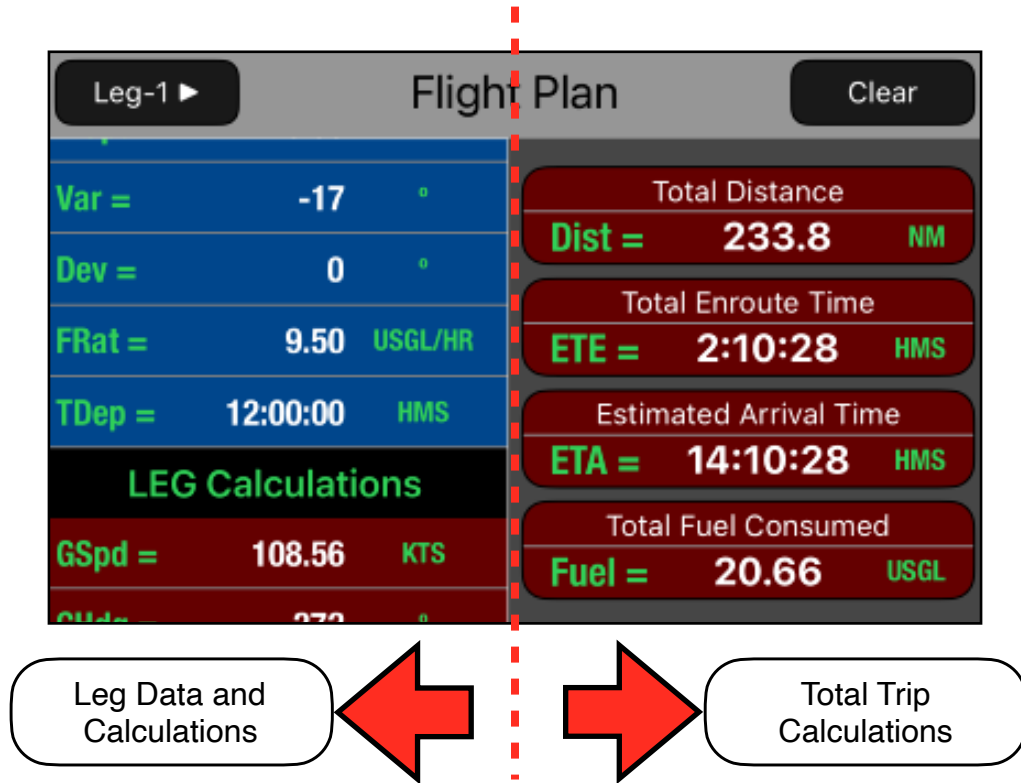


Flight Plan Worksheet

This worksheet is used for planning a cross-country trip composed by an arbitrary number of legs. It has two parts: at the left is scrollable list of the selected leg data and calculations and at the right the total trip computations.



Clear	Remove all legs leaving the initial one and clears all values to 0.		
Leg ►	Menu to select a specific leg, add a new leg, insert a leg before the selected one or delete a leg.		
Selected Leg Data		Selected Leg Calculations	
Dist	Leg distance.	GSpd	Ground speed.
TCrs	Leg True course.	CHdg	Compass heading.
TAS	Leg True air speed.	MHdg	Magnetic heading.
WDir	Leg Wind direction	THdg	True heading.
WSpd	Leg Wind speed.	WCA	Wind correction angle.
Var	Leg Compass variation	Fuel	Fuel burned
Dev	Leg Compass deviation	ETE	Estimated enroute time
FRat	Fuel consumption rate.	ETA	Estimated arrival time
TDep	Leg Time of departure.		

Total Trip Calculations

Dist	Total trip distance.
ETE	Total trip enroute time.
ETA	Total trip estimated time of arrival.
Fuel	Total fuel burned in the trip.

NOTE: Always verify the physical units

To change the units of a variable, tap over the unit symbol and select the right one from the pop-up menu. To change the whole units in the worksheet select “Set Metric Units” or “Set US Units” from the [**UNITS▶**] button in the Navigation Bar.

All the following examples use US units. So please select “Set US Units” from the [**UNITS▶**] menu in the Navigation Bar.

Example 1:

Plan a cross-country trip from Renton Muni (KRNT) to Forks (S18) to Ocean Shores Muni (W04) and back to KRNT. The aircraft used for the cross-country is a Cessna 172. The 172 burns 9.5 U.S. GPH, has a TAS of 110 KTS, and has a deviation of 0°. The area of the cross-country has a variation of 17° E, and you are departing at 12:00:00 UTC.

Given for Leg 1:

- Distance between KRNT and S18: 92.3 nautical miles
- True Course between KRNT and S18: 288°
- Wind Direction is 350° at 3 KTS.

Given for Leg 2:

- Distance between S18 and W04: 57.3 nautical miles
- True Course between S18 and W04: 170°
- Wind Direction is 200° at 6 KTS

Given for Leg 3:

- Distance between W04 and KRNT: 84.2 nautical miles
- True Course between W04 and KRNT: 069°
- Wind Direction is 140° at 5 KTS

Solution:

Keystrokes	Description
[Clear]	Clears all variables to start a new calculation and Leg-1 selected.
type 92.3 [Dist]	Stores 92.3 NM in the Leg-1 distance, Dist
type 288 [TCrs]	Stores 288° in the Leg-1 true course, TCrs
type 110 [TAS]	Stores 110 KTS in the Leg-1 true airspeed, TAS
type 350 [WDir]	Stores 350° in the Leg-1 wind direction, WDir
type 3 [WSpd]	Stores 3 KTS in the Leg-1 wind speed, WSpd
type 17 [+ / -] [TAS]	Stores -17° in the Leg-1 variation, VAR
type 0 [Dev]	Stores 0° in the Leg-1 deviation, Dev
type 9.5 [FRat]	Stores 9.5 USGL/HR in the Leg-1 fuel rate, TAS
type 12 [TDep]	Stores 12:00:00 in the Leg-1 departure time, TDep
[Leg ►] Add Leg	Add new leg to continue with Leg-2
type 57.3 [Dist]	Stores 57.3 NM in the Leg-2 distance, Dist
type 170 [TCrs]	Stores 170° in the Leg-2 true course, TCrs
type 200 [WDir]	Stores 200° in the Leg-2 wind direction, WDir
type 6 [WSpd]	Stores 6 KTS in the Leg-2 wind speed, WSpd
[Leg ►] Add Leg	Add new leg to continue with Leg-3
type 84.2 [Dist]	Stores 84.2 NM in the Leg-3 distance, Dist
type 69 [TCrs]	Stores 69° in the Leg-3 true course, TCrs
type 140 [WDir]	Stores 140° in the Leg-3 wind direction, WDir
type 5 [WSpd]	Stores 5 KTS in the Leg-3 wind speed, WSpd and automatically show the calculations for the total trip: Dist = 233.8 NM ETE = 2:10:28 ETA = 14:10:28 Fuel = 20.66 USGL

Appendix : Equations Used

The equations that this worksheet calculates are:

a) Ground Speed:

$$\mathbf{GS} = \sqrt{[\mathbf{TAS}^2 + \mathbf{WSpd}^2 - (2 \cdot \mathbf{TAS} \cdot \mathbf{WSpd} \cdot \mathbf{COS}(\mathbf{TCrs} - \mathbf{WDir} + \mathbf{WCA}))]}$$

b) Wind Correction Angle:

$$\mathbf{WCA} = \mathbf{ASIN}(\mathbf{SIN}(\mathbf{WDir} - \mathbf{TCrs}) \cdot \mathbf{WSpd} / \mathbf{TAS})$$

c) True Heading:

$$\mathbf{TH} = \mathbf{TCrs} + \mathbf{WCA}$$

d) Compass Heading:

$$\mathbf{CHdg} = \mathbf{THdg} + \mathbf{Var} + \mathbf{Dev}$$

e) Magnetic Heading:

$$\mathbf{MHdg} = \mathbf{THdg} + \mathbf{Var}$$

f) Estimated Time Enroute:

$$\mathbf{ETA} = \mathbf{TDep} + \mathbf{ETE}$$

g) Estimated Time of Arrival:

$$\mathbf{ETE} = \mathbf{Dist} / \mathbf{GSpd}$$

h) Fuel Consumption:

$$\mathbf{Fuel} = \mathbf{FRat} / \mathbf{GSpd}$$