35. ERROR ANALYSIS *Describe* and correct the error in finding the measure of angle A in $\triangle ABC$ if $a = 18$, $b = 15$, and $c = 10$.

$$\cos A = \frac{15^2 + 10^2 - 18^2}{2(18)(15)} \approx 0.0019$$

$$A \approx \cos^{-1} 0.0019 \approx 89.9°$$

CHOOSING A METHOD **Use the law of sines, the law of cosines, or the Pythagorean theorem to solve $\triangle ABC$.**

36. $A = 72°$, $B = 44°$, $b = 14$

37. $B = 98°$, $C = 37°$, $a = 18$

38. $C = 65°$, $a = 12$, $b = 21$

39. $B = 90°$, $a = 15$, $c = 6$

40. $C = 40°$, $b = 36$, $c = 27$

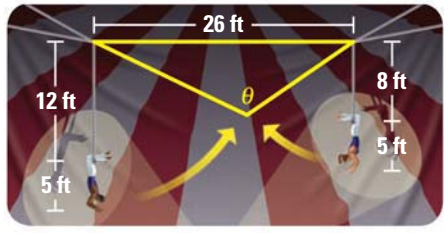
41. $a = 34$, $b = 19$, $c = 27$

42. CHALLENGE Given $\triangle ABC$ with height h, derive the law of cosines. *Explain* how the Pythagorean theorem is related to the law of cosines.

PROBLEM SOLVING

EXAMPLE 3 on p. 890 for Ex. 43

43. TRAPEZE ARTISTS The diagram shows the paths of two trapeze artists who are both 5 feet long when hanging by their knees. The "flyer" on the left bar is preparing to make hand-to-hand contact with the "catcher" on the right bar. At what angle θ will the two meet?



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EXAMPLE 4 on p. 891 for Exs. 44–45

44. RESEARCH TRIANGLE Raleigh, Durham, and Chapel Hill are three cities in North Carolina that form what is known as the Research Triangle. It is about 18 miles from Raleigh to Durham, 23 miles from Raleigh to Chapel Hill, and 8 miles from Chapel Hill to Durham. Find the area of the Research Triangle.

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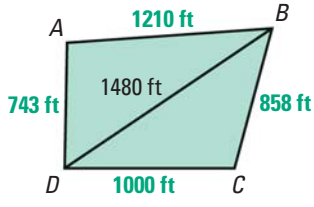
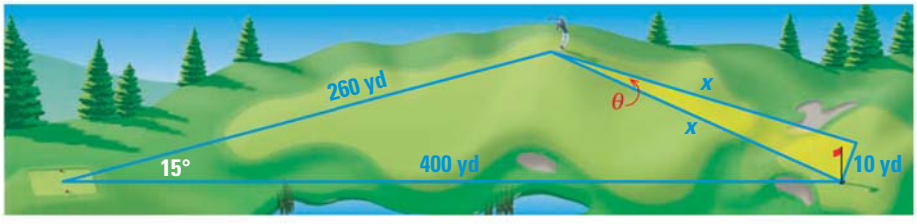
45. TAKS REASONING The diagram shows the dimensions of a plot of land. What is the area of the land in acres? (Use the fact that 1 acre = 43,560 square feet.) *Explain* how you could also determine the area by first finding the length of $\overline{AC}$.



46. MULTI-STEP PROBLEM A golfer hits a drive 260 yards on a hole that is 400 yards long. The shot is 15° off target.



a. What is the distance x from the golfer's ball to the hole?

b. Assume the golfer is able to hit the ball precisely the distance found in part (a). What is the maximum angle θ by which the ball can be off target in order to land no more than 10 yards from the hole?