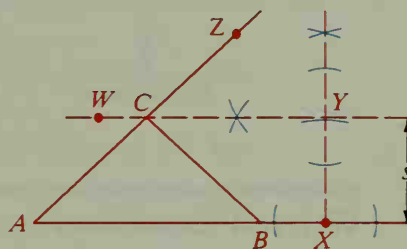
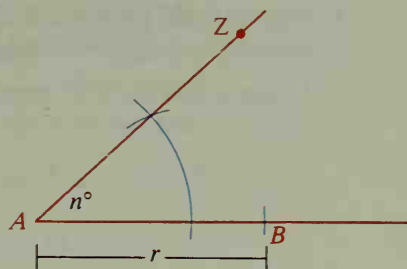


Solution

It is easy to construct $\angle A$ and side \overline{AB} . Point C must satisfy two conditions: C must lie on \overrightarrow{AZ} , and C must be s units from \overline{AB} . The locus of points s units from \overline{AB} is a pair of parallel lines. Only the upper parallel will intersect \overrightarrow{AZ} . We construct that parallel to \overline{AB} as follows:

1. Construct the perpendicular to \overline{AB} at any convenient point X .
2. Mark off s units on the perpendicular to locate point Y .
3. Construct the perpendicular to \overline{XY} at Y . Call it \overleftrightarrow{YW} .

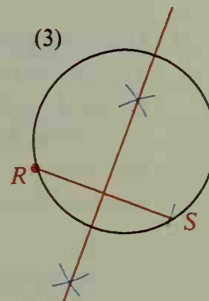
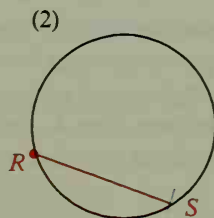
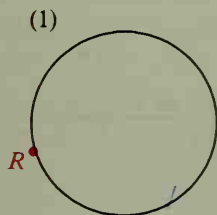
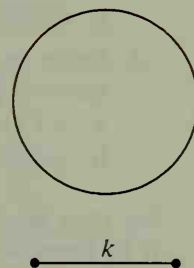
Note that all points on \overleftrightarrow{YW} are s units from \overline{AB} . Thus the intersection of \overleftrightarrow{YW} and \overrightarrow{AZ} is the desired point C . To complete the solution, we simply draw \overline{CB} .


Classroom Exercises

1. The purpose of this exercise is to analyze the following construction problem:

Given a circle and a segment with length k , inscribe in the circle an isosceles triangle RST with base \overline{RS} k units long.

- a. Suppose R has been chosen. Where must S lie so that RS equals k ? (In other words, what is the locus of points k units from R ?)
- b. Now suppose \overline{RS} has been drawn. Where must T lie so that $RT = ST$? (In other words, what is the locus of points equidistant from R and S ?)
- c. Explain the steps of the construction shown.



- d. Explain two different ways to finish the construction.