

1.1 Basics of Geometry Homework

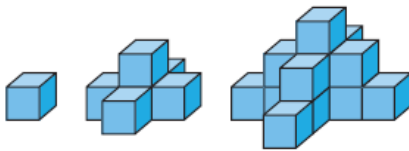
Name: _____

Describe a pattern in the sequence of numbers. Predict the next number.

- 1. 10, 5, 2.5, 1.25, . . .
- 2. 5, 0, -5, -10, . . .
- 3. 1, 3, 6, 10, 15, . . .
- 4. 1.1, 1.01, 1.001, 1.0001, . . .

The first three objects in a pattern are shown. How many blocks are in the next object?

5.



Complete the conjecture based on the pattern you observe in the specific cases.

$1 + 1 = 2$	$7 + 11 = 18$
$1 + 3 = 4$	$13 + 19 = 32$
$3 + 5 = 8$	$201 + 305 = 506$

6. Conjecture: The sum of any two odd number is _____ .

$3 \cdot 5 = 4^2 - 1$	$6 \cdot 8 = 7^2 - 1$
$4 \cdot 6 = 5^2 - 1$	$7 \cdot 9 = 8^2 - 1$
$5 \cdot 7 = 6^2 - 1$	$8 \cdot 10 = 9^2 - 1$

7. The product of a number $(n - 1)$ and the number $(n + 1)$ is always equal to _____ .

Show the conjecture is false by finding a counterexample.

- 8. The sum of two numbers is always greater than the larger number.
- 9. If the product of two numbers is positive, then the two numbers must both be positive.
- 10. If m is a nonzero integer, then $\frac{m+1}{m}$ is always greater than 1.