

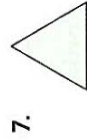
Vocabulary and Core Concept Check

- VOCABULARY** How does the prefix “counter-” help you understand the term counterexample?
- WRITING** Explain the difference between inductive reasoning and deductive reasoning.

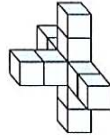
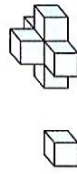
Monitoring Progress and Modeling with Mathematics

In Exercises 3–8, describe the pattern. Then write or draw the next two numbers, letters, or figures. (See Example 1.)

- 1, -2, 3, -4, 5, ...
- 0, 2, 6, 12, 20, ...
- Z, Y, X, W, V, ...
- J, F, M, A, M, ...



8.



In Exercises 17–20, use the Law of Detachment to determine what you can conclude from the given information, if possible. (See Example 4.)

- If you pass the final, then you pass the class. You passed the final.
- If your parents let you borrow the car, then you will go to the movies with your friend. You will go to the movies with your friend.
- If a quadrilateral is a square, then it has four right angles. Quadrilateral $QRST$ has four right angles.
- If a point divides a line segment into two congruent line segments, then the point is a midpoint. Point P divides LH into two congruent line segments.

In Exercises 9–12, make and test a conjecture about the given quantity. (See Example 2.)

- the product of any two even integers
- the sum of an even integer and an odd integer
- the quotient of a number and its reciprocal
- the quotient of two negative integers

In Exercises 13–16, find a counterexample to show that the conjecture is false. (See Example 3.)

- The product of two positive numbers is always greater than either number.
 - If n is a nonzero integer, then $\frac{n+1}{n}$ is always greater than 1.
 - If two angles are supplements of each other, then one of the angles must be acute.
 - A line s divides \overline{MN} into two line segments. So, the line s is a segment bisector of \overline{MN} .
- In Exercises 21–24, use the Law of Syllogism to write a new conditional statement that follows from the pair of true statements, if possible. (See Example 5.)
- If $x < -2$, then $|x| > 2$. If $x > 2$, then $|x| > 2$.
 - If $a = 3$, then $5a = 15$. If $\frac{1}{2}a = 1\frac{1}{2}$, then $a = 3$.
 - If a figure is a rhombus, then the figure is a parallelogram. If a figure is a parallelogram, then the figure has two pairs of opposite sides that are parallel.
 - If a figure is a square, then the figure has four congruent sides. If a figure is a square, then the figure has four right angles.
- In Exercises 25–28, state the law of logic that is illustrated.
- If you do your homework, then you can watch TV. If you watch TV, then you can watch your favorite show. If you do your homework, then you can watch your favorite show.