

Soccer World Cup Simulation

The Soccer World Cup is one of the biggest global sporting events, capturing attention all around the world. This simulation is a fun, fast-paced way to explore probability in a realistic tournament context. It works well for both football fans and non-fans alike and fits within a 45–60 minute lesson.

Preparation

- Print out **48 country cards (flags or team names)** and cut them up
- Prepare a **results sheet** (A3 recommended for visibility)
- Assign extra student roles:
 - Scorekeepers (1 per pool – whoever is not playing that round)
- Each player needs:
 - A 6-sided die
 - Paper for tracking scores (or use a pool scorer)

Set-Up

- Randomly distribute teams to students
- Let students know their pots (A–D)
- Project or display pools so everyone knows their group
- Assign each team a **seeding pot**:

Pot	Strength	Shots at Goal
Pot A	Top teams	10 shots
Pot B	Strong teams	8 shots
Pot C	Mid teams	6 shots
Pot D	Lower teams	4 shots

Game Play

Each match is played as follows:

- Each team rolls a die for each “shot”
- Only a **6 = GOAL**
- Any other number = miss

Total goals = number of 6s rolled

Example:

- Brazil (Pot A) → 10 rolls
- Ghana (Pot C) → 6 rolls
- Final score = number of 6s each team rolls

Tournament Structure

Pool Play (Group Stage)

- Each team plays **3 matches** (round robin within its pool/group)
- All results must be recorded on the class sheet
- **No draws allowed**
 - If tied at full time → teams go to a **sudden death decider** (e.g., golden goal or penalties)

Group Rankings

Teams are ranked based on:

1. Wins
 2. Goal difference
 3. Goals scored
 4. Head-to-head
- (Adjust if you prefer simpler rules)*

Third-Place Qualification (Conditional Rule)

Use this **only when needed** (e.g., uneven number of pools or needing 8 teams total):

When third place is used:

- The **best 3rd-place teams** from selected groups also advance
- Compare all 3rd-place teams using:
 1. Points/Wins
 2. Goal difference
 3. Goals scored
 4. Fewest goals conceded

Example scenarios:

- **3 pools (A, B, C):**
 - Top 2 from each pool = 6 teams
 - **2 best 3rd-place teams** → total 8 → Quarterfinals
- **4 pools:**
 - Usually NO 3rd-place needed (top 2 = 8 teams already)
 - But you *can* include 3rd-place teams if expanding knockout rounds

Knockout Stage

- Quarterfinals → Semifinals → Final
- **No draws** → sudden death or penalties

Important Rule

Teams **keep their original shot allocation (Pot level)** throughout the tournament

Wrap-Up Discussion

After the tournament, ask:

- Was the outcome what you expected?
- Did stronger teams always win?
- How realistic was this model?
- How could we improve the simulation?

Link to probability ideas:

- Experimental vs theoretical probability
- Variation and randomness
- Fair vs biased systems

Extension Ideas

- Run the tournament twice → compare results
- Track **goal averages per pot**
- Predict winners before starting
- Create a **tree diagram for knockout rounds**

Big Idea

Even when stronger teams have better chances, randomness means anything can happen — but over many games, patterns start to emerge.