

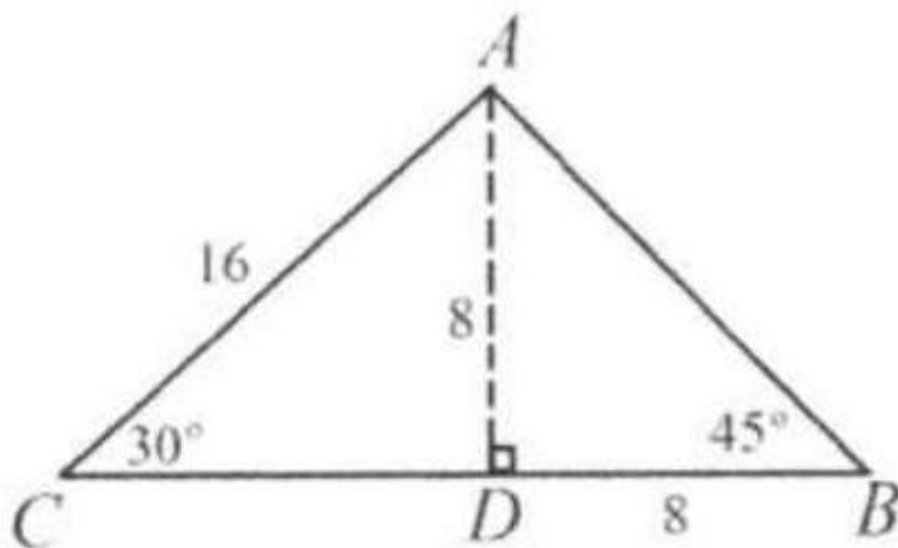
Problem

(AMC) Let line AC be perpendicular to line CE . Connect A to the midpoint D of CE , and connect E to the midpoint B of AC . If AD and EB intersect in point F , and $BC = CD = 15$ inches, find the area of triangle DFE in square inches.

Solution

(C).

We draw the height from A to the base BC as shown in the figure to the right. Triangle ADC is a $30^\circ - 60^\circ - 90^\circ$ right triangle, and so the ratio of the sides is $1 : \sqrt{3} : 2$. It follows that $AD = 16/2 = 8$ and $CD = 8\sqrt{3}$. Triangle ADB is a $45^\circ - 45^\circ - 90^\circ$ right triangle, and so



the ratio of the sides is $1 : 1 : \sqrt{2}$. Thus, $DB = 8$.
The answer is $8 + 8\sqrt{3}$.