Problem of the Week

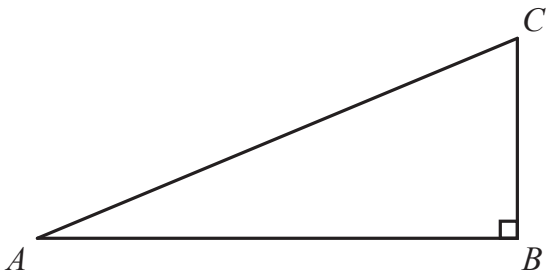
Problem E

An Inside Job

A right triangle, $\triangle ABC$, is constructed so that its base, AB, is twice its height, BC. That is, $AB = 2BC$.

A square is constructed in the following way:

- one vertex is at B;
- a second vertex is at D, somewhere on AB between A and B;
- a third vertex is at F, somewhere on BC between B and C; and
- the final vertex E lies on the hypotenuse AC, between A and C.



This square, $DEFB$ is called an *inscribed* square. Determine the ratio of the area of the inscribed square $DEFB$ to $\triangle ABC$.