

Substituting with Strange Symbols on the ISEE Middle and Upper Level

LESSON GOAL: Learn how to substitute numbers in problems with unusual notation.

ISEE Question: If $h \blacktriangle j = 2h - 3j$, what does $3 \blacktriangle 2 = ?$

- (A) 0
- (B) 2
- (C) 3
- (D) 6

Solution: Don't panic. That black triangle symbol you have never seen before doesn't mean there's math you don't know. It is a **strange symbol** invented for this specific problem, and its meaning is given in the problem.

STEP 1: Analyze the **rule** for the strange symbol: " $h \blacktriangle j = 2h - 3j$ " says that you take the number to the left of the triangle (called " h "), you double it (" $2h$ "), and then you subtract three times the number to the right of the triangle (" $- 3j$ ").

STEP 2: **Plug in** the given numbers into the equation by copying it exactly below the original:

$$\begin{aligned} h \blacktriangle j &= 2h - 3j \\ 3 \blacktriangle 2 &= 2(3) - 3(2) \end{aligned}$$

Helpful Tip: Always use parentheses when plugging in numbers to make sure you don't accidentally mix up the sign of the number or the operation.

STEP 3: Solve the new equation, which should now have only numbers: $3 \blacktriangle 2 = 2(3) - 3(2) = 6 - 6 = 0$

The correct answer is A).