DEPARTMENT OF TRANSPORTATION
Federal Aviation Administration

VFR PILOT EXAM-O-GRAM* NO. 2

VFR CRUISING ALTITUDES

Assume that you plan to make a VFR cross-country flight over terrain which has a constant elevation of 2,900 feet. After charting the course you determine that the true course is 188° and the magnetic variation is 12° E. According to the latest aviation weather reports, there is a broken layer of clouds at 7,000 feet all along the route, and the visibility is unlimited along your intended route. The winds aloft forecast indicates that the higher the altitude the more favorable the wind direction and speed. If you intend to take advantage of the most favorable wind and still comply with Federal Aviation Regulations, you should decide upon a cruising altitude of:

a. 5,500 feet MSL
b. 6,500 feet MSL
c. 7,500 feet MSL
d. 9,500 feet MSL

Analysis

1- You wish to fly as high as legally possible to take advantage of the most favorable wind.

2- The base of the broken clouds is reported in height above the surface. Therefore, the base of the clouds is approximately 2,900 feet plus 7,000 feet, or 9,900 feet above sea level.

3- Cruising altitude is a level above mean sea level (MSL), but the rules pertaining to the selection of a cruising altitude appropriate to the flight's magnetic course are applicable only when flying more than 3,000 feet above the ground.

4- This flight will be made at an altitude of more than 3,000 feet above the surface in order to take advantage of the more favorable winds at higher altitudes. Since you will be flying more than 3,000 feet above the surface, you must, according to Federal Aviation Regulations, fly at a cruising altitude appropriate to the magnetic course. In this instance the magnetic course is 176° (true course 188° - 12°E magnetic variation = 176°.)

5- A magnetic course of 176° in this case requires that you fly at an altitude (above sea level) of an odd thousand plus 500 feet.

6- In this example, you must maintain a vertical distance under the base of any cloud formation of at least 500 feet. This rules out a cruising altitude of 9,500 feet. You do not choose 5,500 feet since you want to take advantage of better tail winds at higher altitudes. You eliminate 6,500 feet because you must be at an odd thousand altitude plus 500 feet. Therefore, you select a cruising altitude of 7,500 feet, which meets legal requirements and gives you the advantage of more favorable winds.

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* Exam-O-Grams are non-directive in nature and are issued solely as an information service to individuals interested in Airman Written Examinations.

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