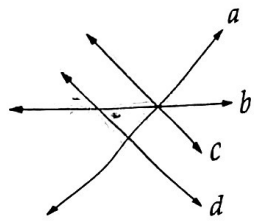
10.2.4 Lines j and k are parallel. If line ℓ is perpendicular to line j, then must line ℓ be perpendicular to line k?

10.2.6 In the diagram, line d is perpendicular to line a, and line d is parallel to line c. Line b passes through the intersection of lines a and c. If the acute angle between lines a and b measures 47°, then what is the measure of the acute angle between lines b and d?



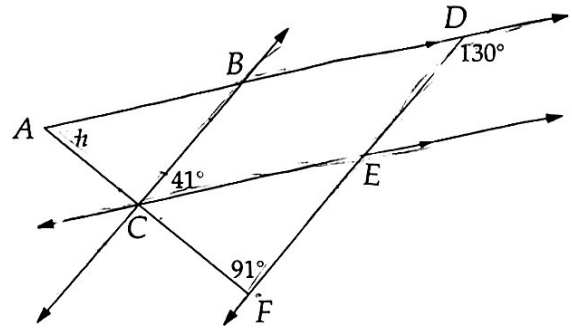
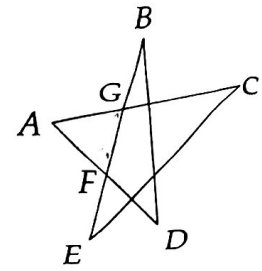


Figure 10.20: Diagram for Problem 10.35

10.35 Find angle measures h and j in the diagram on the right above.

10.39 Point A is on the edge of a circular disk. Every day at noon, the disk is rotated 150° in a counter-clockwise direction. What day of the week will it be the next time point A is at the same position that it was at 10 a.m. on Saturday? *(Source: MATHCOUNTS)*



10.42★ In quadrilateral $ABCD$ angle BAD and angle CDA are divided into three equal angles as shown. What is the measure of $\angle AFD$ in degrees? *(Source: MATHCOUNTS)* **Hints:** 50

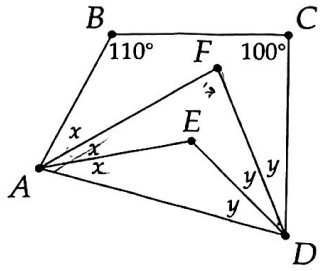


Figure 10.23: Diagram for Problem 10.42

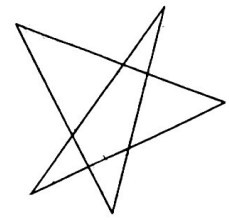


Figure 10.24: Diagram for Problem 10.43

10.43★ Draw a five-pointed star like the one shown at the right above. Find the sum of the measures of the angles at the five points of the star. Notice anything interesting? Test your observation for a few more stars, and then see if you can explain why it must be true.
Hints: 142, 63