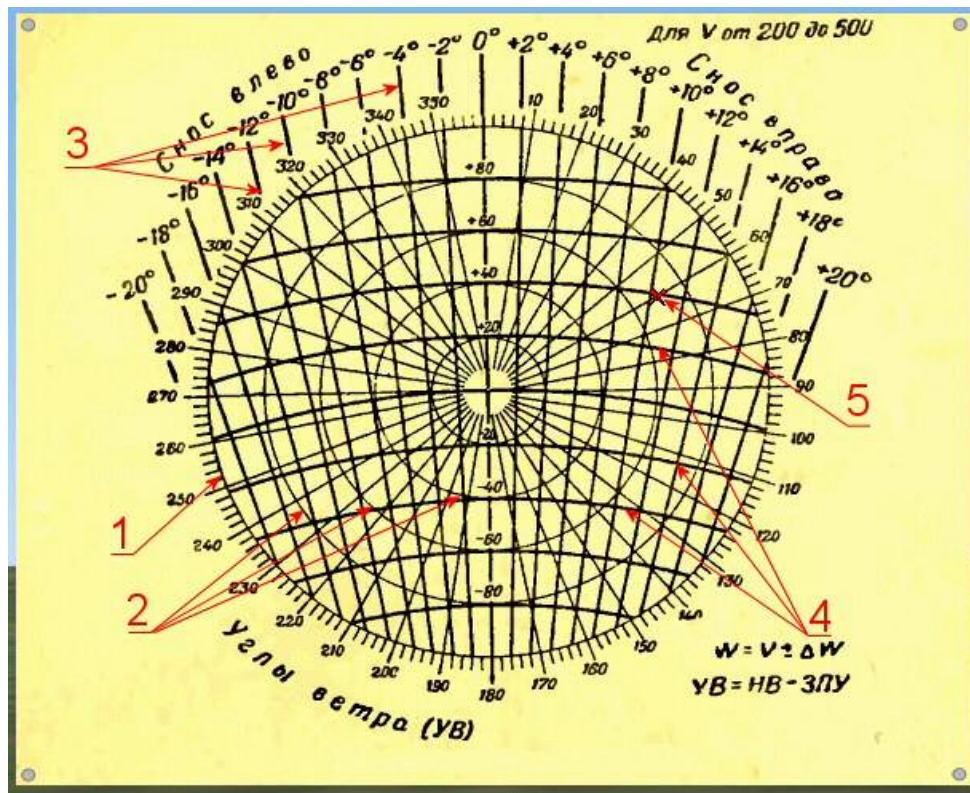


**Crosswind correction and ground-speed calculator
for MSFS2004**
2010© Freeware, Alexander Belov a_belov@mail.ru

Crosswind correction and ground speed calculator is a simple and easy-to-use instrument, usable for any aircraft developing airspeed from 200 to 500 kph (125 – 312 mph). It allows to calculate crosswind correction and ground speed using known values of true aircraft speed and desired track angle, and wind velocity and wind direction.

General description

Following scales are plotted on the gauge plate:



- Wind heading angles scale (pos. 1) is marked on the outer circle. It is graduated from 0° to 360° clockwise. Radial lines are plotted at every 10°.
- Wind velocity scale (pos. 2) is marked by concentric rings for 20, 40, 60 and 80 kph (12.5, 25, 37.5 and 50 mph respectively).
- Drift angle scale (pos. 3) is presented as set of lines for drift from -20 to +20 degrees with 2 degree interval.
- Ground-speed correction scale (pos. 4) is presented by set of curves for range from -80 kph (-50 mph) to +80 kph (+50 mph) with 20 kph interval.

A mark (pos. 5) should be settled in the wind-point.

Operation

Let's discuss a sample problem:

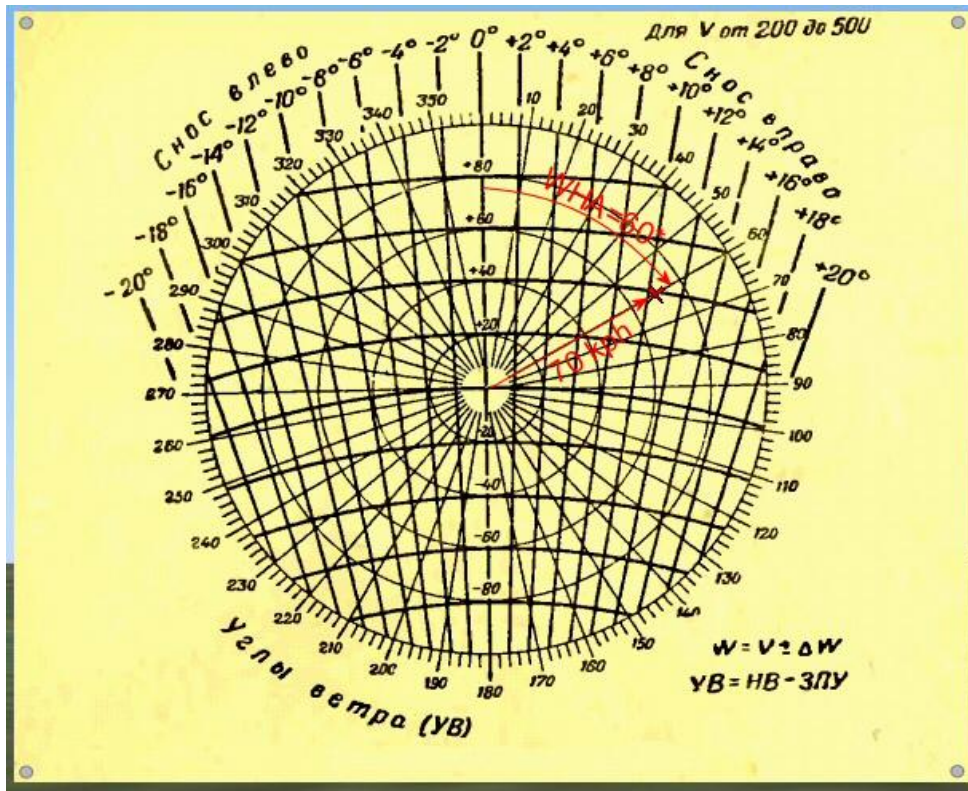
An aircraft should fly at actual track angle 100° at true airspeed of 400 kph (250 mph). The wind velocity is 70 kph (about 44 mph) and wind direction is 160°. The crosswind correction and ground speed should be determined.

Solution.

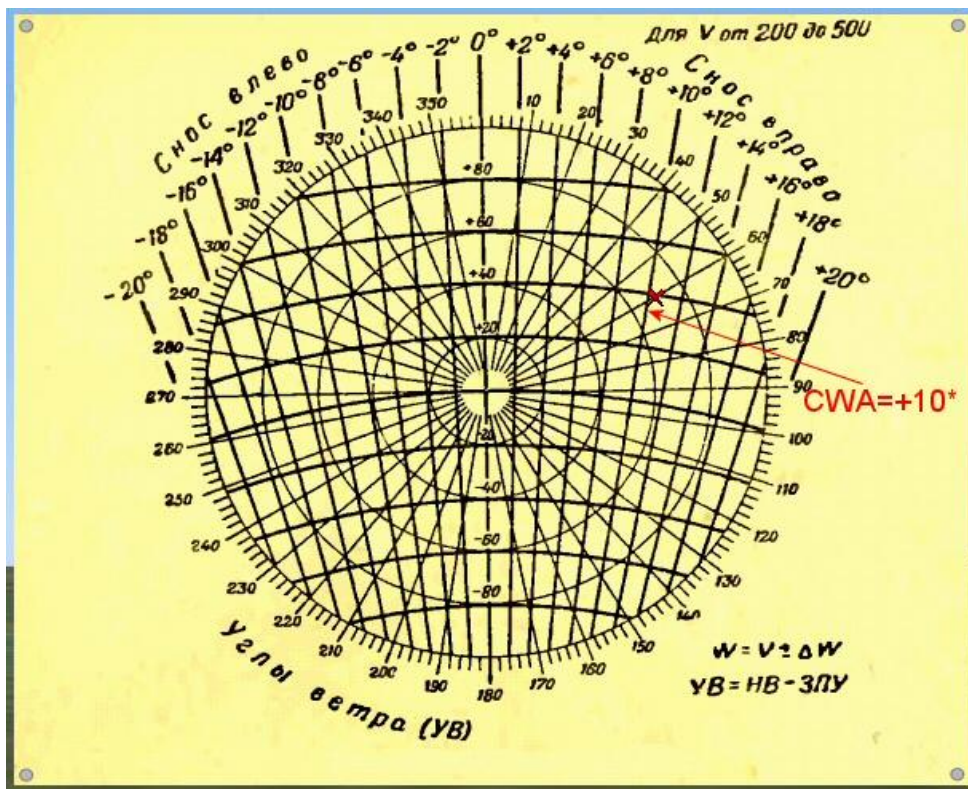
1. One should determine the wind heading angle (WHA) as the difference between wind direction (WD) and actual track angle (ATA):

$$WHA = WD - ATA = 160^\circ - 100^\circ = 60^\circ.$$

2. Set the marker at the crossing of 70-kph circle and 60° wind heading radius:



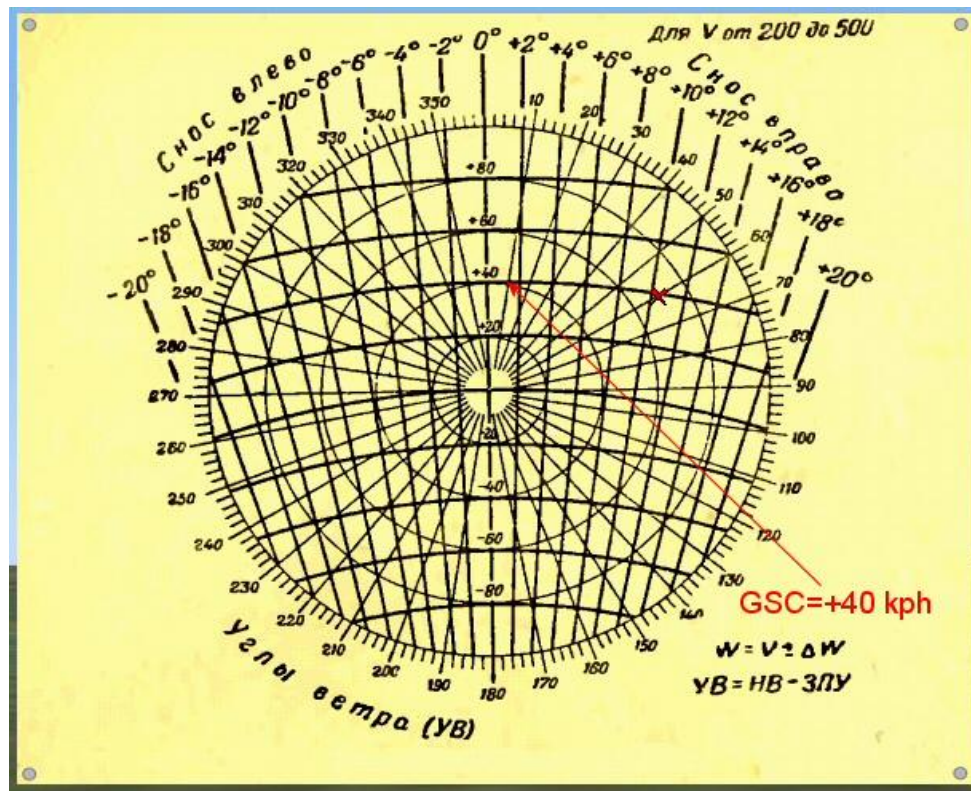
3. Determine the cross-wind correction angle as the line nearest to the marker:



The cross-wind correction is equal to +10 degrees. So, to keep track angle equal 100° one should set magnetic heading (MH) as difference between actual track angle and crosswind correction angle (CWA):

$$MH = ATA - CWA = 100^\circ - 10^\circ = 90^\circ.$$

5. Follow the nearest ground speed correction curve to determine the correction value:



The ground-speed correction is equal to +40 kph (+25 mph). So, actual ground speed (GS) can be determined as the sum of true airspeed (TAS) and ground-speed correction (GSC):

$$GS = TAS + GSC = 300 + 40 = 340 \text{ kph (212 mph)}$$