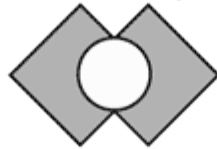


- Two 4×4 squares intersect at right angles, bisecting their intersecting sides, as shown. The circle's diameter is the segment between the two points of intersection. What is the area of the shaded region created by removing the circle from the squares?



- (A) $16 - 4\pi$ (B) $16 - 2\pi$ (C) $28 - 4\pi$ (D) $28 - 2\pi$ (E) $32 - 2\pi$

2004 AMC 8, Problem #25

"Draw in the square that exists in the middle. What is its side length?"

- **Solution**

(D) The overlap of the two squares is a smaller square with side length 2, so the area of the region covered by the squares is $2(4 \times 4) - (2 \times 2) = 32 - 4 = 28$. The diameter of the circle has length $\sqrt{2^2 + 2^2} = \sqrt{8}$, the length of the diagonal of the smaller square. The shaded area created by removing the circle from the squares is $28 - \pi \left(\frac{\sqrt{8}}{2}\right)^2 = 28 - 2\pi$.

Difficulty: Hard

NCTM Standard: Geometry

analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships

Mathworld.com Classification:

Geometry > Plane Geometry > Circles > Diameter

