WHAT'S UP

Name: _____

Class: _____   Date: _____

What a Chance! Fun with Probability
An extension of "Arsenal after Arsène"

Soccer is an exciting sport. During the World Cup season, not knowing who will win or lose keeps football fans on edge for weeks. There is even a cat named Achilles who is being used to predict winners. Because you study mathematics in school, you have better options than "psychic" cats: you can calculate the probability of outcomes in a cool, rational way.

Instructions

1. Individually, read "**Arsenal after Arsène**" (page 22–23, *What's Up* June 2018).

2. Work on the two challenges given below. You may use the other side of this handout to show your calculations. Assumptions: (i) The match is played. (ii) The team that scores the most number of goals wins.

CHALLENGE 1

At the start of a football match between Team X and Team Y, there is a coin toss. The captain of Team X chooses "tails" before the referee tosses the coin. The team that wins the toss decides which goal it will attack in the first half of the match. The team that loses the coin toss takes the kick-off to start the match.

What is the probability of each of the following?

a) Team Y will take the kick off to start the match. ANSWER: _____

b) Team Y will win the match. ANSWER: _____

c) Team X or Team Y will win the match. ANSWER: _____

d) Team X will win the toss, but the match is a draw. ANSWER: _____

CHALLENGE 2

The Y18 Championship Games between Club N, Club Q, Club R, and Club S are to be held soon. The rules of the game do not allow for a draw. Exactly one and only one club will win the Championship.

The odds for winning the Championship are 8 to 3 **against** Club N, 2 to 5 **for** Club Q and 3 to 4 **for** Club S. Find the odds **against** Club R. Does Club R have a better chance in winning the Championship than Club Q?

ANSWERS: _____

Note: If the probability a club wins the games is m/n, then the odds **against** the team is (n-m) to m and the odds **fo**r the same team is m to (n-m).