18. In $\triangle ABC$, $AB = AC = 13$ and $BC = 10$.
    a. Find the length of the altitude from A.
    b. Find the measures of the three angles of $\triangle ABC$.
    c. Find the length of the altitude from C.

19. In $\triangle ABC$, $m \angle B = m \angle C = 72$ and $BC = 10$.
    a. Find AB and AC.
    b. Find the length of the bisector of $\angle A$ to $\overline{BC}$.

20. In $\triangle PAL$, $m \angle A = 90$, $m \angle L = 24$ and median $\overline{AM}$ is 6 cm long. Find PA.

21. The diagonals of rectangle $ABCD$ are 18 cm long and intersect in a $34°$ angle. Find the length and width of the rectangle.

22. Points A, B, and C are three consecutive vertices of a regular decagon whose sides are 16 cm long. How long is diagonal $\overline{AC}$?

23. Points A, B, C, and D are consecutive vertices of a regular decagon with sides 20 cm long. $\overrightarrow{AB}$ and $\overrightarrow{DC}$ are drawn and intersect at X. Find BX.

For Exercises 24–26 write proofs in paragraph form.

C 24. Prove that in any triangle with acute angles A and B, $\dfrac{a}{\sin A} = \dfrac{b}{\sin B}$. (*Hint:* Draw a perpendicular from the third vertex to $\overline{AB}$. Label it p.)
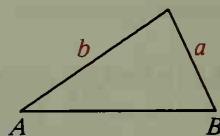
25. Prove: If R is any acute angle, $(\sin R)^2 + (\cos R)^2 = 1$. (*Hint:* From any point on one side of $\angle R$, draw a perpendicular to the other side.)

26. A rectangular card is 10 cm wide. The card is folded so that the vertex D falls at point D' on $\overline{AB}$ as shown. Crease $\overline{CE}$ with length k makes an $n°$ angle with $\overline{CD}$. Prove: $k = \dfrac{10}{\sin (2n)° \cos n°}$
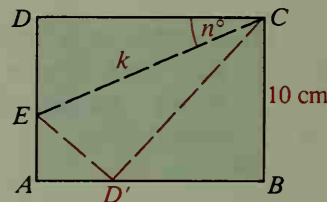
Challenge

The two blocks of wood have the same size and shape. It is possible to cut a hole in one block in such a way that you can pass the other block completely through the hole. How?