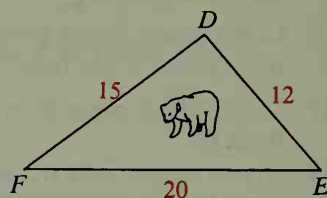


24. A mini-radio transmitter has been secured to a bear. Rangers  $D$ ,  $E$ , and  $F$  are studying the bear's movements. Rangers  $D$  and  $E$  can receive the bear's beep at distances up to 10 km, ranger  $F$  at distances up to 15 km.

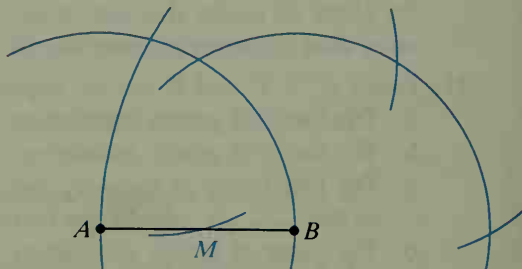
Draw a diagram showing where the bear might be at these times:

- When all three rangers can receive the signal
- When ranger  $F$  suddenly detects the signal after a period of time during which only rangers  $D$  and  $E$  could receive the signal
- 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  $s$ .

