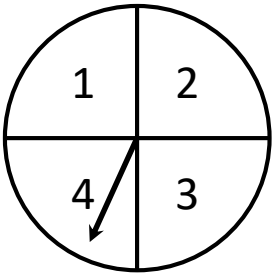
8A.11 **NOTES** Name:_____

Problem Solving: Probability

SAT Problem

1) In the figure below, a player spins the arrow twice. Let the number of the first spin be p where the arrow stops, and the number of the second spin be q where the arrow stops. If each number has an equal probability of being the sector on which the arrow stops, what is the probability that the fraction $\frac{p}{q}$ is greater than or equal to 1?



(A) $\frac{1}{4}$

(B) $\frac{3}{16}$

(C) $\frac{5}{16}$

(D) $\frac{1}{2}$

(E) $\frac{5}{8}$

2) Two boys and six girls are seated randomly in 8 chairs around a circular table. Express as a fraction, in simplest form, the probability that the two boys are seated next to each other.

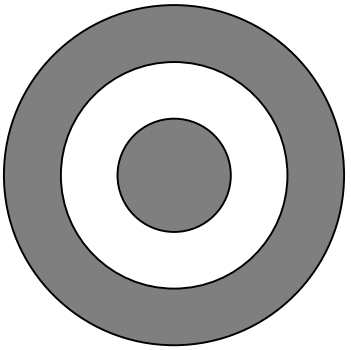
3) **SAT Problem**

Two marbles at a time are to be drawn out from a jar that contains 5 red marbles and 8 black marbles. What is the probability of drawing one red and one black marble from the jar?

SAT Problem

4) The figure below shows a dartboard with a radius 9. Each of the concentric circles has a radius 3 less that the next larger circle. If 24 darts land randomly on the target, how many darts will be expected to land in the shaded regions?

(A) 18
(B) 16
(C) 14
(D) 12
(E) 10



5) Sophia and Daniela play three games. The probability that Sophia wins any game is $\frac{3}{5}$. What is the probability that Sophia wins for the first time in the third game?

SAT Problem

6) The figure below shows three spinners A, B, and C with numbers on them. If every number has an equal probability of being the sector on which the arrow stops, what is the probability that the sum of the three numbers is an even number?

(A) $\frac{1}{6}$
(B) $\frac{1}{4}$
(C) $\frac{1}{3}$
(D) $\frac{1}{2}$
(E) $\frac{2}{3}$