NAME _______________ DATE _______

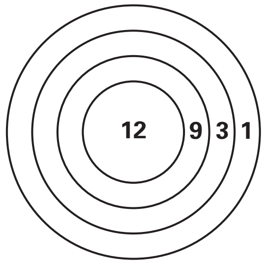
Real-Life Application: When Will I Ever Use This?

For use with pages 636–640

Circle Game

GAMES Suppose you are on the Spring Fair committee at your school and you want to design a game to be played at the fair. You can use your knowledge of circles to design the game.

A series of concentric circles is placed at the end of a ramp. A player rolls a ball down the ramp. At the end of the ramp, the ball will bounce into one of the circles. The inner circle is worth 12 points, the next circle is worth 9 points, the third circle is worth 3 points, and the outer circle is worth 1 point.

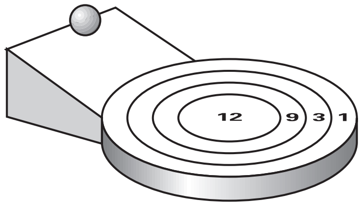


You assume that, on average:

- 5% of the balls will bounce into the 12-point circle.
- 15% of the balls will bounce into the 9-point circle.
- 30% of the balls will bounce into the 3-point circle.
- 50% of the balls will bounce into the 1-point circle.

In Exercises 1–4, use the information above and the following information.

Assume that your design for this game includes a coordinate plane with the circles plotted. The center of the circles is at (8, 4). The radius of each circle is given in the table.



Circle	12-point circle	9-point circle	3-point circle	1-point circle
Radius	2 feet	3 feet	4 feet	5 feet

1. Write the equations of the circles.
2. Graph your equations from Exercise 1 in a coordinate plane. Each square unit is one square foot.
3. During a turn, a player rolls 4 balls down the ramp. Use your graph from Exercise 2 to find the total point value for a turn where the four balls land at the following locations: (7, 4), (10, 7), (10, 0), and (9, 6).
4. During the entire day of the Fair, 1200 people played the game, with each person rolling 4 balls down the ramp. On average, how many balls rolled into each of the circles described above?