Time, Speed, and Distance Problems

The rate arrow on the disk is always set to indicate a value per hour on the outer scale. There are three basic time-speed-distance problems. In two of these problems you know the rate, while in the third problem, the rate is part of the answer you are looking for.

To find the **Time En Route**, let's assume you know your airspeed is 150 knots (nautical miles per hour).

1. Set the rate arrow to 150. *See* Figure 3.
2. You have determined the distance to your destination to be 245 nautical miles. Speed and distance are always on the outer scale; 245 is halfway between 24 and 25.
3. Look directly opposite to that value on the inner scale to find the Time En Route. It is between 1:35 and 1:40. There are five calibration marks on the middle scale between 1:35 and 1:40, and 245 NM on the outer scale is closest to the third calibration, or one hour and 38 minutes.

To find out how far you can go if your **fuel endurance** is 4.5 hours and your ground speed is known to be 125 knots:

1. Set the rate arrow at 125 on the outer scale. *See* Figure 4.
2. Find 4:30 on the inner scale.
3. The value on the outer scale is slightly more than 55. You know that 4 hours at 125 knots should cover 500 miles, so the outer scale is read as 500, not 50 or 5,000, which makes each large calibration mark worth 10 nautical miles. The answer is 564 nautical miles.

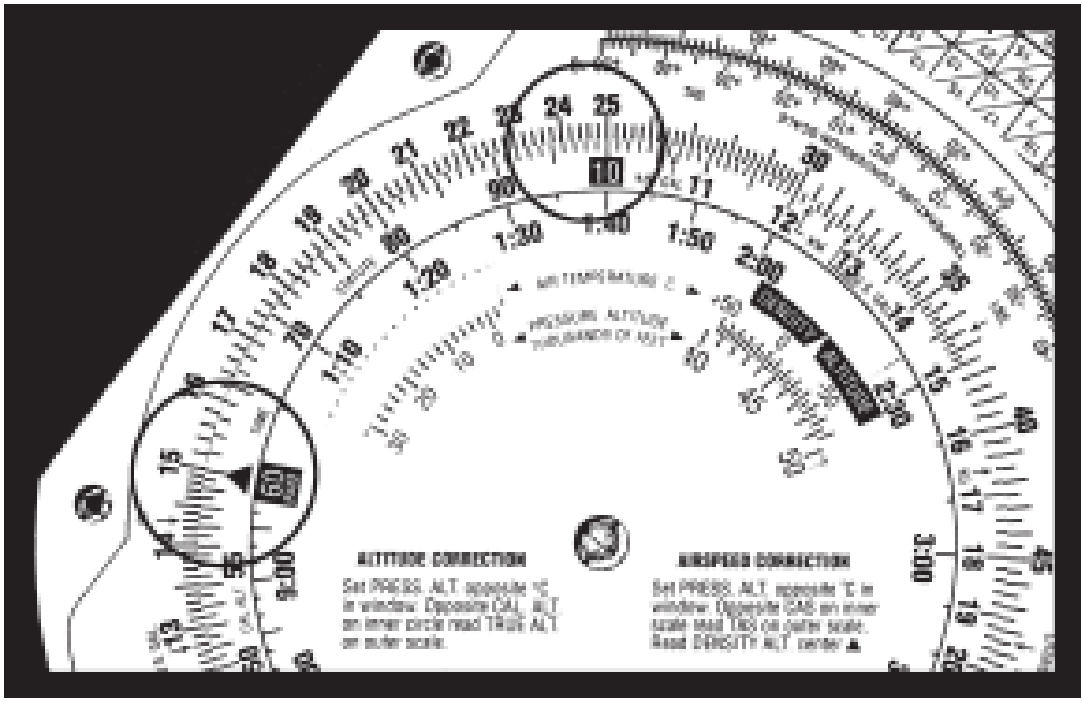

Figure 3

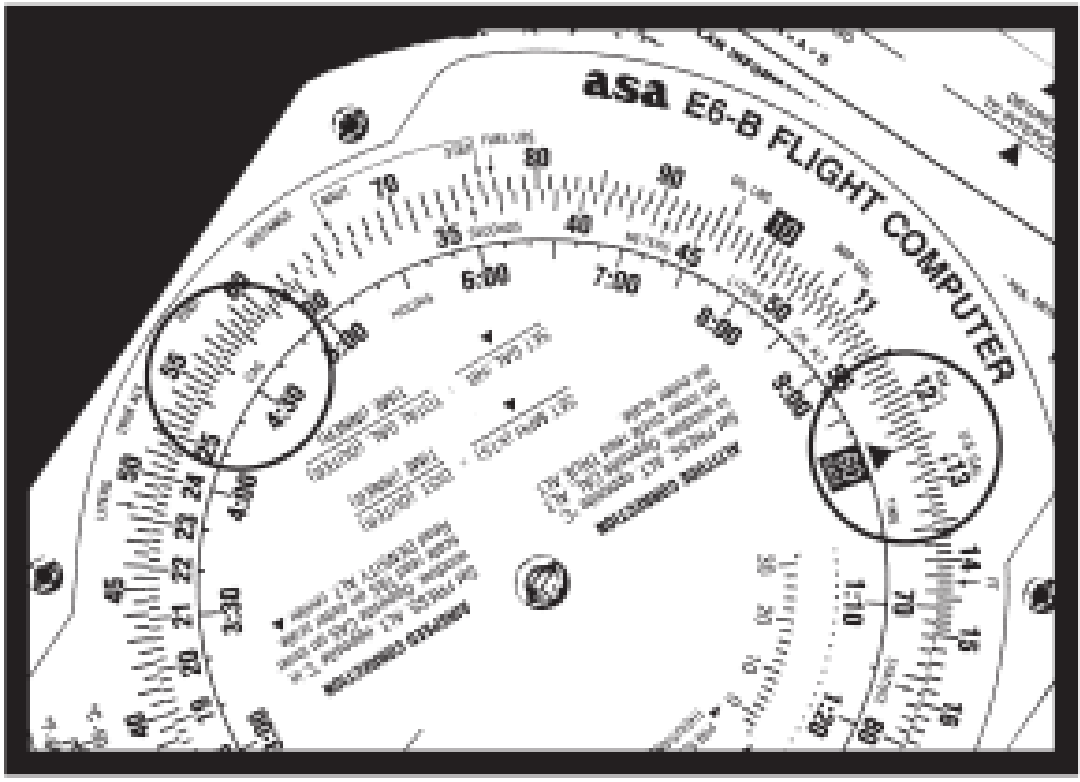

Figure 4

In the final and most common type of time-speed-distance problem, the time and distance are known, and you need to solve for **unknown speed**. The rate arrow represents the answer. You will have flown between two known ground reference points 26 NM apart and checked the time between them to be: 13 (thirteen minutes, that is, not thirteen hours).

1. Set thirteen minutes on the middle scale opposite to 26 on the outer scale. *See* Figure 5.
2. The rate arrow points to your ground speed, 120 knots.