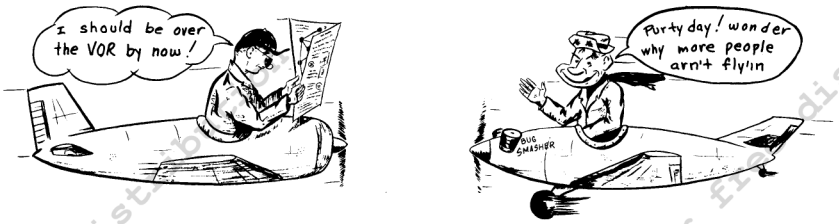
DEPARTMENT OF TRANSPORTATION
Federal Aviation Administration

VFR PILOT EXAM-O-GRAM* NO. 29

POTENTIAL MID-AIR COLLISIONS (Series 2)



Due to an increasing number of "near mid-air" collision incidents being reported and the seriousness of mid-air collisions, most general aviation written tests contain one or more test items that deal with FAA "right-of-way" rules. (NOTE: See VFR Exam-O-Gram No. 22 which also deals with Potential Mid-Air Collisions.)

This Exam-O-Gram will be concerned primarily with the right-of-way rule for "converging" aircraft. The "approaching head-on" rule is one that is simple and easily understood, a rule that has been in existence for many years and one that has an added safety factor in that each pilot of each aircraft shall alter course to the right.

CAN YOU ANSWER THE FOLLOWING SAMPLE TEST ITEM?

Assume that during a flight in a 4-place single-engine airplane you observe a light twin-engine airplane at your altitude. The light twin is approaching from your right on an apparent collision course. Although each pilot must do his best to avert a collision, which airplane, according to regulations, should give way and why should it give way?

1- You should give way since you are flying a small single-engine airplane.
2- You should give way since the light twin is on your right.
3- Both airplanes should alter their courses to the right since each pilot must do his best to avert a collision.
4- The light twin should give way since your airplane is to the light twin's left.

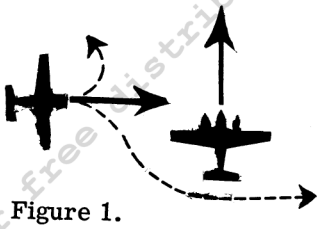


Figure 1.

The regulation concerning "converging" aircraft states in part: "When aircraft of the same category are converging at approximately the same altitude (except head-on, or nearly so), the aircraft to the other's right has the right-of-way." Therefore, response number 2 is correct since the other aircraft is on your right and both aircraft are of the same category - both are airplanes. See Figures 1 and 2.

☆☆☆☆☆

On the back page of this Exam-O-Gram, you will find an excerpt from a U. S. Naval Aviation Safety Bulletin. It is an excellent portrayal of the rapid rate of closure in a head-on view of a T-33 Jet, with a wing span of 42' 5", which closely approximates the span of several present day light twin-engine aircraft.

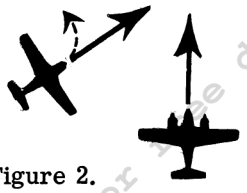


Figure 2.

Collision avoidance requires the necessity for constant vigilance of all pilots at all times under all circumstances. When another aircraft appears to be getting too close -- GIVE WAY! There is no equivalent to "fender bending" in aviation.

* 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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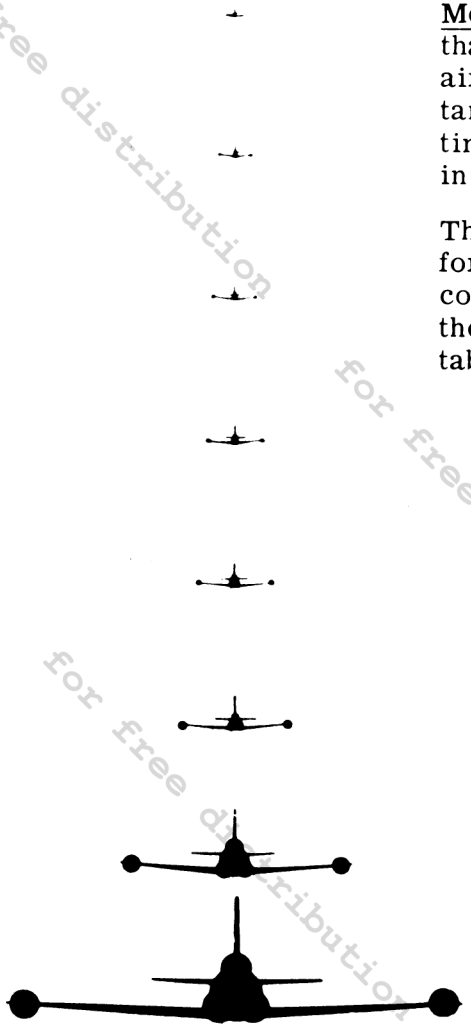
FAA Aeronautical Center
Flight Standards Technical Division
Operations Branch
P. O. Box 25082
Oklahoma City, Oklahoma 73125

DISTANCE - SPEED - TIME

MPH	600	360
	SECONDS	
10 miles	60	100
6 miles	36	60
5 miles	30	50
4 miles	24	40
3 miles	18	30
2 miles	12	20
1 mile	6	10
½ mile	3	5



CRITICAL SECONDS

Move back 12 feet from this illustration. From that position the silhouettes represent a T-33 aircraft as it would appear to you from the distances indicated in the table on the left. The time required to cover these distances is given in seconds for combined speeds of 360 and 600 mph.

The blocks on the lower left mark the danger area, for the speeds quoted, when aircraft are on a collision course. This danger area is based on the recognition and reaction times shown in the table on the lower right.

RECOGNITION and REACTION TIMES (from U.S. Naval Aviation Safety Bulletin)

Excerpt

	Seconds
see object	0.1
recognize a/c	1.0
become aware of collision course	5.0
decision to turn left or right	4.0
muscular reaction	0.4
aircraft lag time	2.0
TOTAL	12.5