Assignment

Write

1. _____ is the likelihood of an event occurring based on geometric relationships such as length, area, or volume.
2. _____ is the sum of the values of a random variable with each value multiplied by its probability of occurrence.

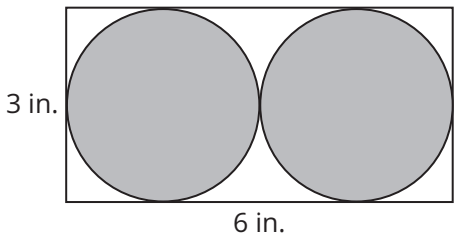
Remember

It is often valuable to be able to determine the financial risk/reward involved when making a decision that is based upon unknowns. Using the known probabilities can help you make better decisions.

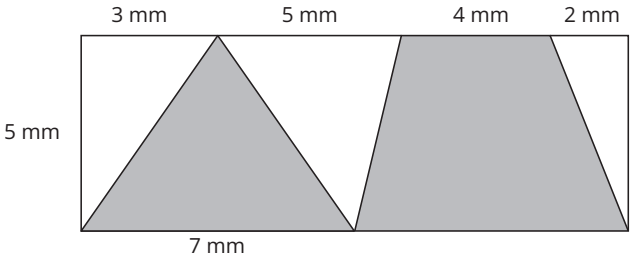
Practice

1. A dart is thrown and lands on random spot on each target. Determine the probability of hitting the shaded region. Write your answers as a percent rounded to the nearest tenth.

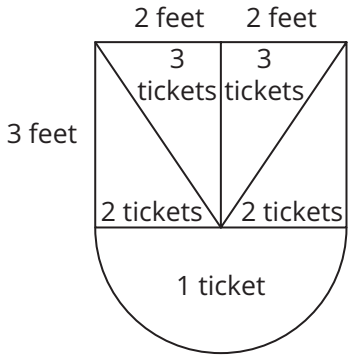
   a. The board shown is two circles inscribed inside a rectangle.



   b. The board shown is a triangle and a trapezoid inside of a rectangle.



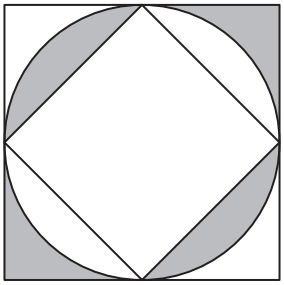
2. At a carnival, Jasmine is playing a game with the dartboard below. The dartboard has a rectangular shaped top and a semicircle along the bottom. She throws a dart that lands randomly on the dartboard, and wins the number of tickets shown in each region.



   a. Determine the areas you will need to know to calculate the expected value for the number of tickets Jasmine will win.
   b. Determine the probabilities you will need to know to calculate the expected value for the number of tickets Jasmine will win.
   c. What is the expected value for the number of tickets Jasmine will win?

Stretch

1. The board shown is a square inside a circle that is inside another square. The radius of the circle is $\sqrt{3}$ meters.



   a. A dart is thrown and lands on a random spot on the board. Determine the probability of hitting the shaded region. Write your answer as a percent rounded to the nearest tenth.

   b. If the dart lands on a shaded area inside the circle, the player is given 10 points. If the dart lands on a shaded area outside the circle, the player is given 20 points. What is the expected value for the number of points a player will get?

Review

1. In a restaurant, $\frac{3}{5}$ of the customers order meat dishes and $\frac{2}{5}$ of the customers order meatless dishes. If eight people sit down for a meal, what is the probability that three of them order meat dishes and five of them order meatless dishes?
2. A spinner has 4 blue spaces and 2 yellow spaces. What is the probability of 3 blue outcomes and 1 yellow outcome when the spinner is spun 4 times?
3. While playing a board game, a player rolls a number cube once and then picks a card. The number cube is numbered 1 through 6. There are 3 cards, each with one animal on them including a pig, a goat, and a cow.
   a. Write an organized list that represents the sample space.
   b. Determine the size of the sample space using the Counting Principle. Show your calculation.
4. Consider the graph shown. Identify the key characteristics.
   a. Intervals where the function is increasing or decreasing
   b. Minimum and/or maximum values of the function
   c. x- and y-intercept(s)