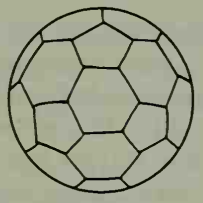
B **16.** The sum of the measures of the interior angles of a polygon is five times the sum of the measures of its exterior angles, one angle at each vertex. How many sides does the polygon have?

17. The measure of each interior angle of a regular polygon is eleven times that of an exterior angle. How many sides does the polygon have?

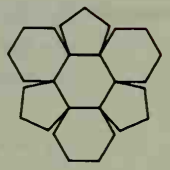
18. **a.** What is the measure of each interior angle of a regular pentagon?
b. Can you tile a floor with tiles shaped like regular pentagons? (Ignore the difficulty in tiling along the edges of the room.)

19. Make a sketch showing how to tile a floor using both squares and regular octagons.

20. The cover of a soccerball consists of interlocking regular pentagons and regular hexagons, as shown at the right. The second diagram shows that regular pentagons and hexagons cannot be interlocked in this pattern to tile a floor. Why not?



Possible



Impossible

21. In quadrilateral $ABCD$, $m\angle A = x$, $m\angle B = 2x$, $m\angle C = 3x$, and $m\angle D = 4x$. Find the value of x and then state which pair of sides of $ABCD$ must be parallel.

22. In pentagon $PQRST$, $m\angle P = 60$ and $m\angle Q = 130$. $\angle S$ and $\angle T$ are each three times as large as $\angle R$.
a. Find the measures of $\angle R$, $\angle S$, and $\angle T$.
b. Which pair of sides of $PQRST$ must be parallel?

23. $ABCDEFGHIJ$ is a regular decagon. If sides $\overline{AB}$ and $\overline{CD}$ are extended to meet at K, find the measure of $\angle K$.

24. $\overline{BC}$ is one side of a regular n-gon. The sides next to $\overline{BC}$ are extended to meet at W. Find the measure of $\angle W$ in terms of n.

25. The sum of the measures of the interior angles of a polygon is known to be between 2100 and 2200. How many sides does the polygon have?

C **26.** The sum of the measures of the interior angles of a polygon with n sides is S. Without using n in your answer, express in terms of S the sum of the measures of the angles of a polygon with:
a. $n + 1$ sides **b.** $2n$ sides

27. The formula $S = (n - 2)180$ can apply to nonconvex polygons if you allow the measure of an interior angle to be more than 180.
a. Illustrate this with a diagram that shows interior angles with measures greater than 180.
b. Does the reasoning leading up to Theorem 3-13 apply to your figure?

28. Given: The measure of each interior angle of a regular n-gon is x times that of an exterior angle.
a. Express x in terms of n.
b. For what values of n will x be an integer?