

DENSITY ALTITUDE**FIND THE DENSITY ALTITUDE**

For each of the three scenarios, use the provided measurements to calculate density altitude. Round all results to the nearest 100 feet. Use both the formula and the chart (found on the last page), and record both answers. Explain why the answers may vary.

Remember the equations for calculating density altitude.

$$DA = PA + [120 (OAT - ISA)]$$

$$PA = (29.92 - \text{Barometric Pressure}) 1,000 + \text{Elevation}$$

$$ISA = 15 - (2 / 1000 \times PA)$$

SCENARIO 1

Outside air temperature: 17 °C

Barometric pressure: 29.61 "Hg

Elevation: 1,500 feet

$$PA = (29.92 - 29.61) 1,000 + 1,500 = 1,810$$

$$ISA = 15 - (2 / 1,000 \times 1,810) = 11.38$$

$$DA = 1,810 + [120 (17 - 11.38)] = 2,484.4 \text{ ft}$$

Density Altitude Calculation - 2,500 ft

Density Altitude Chart - Approximately 2,700 ft

**SCENARIO 2**

Outside air temperature: 8 °C

Barometric pressure: 28.22 "Hg

Elevation: 4,000 feet

$$PA = (29.92 - 28.22) 1,000 + 4,000 = 5,700$$

$$ISA = 15 - (2 / 1,000 \times 5,700) = 3.6$$

$$DA = 5,700 + [120(8 - 3.6)] = 6,228$$

Density Altitude Calculation - 6,200 ft

Density Altitude Chart - Approximately 6,500 ft

SCENARIO 3

Outside air temperature: 13 °C

Barometric pressure: 28.98 "Hg

Elevation: 5,000 feet

$$PA = (29.92 - 28.98) 1,000 + 5,000 = 5,940$$

$$ISA = 15 - (2 / 1,000 \times 5,940) = 3.12$$

$$DA = 5,940 + [120(13 - 3.12)] = 7,215.6$$

Density Altitude Calculation - 7,200 ft

Density Altitude Chart - Approximately 7,100 ft

QUESTION

In a few sentences, explain why density altitudes may vary when using the equation versus the chart.

The equation is a more precise method for calculating density altitude. You can use exact numbers for each value that goes into the equation. The chart requires you to approximate the measurements and the result; it's easier because you don't have to perform any calculations, but it is also less precise.



DENSITY ALTITUDE CHART

