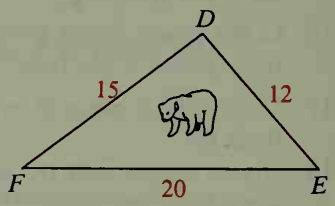
24. A mini-radio transmitter has been secured to a bear. Rangers D, E, and F are studying the bear's movements. Rangers D and E can receive the bear's beep at distances up to 10 km, ranger F at distances up to 15 km.

Draw a diagram showing where the bear might be at these times:

a. When all three rangers can receive the signal

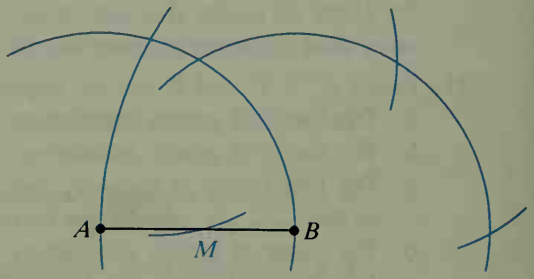
b. When ranger F suddenly detects the signal after a period of time during which only rangers D and E could receive the signal

c. When ranger D is off duty, and ranger F begins to detect the signal just as ranger E loses it



Challenge

Given $\overline{AB}$, it is possible to construct the midpoint M of $\overline{AB}$ using only a compass (and *no* straightedge). Study the diagram until you understand the procedure. Then draw $\overline{AB}$, about 10 cm long, construct its midpoint M as shown, and prove that M is the midpoint.



10-8 *Locus and Construction*

Sometimes the solution to a construction problem depends on finding a point that satisfies more than one condition. To locate the point, you may have to begin by constructing a locus of points satisfying *one* of the conditions.

Example Given the angle and the segments shown, construct $\triangle ABC$ with $m\angle A = n$, $AB = r$, and the altitude to $\overleftrightarrow{AB}$ having length s.