

- The symbolism $\lfloor x \rfloor$ denotes the largest integer not exceeding x . For example, $\lfloor 3 \rfloor = 3$, and $\lfloor 9/2 \rfloor = 4$. Compute

$$\lfloor \sqrt{1} \rfloor + \lfloor \sqrt{2} \rfloor + \lfloor \sqrt{3} \rfloor + \cdots + \lfloor \sqrt{16} \rfloor.$$

- (A) 35 (B) 38 (C) 40 (D) 42 (E) 136

2003 AMC 10 B, Problem #7—

“What is $\lfloor \sqrt{x} \rfloor$ when x is not a perfect square?”

- **Solution (B)** The first three values in the sum are 1, the next five are 2, the next seven are 3, and the final one is 4 for a total of

$$3 \cdot 1 + 5 \cdot 2 + 7 \cdot 3 + 1 \cdot 4 = 38.$$

Difficulty: Medium

NCTM Standard: Number and Operations Standard for Grades 9–12: Judge the effects of such operations as multiplication, division, and computing powers and roots on the magnitudes of quantities.

Mathworld.com Classification:

Number Theory > Rounding > Floor Function