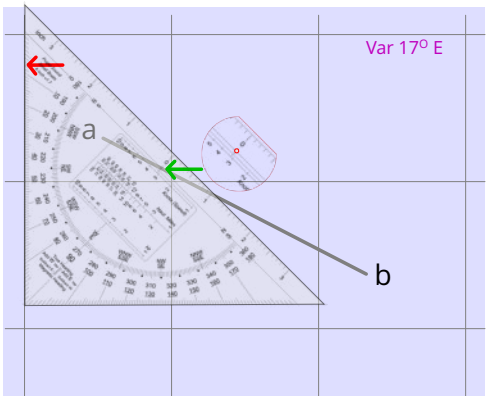
# User Guide

## ‘Puget Sound’ Small-Boat Protractor Triangle

Simple navigation for small boats

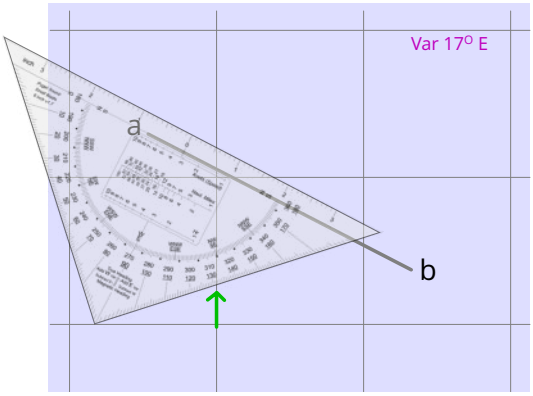



### 1. Determining Course Directions

a. Draw a straight line between the starting point and your endinging point or intermediate waypoint with a pencil (a-b).

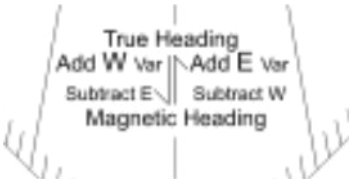
b. Align the center of the protractor (the hole) on the pencil line (green arrow) and the short edge of the traingle with a closeby longitude (vertcal) line on the chart (red arrow).

c. Rotate the traingle so that the line is aligned with the long line on the hypotenuse. Read the degree marking on the bottom where the longitude line intersects (green arrow). The true course direction value is 131.5 degrees.




### 2. Correcting for magnetic variation

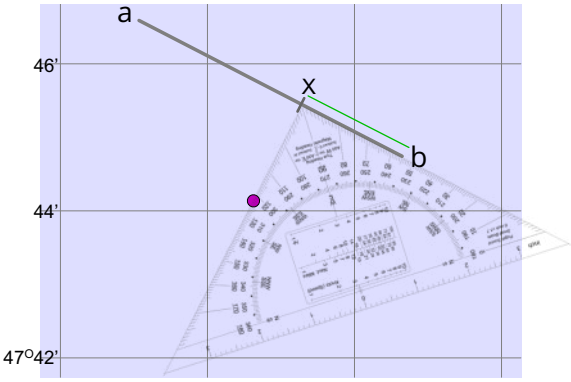
a. The course direction obtained in step 1 above is the true direction. To convert to magnetic compass direction, for westerly variation add to the true heading value and for easterly variation subtract from the true heading value. For the example shown the chart states ‘Var 17° E’ so magnetic direction for the course from Pt A to Pt B is 114.5° (131.5- 17). The protractor includes a reminder of this method.




### 3. Determining tangents (when will a feature or object be ‘abeam’ or 90 degrees to the course)

a. Place one of the shorter sides of the triangle on the course line and slide it along the course line till the other shorter side crosses the feature (in purple), mark the intersect with a pencil.

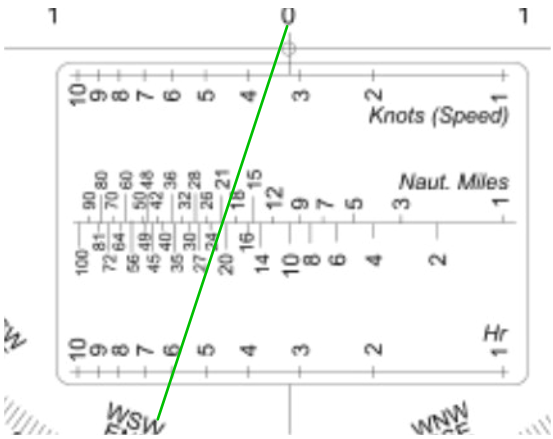
b. The distance to the end point (x - b) can be measured by using the inch scale on the hypotenuse of the triangle. On some charts with a scale of 1:80,000, an inch = 1 nautical mile or 1 minute of latitude. Or the length can be measured by placing the inch ruler against the latitude scale or a length scale printed on the chart.




### 4. Using time, distance or speed with nomogram

a. To determine distance covered, place a straight edge at boat speed (Knots) and travel time (Hr). The straight edge will insersect a value on the Nautical Mile scale. In the example shown (green line), knots = 3.5, time 6 hr, the distance will then be 21 naut. miles.

b. Knowing any two values, the third value can be quickly estimated.



SOUNDINGS IN FEET

18446

AGATE PASSAGE

Scale 1:10,000

UNITED STATES - WEST COAST

WASHINGTON

# PUGET SOUND

## APPLE COVE POINT TO KEYPORT

Mercator Projection
Scale 1:25,000 at Lat. 47°44'

North American Datum of 1983
(World Geodetic System 1984)

SOUNDINGS IN FEET
AT MEAN LOWER LOW WATER

Additional information can be obtained at nauticalcharts.noaa.gov

SCALE 1:25,000

SCALE 1:20,000

PUGET SOUND

PORT MADISON

Port Madison Indian Reservation

BAINBRIDGE I

Port Orchard

BAINBRIDGE

PORT ORCHARD

BALLARD

SEATTLE

EDMONDS

Apple Cove Pt to Keyport

SOUNDINGS IN FEET - SCALE 1:25,000

18446

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