

2025 Sept AMC 10 Week 2 Day 2 - Geometric Probability

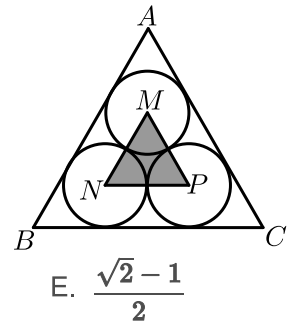
- 1 A point P is chosen at random inside a circle C with radius 2. What is the probability that the chord with midpoint P has length less than $2\sqrt{3}$?

A. $\frac{1}{2}$ B. $\frac{3}{4}$ C. $\frac{1}{4}$ D. $\frac{3}{10}$ E. $\frac{3}{5}$

- 2 On side AB of triangle ABC with area S , a point P is chosen at random. What is the probability that the area of $\triangle PBC$ is greater than $\frac{S}{3}$?

A. $\frac{1}{6}$ B. $\frac{2}{3}$ C. $\frac{1}{4}$ D. $\frac{1}{3}$ E. $\frac{5}{6}$

- 3 As shown in the figure, circles M , N , and P are mutually externally tangent and also tangent internally to the equilateral triangle ABC . If a point is chosen at random inside equilateral triangle ABC , what is the probability that this point lies inside triangle MNP (the shaded region)?

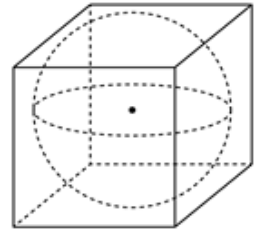


A. $\frac{\sqrt{3}-1}{2}$ B. $\frac{\sqrt{3}-1}{3}$ C. $\frac{2-\sqrt{3}}{2}$ D. $\frac{2-\sqrt{3}}{3}$ E. $\frac{\sqrt{2}-1}{2}$

- 4 Since Wong is busy at work and has no time to cook lunch, he orders takeout. Suppose both Wong and the delivery person both arrive randomly between 12:00 and 12:10 at the entrance of Wong's building. Suppose Wong arrived earlier than the delivery person, what is the probability that Wong waits no more than 5 minutes for the delivery person?

A. $\frac{1}{2}$ B. $\frac{4}{5}$ C. $\frac{3}{4}$ D. $\frac{3}{8}$ E. $\frac{5}{8}$

As shown in the figure, a sphere is inscribed in a cube of side length **2** (the sphere is tangent to each face of the cube). If a point P is chosen at random inside the cube, what is the probability that the point lies outside the sphere?



A. $\frac{\pi}{6}$

B. $\frac{\pi}{8}$

C. $\frac{6 - \pi}{6}$

D. $\frac{8 - \pi}{8}$

E. $\frac{\pi}{4}$