

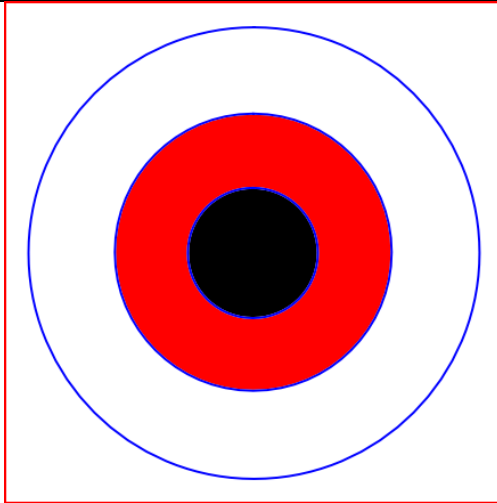
Name _____

Date _____

Advanced Algebra

Unit 8: Probability – Assignment #10 Geometric Probability

Billy is practicing for a dart throwing tournament. He is throwing darts at the target shown below. The biggest circle is white, the medium circle is red, and the smallest circle is black. The white circle has a diameter of 5 inches, the red circle has a diameter of 3 inches, and the black circle has a diameter of 2 inches. Billy is accurate enough to hit somewhere within the largest circle, but anywhere inside of the white circle is equally likely. The area of a circle is $A = \pi r^2$.



1. Find the area of the inner most, black circle.
2. Find the area of a circle with diameter of 3 inches.
3. Find the red area on the dart board.
4. Find the area of a circle with diameter of 5 inches.
5. Find the white area on the dart board.
6. Find these probabilities (without a tree diagram):
 - a. $P(\text{dart lands in black})$
 - b. $P(\text{dart lands in red})$
 - c. $P(\text{dart lands in white})$
 - d. $P(\text{dart lands in red 3 consecutive throws})$
7. Billy throws 2 darts at the board. Find these probabilities (with a tree diagram):
 - a. $P(\text{He hits the same color with both throws})$
 - b. $P(\text{He hits different colors with both throws})$
 - c. $P(\text{He hits black exactly once})$
 - d. $P(\text{He hits white exactly once})$
 - e. $P(\text{He hits red and black, in any order})$

HIGH CHALLENGE:

Bret and Jermaine are the best spellers in the school... PERIOD! No one in the school has a chance at beating either of them... PERIOD! It's not happening. The school is holding a spelling bee in a single elimination tournament format. Players are not seeded according to ability; match-ups are assigned randomly. What are the chances that the two best players (Brett and Jermaine) meet in the championship if the tourney has...

- a. 8 players
- b. 128 players
- c. n players.