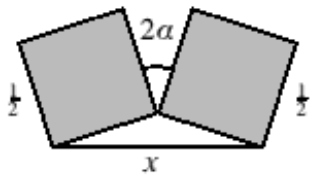
18. The diagram shows two squares, with sides of length $\frac{1}{2}$, inclined at an angle 2α to one another. What is the value of x?



A $\cos\alpha$ B $\dfrac{1}{\cos\alpha}$ C $\sin\alpha$ D $\dfrac{1}{\sin\alpha}$ E $\tan\alpha$

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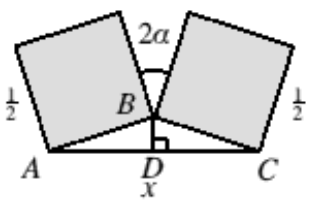
18. **A** In the diagram, D is the midpoint of AC. Triangle ABC is isosceles since $AB = BC = \frac{1}{2}$. Therefore, BD bisects $\angle ABC$ and BD is perpendicular to AC. The angles at a point total 360°, so $\angle ABC = 360° - 2\times 90° - 2\alpha = 180° - 2\alpha$. Therefore $\angle ABD = \angle CBD = 90° - \alpha$. So $\angle BAD = \angle BCD = \alpha$.



Therefore $x = AC = 2\times AD = 2\times AB\cos\alpha = 2\times\frac{1}{2}\cos\alpha = \cos\alpha$.