

Problem of the Week-2: Multiple Round-Robin

In a round-robin tournament, each team plays all of the other teams exactly once.

Consider the following multiple round-robin set up:

- N teams play a round-robin tournament and exactly one team is eliminated from further play.
- The remaining $N - 1$ teams play another round-robin tournament with a second team then eliminated.
- Round-robin tournaments continue, with exactly one team eliminated at the conclusion of each round-robin, until only two teams remain.
- The last two teams in contention play a final game (which would constitute a round-robin with two teams) to determine the champion.

What percentage of total games played in the multiple round-robin tournament does the champion play?

As always, prove your answer.

Posting Date 9/12/10. Submit solutions to Noah Aydin, Mathematics Department, RBH 319 (e-mail or hard-copy, but hard copy submissions must include a time stamp) by 4 pm on 9/24/10.