For each exercise, write the equation you think should come next. Check your prediction with a calculator.

15. $1 \times 9 + 2 = 11$	**16.** $9 \times 9 + 7 = 88$	**17.** $9^2 = 81$
$12 \times 9 + 3 = 111$	$98 \times 9 + 6 = 888$	$99^2 = 9801$
$123 \times 9 + 4 = 1111$	$987 \times 9 + 5 = 8888$	$999^2 = 998001$

Draw several diagrams to help you decide whether each statement is true or false. If it is false, show a counterexample. If it is true, draw and label a diagram you could use in a proof. List, in terms of the diagram, what is given and what is to be proved. Do *not* write a proof.

B **18.** If a triangle has two congruent sides, then the angles opposite those sides are congruent.

19. If a triangle has two congruent angles, then the sides opposite those angles are congruent.

20. If two triangles have equal perimeters, then they have congruent sides.

21. All diagonals of a regular pentagon are congruent.

22. If both pairs of opposite sides of a quadrilateral are parallel, then the diagonals bisect each other.

23. If the diagonals of a quadrilateral are congruent and also perpendicular, then the quadrilateral is a regular quadrilateral.

24. The diagonals of an equilateral quadrilateral are congruent.

25. The diagonals of an equilateral quadrilateral are perpendicular.

26. a. Study the diagrams below. Then guess the number of regions for the fourth diagram. Check your answer by counting.
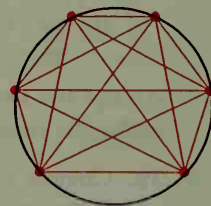

2 points	3 points	4 points	5 points
2 regions	4 regions	8 regions	_?_ regions

b. Using 6 points on a circle as shown, guess the number of regions within the circle. Carefully check your answer by counting.
Important note: This exercise shows that a pattern predicted on the basis of a few cases may be incorrect. To be sure of a conclusion, use a deductive proof.

27. a. Draw several quadrilaterals whose opposite sides are parallel. With a protractor measure both pairs of opposite angles of each figure. On the basis of the diagrams and measurements, what do you guess is true for all such quadrilaterals? (*Note:* See Exercise 23, page 82.)

b. State and prove the converse of your conclusion about opposite angles in part (a).

c. Write a biconditional about pairs of opposite angles of a quadrilateral.