

## Backsolving with Strange Symbols on the ISEE Middle and Upper Level

LESSON GOAL: Learn how to substitute the answer choices into questions with strange symbols.

**ISEE Question:** If  $z \Rightarrow = z^2 + 2z$ , and  $x \Rightarrow = 15$ , what is the integer value of  $x$ ?

- (A) 1
- (B) 3
- (C) 5
- (D) 15

**Solution:** For this **strange symbol** problem, it's easiest to **backsolve**, which just means "plug in the answer choices." (For another way to do the problem, see [Substituting with Strange Symbols](#).)

STEP 1: Analyze the **rule** and quickly estimate the answer. Here, the "z" is squared and doubled and the two are added together, but the result is still the relatively small number 15, so answer choice D) seems too large, and even C) doesn't look very likely. So let's start plugging in from A) or B).

STEP 2: Next to the each answer choice, rewrite the equation, **plugging in** the numbers in that answer choice instead of the "z" (use parentheses) and solve until one of them gives you 15:

- (A) 1     $1 \Rightarrow = (1)^2 + 2(1) = 1 + 2 = 3$
- (B) 3     $3 \Rightarrow = (3)^2 + 2(3) = 9 + 6 = 15$     THAT'S IT!
- (C) 5
- (D) 15

The correct answer is B).

Now try this problem by yourself:

**ISEE Question:**  $m \Downarrow \Downarrow \Downarrow n = m^2 - n^2$ . If  $6 \Downarrow \Downarrow \Downarrow k = 20$ , what is the value of  $k$ ?

- (A) 2
- (B) 4
- (C) 6
- (D) 8