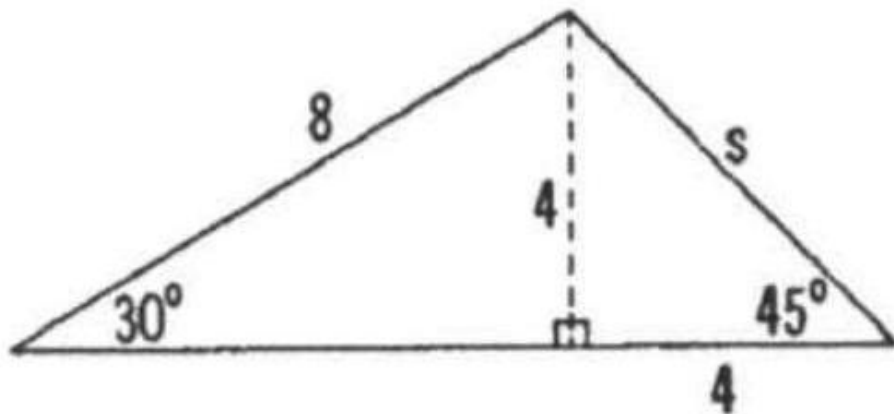# Example 1

(AMC) A triangle has angles of $30°$ and $45°$. If the side opposite the $45°$ angle has length 8 , then the side opposite the $30°$ angle has length
(A) 4
(B) $4\sqrt{2}$
(C) $4\sqrt{3}$
(D) $4\sqrt{6}$
(E) 6

Solution: (B).

Let s denote the length of the side we want to figure out (see figure to the right). The altitude to the longest side, opposite the $30°$ angle, has length $\frac{8}{2} = 4$ and is also one leg of an isosceles right triangle with hypotenuse s, which therefore has length

$4\sqrt{2}.$