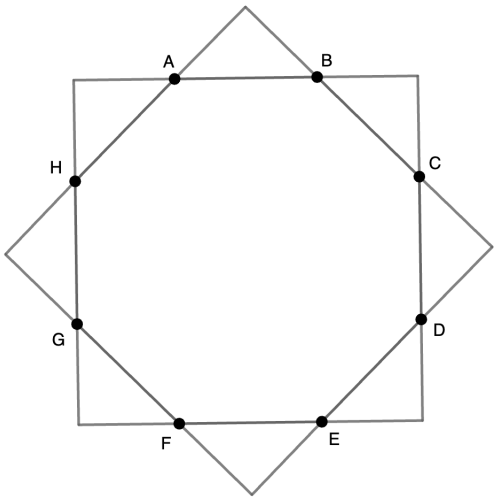
In the figure below, two congruent squares are stacked on top of each other. The overlapped sections of the squares create regular octagon $ABCDEFGH$, with side length 4cm. Using this information, answer the questions below.[1]

(1): Find the measure of an interior angle in octagon $ABCDEFGH$.
(2): Find the total area of the 8 triangles surrounding octagon $ABCDEFGH$.



[1] Mie Prefecture

Solution

$Answer : (1) : 135°, (2) : 32cm^2$

Proof (1): An exterior angle of a regular octagon is $360° \div 8 = 45°$. Therefore, the measure of each interior angle is $\mathbf{180°} - \mathbf{45°} = \mathbf{135°}$.

Proof (2): The area of an isosceles right triangle is a quarter of the square of the hypotenuse. To calculate the total area of the 8 isosceles right triangles, you can multiply that result by 8: $(\frac{\mathbf{1}}{\mathbf{4}} \times \mathbf{4^2}) \times \mathbf{8} = \mathbf{32cm^2}$.