TOPIC 15-4: GEOMETRIC PROBABILITY

Probability is the likelihood that an event will happen.

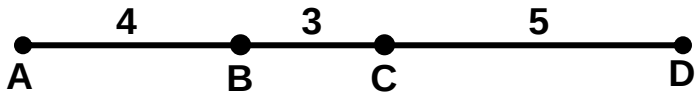
Probabilities are determined by:

$$P(\text{event}) = \frac{\#\text{of outcomes in the event}}{\#\text{ of outcomes in the sample space}}$$

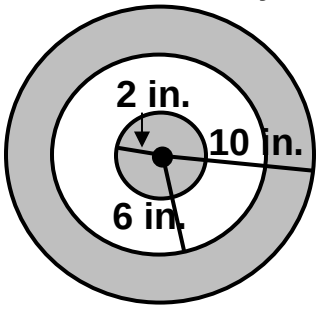
In geometric probability, the probability of an event is based on a ratio of geometric measures such as length or area. The probability that a point in a figure will lie in a particular part of the figure can be calculated by dividing the length or area of the part of the figure by the length or area of the entire figure.

$$P(B) = \frac{\text{area of region B}}{\text{area of region A}}$$

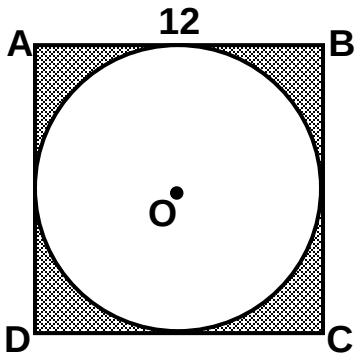
EXAMPLE 1: A point is chosen randomly on $\overline{AD}$. Find the probability that the point is on $\overline{AC}$. Now find the probability that the point is not on $\overline{AB}$.



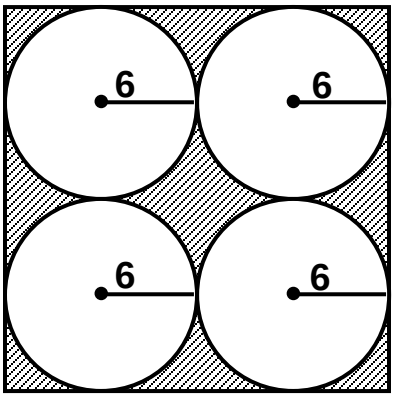
EXAMPLE 2: Darts are thrown at a circular dartboard. If a dart hits the board, what is the probability that the dart lands in the bulls-eye?



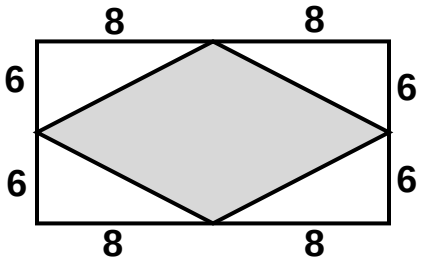
EXAMPLE 3: Find the probability that a point chosen at random lies in the shaded region. Round to the nearest hundredth, if necessary.



EXAMPLE 4: Find the probability that a point chosen at random lies in the shaded region. Round to the nearest hundredth, if necessary.



EXAMPLE 5: Find the probability that a point chosen at random lies in the shaded region. Round to the nearest hundredth, if necessary.



EXAMPLE 6: Find the probability that a point chosen randomly inside the rectangle is in the equilateral triangle. Now find the probability that a point chosen randomly inside the rectangle is in the trapezoid. Round to the nearest hundredth.