

2010 ATPL
Section 5.2, Question 4

There are two ways to solve this problem. Either use the aviation slide rule (whiz wheel) or use the altitude correction tables in the CAP GEN.

Whiz Wheel Solution

There are instructions on the front of the whiz wheel for determining true altitude.

Firstly, you need to input the outside air temperature and the pressure altitude (PA).

You know the OAT and the pressure altitude can be determined from the indicated altitude and the altimeter setting using the approximation that 1" Hg. = 1,000 feet. From this the pressure altitude = 7,500 feet.

If you enter the OAT and the PA as instructed on the front of the whiz wheel, you can then read the true altitude on the outer scale opposite the calibrated altitude on the inner scale. NOTE: The calibrated altitude is approximated from the indicated altitude. The true altitude, read this way, is 6,450' which is 1,450' above the ridge.

Cold Weather Correction Table Solution

To use the cold weather correction table, one requires the altitude above the station from which the altimeter setting is provided. This is stated as being 7,000 feet. One also requires the temperature at the station providing the altimeter setting. This temperature is not provided in the question and must therefore be approximated from the outside air temperature (OAT) which is stated as -20°C.

With the OAT at -20°C at 7,000 feet, the temperature at the surface is

$$\begin{aligned} &= -20^{\circ}\text{C} + (7 \times 2^{\circ}\text{C}/1,000') \\ &= -20^{\circ}\text{C} + 14^{\circ}\text{C} \\ &= -6^{\circ}\text{C} \end{aligned}$$

Using this in the altitude correction tables, the altimeter correction to be applied to the indicated altitude is $-410' + -168' = -578'$.

The true altitude is thus 6,422' and the clearance above the ridge is thus 1,422'.