



SWISS ALPINE MILITARY

by Grovana

Slide Rule Instruction Manual Ref. 7078.9

This slide rule is good for multiplication, division, proportion, square root, time required, fuel consumption, estimated flighttime and other fly problems.

There are two scales on the dial of your watch. The outer scale is the distance scale and the inner scale is the time scale.
The marking MPH ▲ is the speed index.

Note the following points when using this function. Use the calculation function of this watch only as a guide.
Scales like these can not place a decimal point for you.

1) TIME REQUIRED:

Example: Obtain the time required for the flight of an aircraft at 180 knots for 450 nautical miles.

Operation: Align „18“ on the outer scale with the speed index (▲) on the inner scale. Then, „45“ on the outer scale corresponds to „150.1“ on the inner scale (time scale). Thus, the time required for the flight is 2 hours and 30 minutes and 10 seconds.

2) KNOTS (AIR SPEED):

Example: Obtain the knots (air speed) for 240 nautical miles with a flight time of 1 hour and 20 minutes.

Operation: Align „24“ on the outer scale with „8“ on the inner scale (time scale). Then, the speed index (▲) on the inner scale corresponds to „18“ on the outer scale. Thus, the air speed for the flight is 180 knots.

3) FLIGHT DISTANCE:

Example: Obtain the air distance when the air speed is 180 knots and the flight time is 40 minutes.

Operation: Align „18“ on the outer scale with the speed index (▲) on the inner scale. Then „40“ on the inner scale corresponds to „12“ on the outer scale. Thus, the air distance of the flight is 120 nautical miles.

4) RATE OF FUEL CONSUMPTION:

Example: Obtain the rate of fuel consumption (gallons/hour) when the flight time is 30 minutes and the fuel consumption is 130 gallons.

Operation: Align „13“ on the outer scale with „30“ on the inner scale. Then, the speed index (▲) on the inner scale corresponds to „26“ on the outer scale. Thus, the fuel consumption is 260 gallons per hour.

5) FUEL CONSUMPTION:

Example: Obtain the fuel consumption required for a flight when the fuel consumption is 236 gallons per hour and the flight time is 9 hours.

Operation: Align „23.6“ on the outer scale with the speed index (▲) on the inner scale. Then, „9.00“ on the inner scale (time scale) corresponds to „35“ on the outer scale. Thus, the fuel consumption is 3'500 gallons.

6) ESTIMATED FLIGHT TIME:

Example: Obtain the estimated flight time when the fuel consumption is 260 gallons per hour and the aircraft has 650 gallons of fuel.

Operation: Align „26“ on the outer scale with the speed index (▲) on the inner scale. Then, „65“ on the outer scale corresponds to „150“ on the inner scale (time scale). Thus, the estimated flight time is 2 hours and 30 minutes.

7) DIFFERENCE IN ALTITUDE:

The difference in altitude can be obtained from rate of descent and the descent time.

Example: Obtain the difference in altitude when an aircraft continues descending for 20 minutes at a rate of 430 feet per minute.

Operation: Align „43“ on the outer scale with „10“ on the inner scale. Then, „20“ on the inner scale corresponds to „86“ on the outer scale. Thus, the difference in altitude is 8'600 feet.

8) RATE OF CLIMB (OR DESCENT):

The rate of climb (or descent) can be obtained from the time required to reach an altitude.

Example: Obtain the rate of climb when an aircraft reaches an altitude of 7'500 feet after climbing for 25 minutes.

Operation: Align „75“ on the outer scale with „25“ on the inner scale. Then, „10“ on the inner scale corresponds to „30“ on the outer scale. Thus, the rate of climb is 300 feet/minute.

9) TIME OF CLIMB (OR DESCENT):

The time required for climb can be obtained from the altitude to be reached and the rate of climb (or descent).

Example: Obtain the time of climb when an aircraft is to climb to 6'300 feet at a rate of 390 feet per minute.

Operation: Align „39“ on the outer scale with „10“ on the inner scale. Then, „63“ on the outer scale corresponds to „16“ on the inner scale. Thus, the time of climb is 16 minutes.

10) CONVERSION:

Example: Convert 24 statute miles into nautical miles and kilometers.

Operation: Align „24“ on the outer scale with STAT (*) on the inner scale. Then, NAUT (▲) on the inner scale corresponds to „15“ nautical miles on the inner scale and „48.2“ km (s) on the inner scale corresponds to „48.2“ km on the outer scale.

11) MULTIPLICATION:

Example: 39 x 20

Operation: Align „39“ on the outer scale with „10“ on the inner scale. Then, „20“ on the inner scale corresponds to „78“ on the outer scale. Take into account the position of the decimal point and add one zero to obtain 780. Note that with the scales of this watch, the position of the decimal point can not be obtained.

12) DIVISION:

Example: 900 / 47

Operation: Align „90“ on the outer scale with „47“ on the inner scale. Then, „10“ on the inner scale corresponds to „19.1“ on the outer scale. Take into account the position of the decimal point to obtain 19.1.

13) PROPORTION:

Example: 30/10 = 60/x

Operation: Align „30“ on the outer scale with „10“ on the inner scale. Then, „90“ on the outer scale corresponds to „30“ on the inner scale. At this point, the proportion for every value on the inner and outer scale is 30:10.

14) SQUARE ROOT:

Example: Square root of 900

Operation: Turn the outer scale slowly and find a value that corresponds to both „90“ on the outer scale and „10“ on the inner scale. In this example, „90“ on the inner scale corresponds to „30“ on the inner scale and „10“ on the inner scale corresponds to „30“ on the outer scale. Thus, the answer is 30.

15) CURRENCY OPERATION:

Example: Swiss Francs 35 into Euro

Operation: Align „14“ on the outer scale with „10“ on the inner scale (in this case the actual course is Swiss Francs 14 to 10 Euro). Then „35“ on the outer scale corresponds to „25“ on the inner scale. All on the inner scale corresponds with the outer scale SFr. to Euro (or other currency).