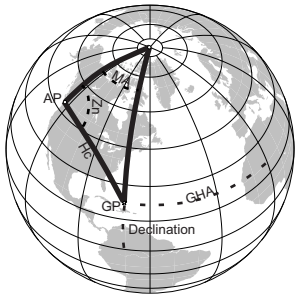
Once you complete section 4, you will know the location of the GP.



Once you complete section 5, you will know the location of the AP and the meridian angle.



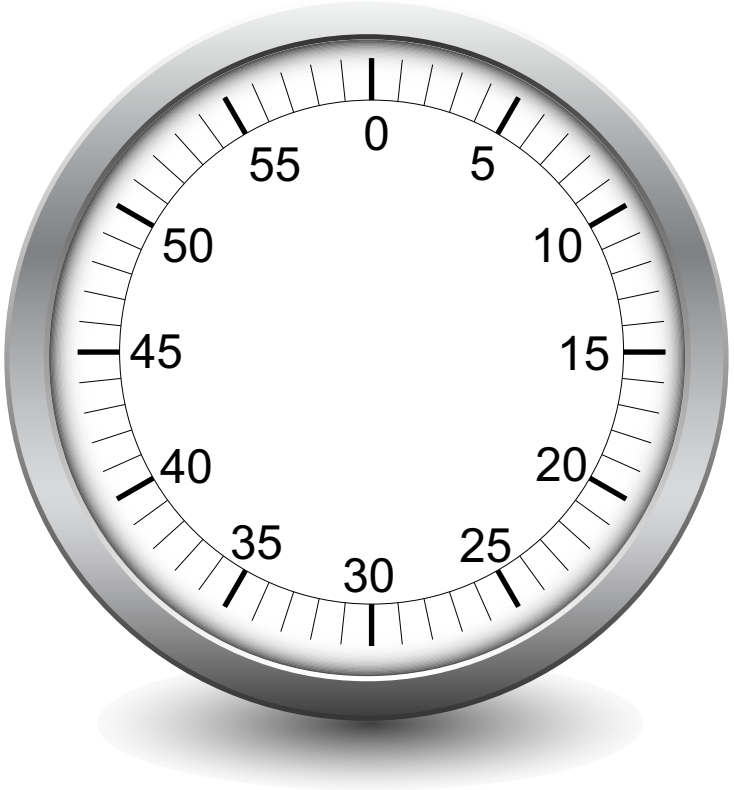
Once you complete section 7, you will know the final side of the navigational triangle.



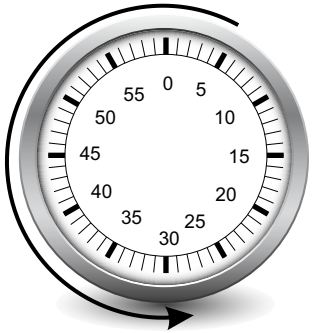
You will use all this information about the navigational triangle on the plotting sheet. There, you will use your sextant data to compare your actual position to the hypothetical, assumed position.

From this, you end up with a fix.

Visual Addition/Subtraction of Minutes
Similar to adding/subtracting time.

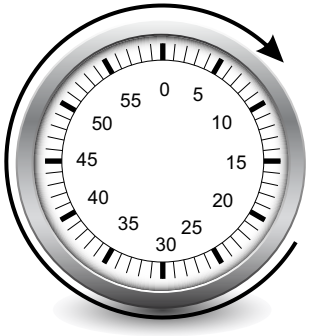


12° 05′ minus 37′ = 11° 28′



Alternatively:
12° 05′ is equivalent to 11° 65′
hence...
11° 65′ minus 37′ = 11° 28′

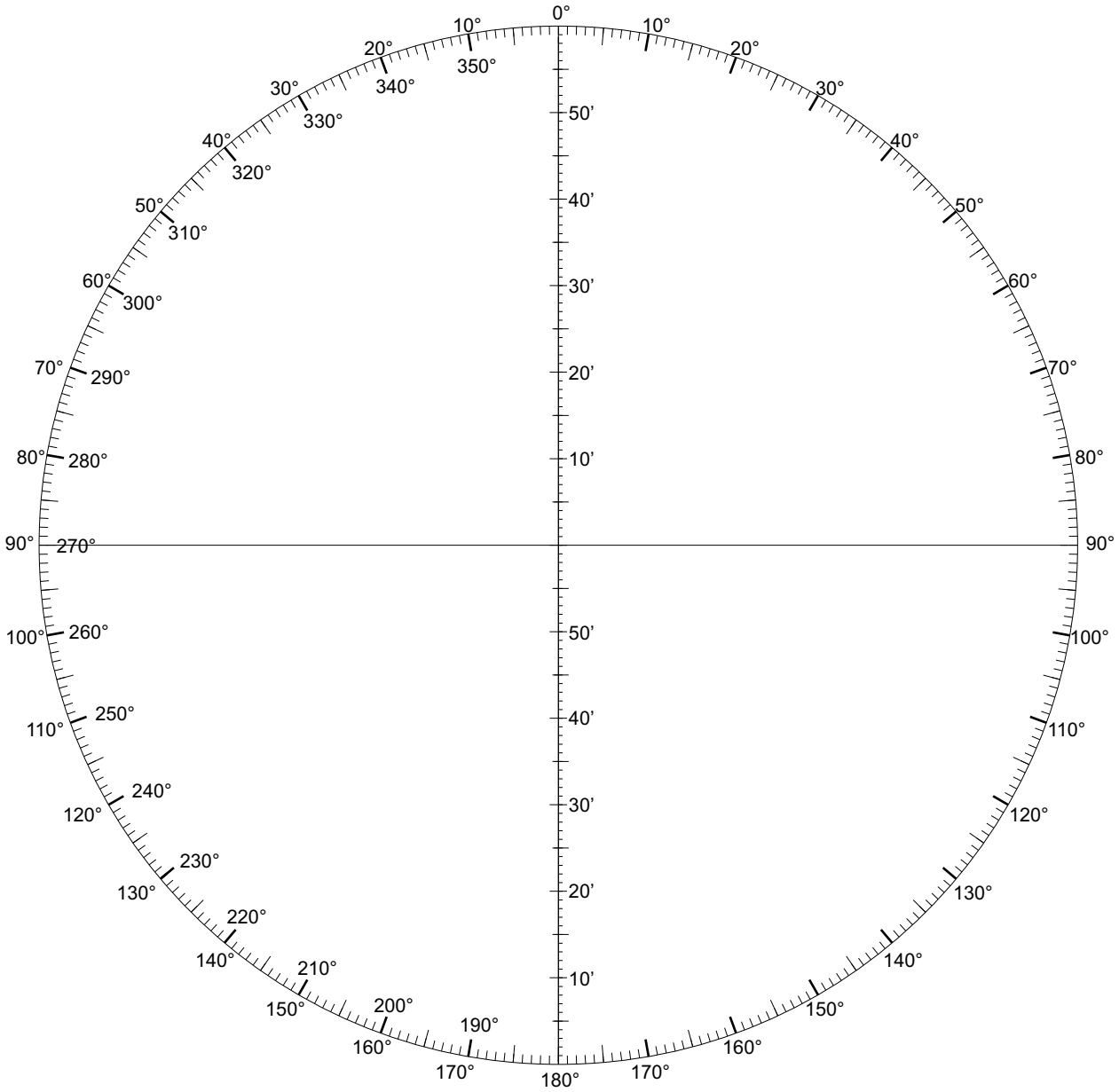
12° 20′ plus 49′ = 13° 09′



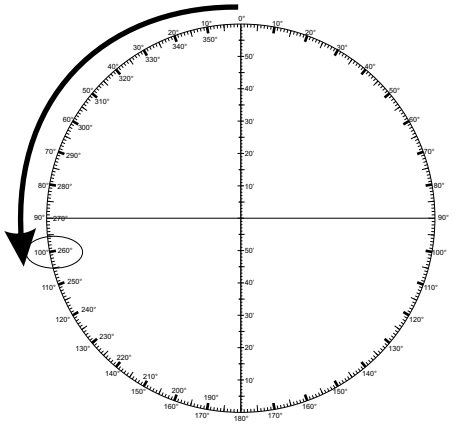
Alternatively:
12° 20′ plus 49′ = 12° 69′

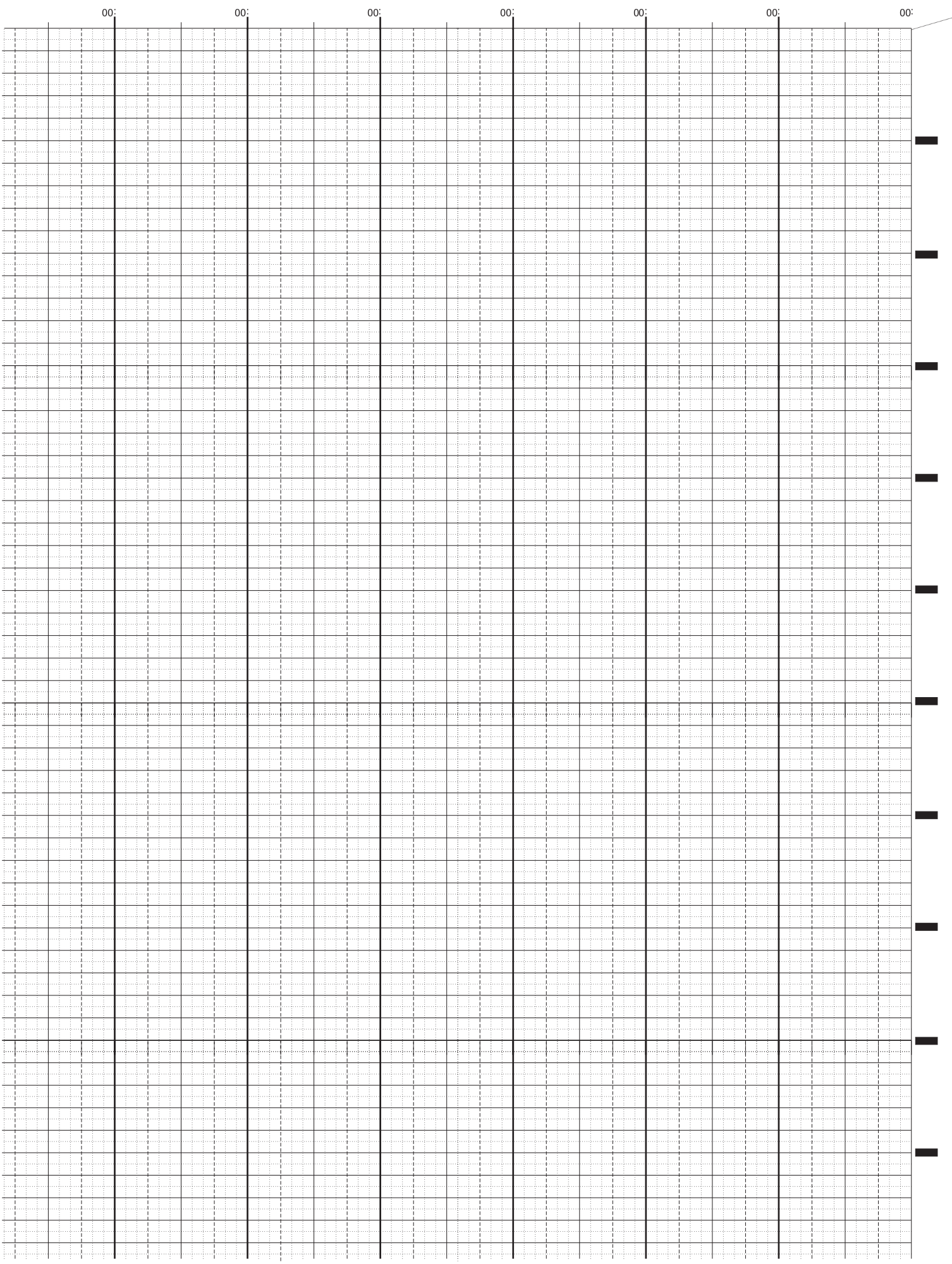
12° 69′ is equivalent to 13° 09′

Subtracting Z from 360 to get Zn.



Example
Z = 100° W
Zn = 360° - 100° = 260°




00:
00:
00:
00:
00:
00:
00: