Name: _____

A Cessna 172 Skyhawk uses a pitot-static tube to measure its airspeed. If the airspeed indicator on the plane reads 140 mph at an altitude of 10,000 ft what must be the absolute pressure reading in the total (stagnation) pressure air line?

$$p_s = \_\_\_\_\_ \text{ psia}$$

How about at 9,500 ft?

$$p_s = \_\_\_\_\_ \text{ psia}$$

Unbeknownst to the pilot ice accumulated over the static pressure holes while at an altitude of 10,000 ft. When the pilot descends to 9,500 ft how fast is the plane actually going if the airspeed indicator reads 140 mph?

$$v = \_\_\_\_\_ \text{ mph}$$

altitude [ft]	ρ [slugs/ft^3]	g [ft/s^2]	γ [lb/ft^3]	Pressure [psia]
0	0.00237689	32.1739	0.0764739	14.6959
9500	0.00178356	32.1447	0.0573321	10.3086
10000	0.00175570	32.1432	0.0564337	10.1097

Table 1: "U.S. Standard Atmosphere 1976"

Figure 1: By Cjp24 (Own work) [CC BY-SA 4.0 (http://creativecommons.org/licenses/by-sa/4.0)], via Wikimedia Commons