MARCH

MATH

MADN ESS

**Welcome to March Math Madness**

**Get ready to cheer on your team!**

Step 1 – Record Keeping

* Find this year’s win-loss record
* Determine % wins
* Research if that team has won past NCAA championships

Step 2 – Predicting from Record Keeping

Based on the information in your tables from Step 1, with no prior knowledge or bias, determine and support mathematically which NCAA team you would expect to win each region and the entire tournament.

* East
* West
* South
* Midwest
* Tournament

Step 3 –Eliminations

* Complete the chart
* Describe the patterns
* Adding rounds to the tournament

Step 4 –Probability of Winning the Tournament

* Complete the chart
* Describe the patterns

Step 5 –Probability Palooza

* Answer all probability questions

Step 6–Take your chances

* Complete your bracket
* Explain your choice of tournament winner

**Step 1 – Record Keeping**

|  |  |  |  |
| --- | --- | --- | --- |
| EAST REGION | | | |
| TEAM | RECORD  WIN-LOSS | WINS  % | Past  NCAA Championships |
| Villanova |  |  |  |
| Virginia |  |  |  |
| Oklahoma |  |  |  |
| Louisville |  |  |  |
| UNI |  |  |  |
| Providence |  |  |  |
| Michigan State |  |  |  |
| NC State |  |  |  |
| LSU |  |  |  |
| Georgia |  |  |  |
| Boise State/Dayton |  |  |  |
| Wyoming |  |  |  |
| UC Irvine |  |  |  |
| Albany |  |  |  |
| Belmont |  |  |  |
| Lafayette |  |  |  |
| SOUTH REGION | | | |
| TEAM | RECORD  WIN-LOSS | WINS  % | Past  NCAA Championships |
| Duke |  |  |  |
| Gonzaga |  |  |  |
| Iowa State |  |  |  |
| Georgetown |  |  |  |
| Utah |  |  |  |
| SMU |  |  |  |
| Iowa |  |  |  |
| San Diego State |  |  |  |
| St. John’s |  |  |  |
| Davidson |  |  |  |
| UCLA |  |  |  |
| S.F. Austin |  |  |  |
| Eastern Washington |  |  |  |
| UAB |  |  |  |
| N. Dakota State |  |  |  |
| N. Florida/Robert Morris |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| WEST REGION | | | |
| TEAM | RECORD  WIN-LOSS | WINS  % | Past  NCAA Championships |
| Wisconsin |  |  |  |
| Arizona |  |  |  |
| Baylor |  |  |  |
| North Carolina |  |  |  |
| Arkansas |  |  |  |
| Xavier |  |  |  |
| VCU |  |  |  |
| Oregon |  |  |  |
| Oklahoma St. |  |  |  |
| Ohio State |  |  |  |
| BYU/Ole Miss |  |  |  |
| Wofford |  |  |  |
| Harvard |  |  |  |
| Georgia State |  |  |  |
| Texas Southern |  |  |  |
| Coastal Carolina |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| MIDWEST REGION | | | |
| TEAM | RECORD  WIN-LOSS | WINS  % | Past  NCAA Championships |
| Kentucky |  |  |  |
| Kansas |  |  |  |
| Notre Dame |  |  |  |
| Maryland |  |  |  |
| West Virginia |  |  |  |
| Butler |  |  |  |
| Wichita State |  |  |  |
| Cincinnati |  |  |  |
| Purdue |  |  |  |
| Indiana |  |  |  |
| Texas |  |  |  |
| Buffalo |  |  |  |
| Valparaiso |  |  |  |
| Northeastern |  |  |  |
| New Mexico St |  |  |  |
| Hampton/Manhattan |  |  |  |

**Step 2 – Predicting from Record Keeping**

Based on the information in your tables and each team’s record, explain which NCAA team you would expect to win each region. Justify your thoughts.

East: Team

Justification

West: Team

Justification

South: Team

Justification

Midwest: Team

Justification

Based on the information in your tables and each team’s record, explain which NCAA team you would expect to win the tournament. Justify your thoughts.

Team

Justification

**Step 3 – The Elimination**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Round | #Teams at Beginning | #Teams  Eliminated | Fraction Of Total Teams Eliminated | Percent Of Total Teams Eliminated | Probability of a Team  Going to the Next Round |
| First |  |  |  |  |  |
| Second |  |  |  |  |  |
| Third |  |  |  |  |  |
| Regional Finals |  |  |  |  |  |
| Semi-Finals |  |  |  |  |  |
| Finals |  |  |  |  |  |

a) What pattern do you see in the way teams are eliminated? Describe what you see.

b) How many teams would be necessary if one more round were added to the tournament? Explain.

c) How many teams would be necessary if three more rounds were added to the tournament? Explain.

**Step 4 – Probability of Winning the Tournament**

Disregarding statistics, what is the probability of the following? Show your math reasoning.

|  |
| --- |
| A Team Winning the First Round |
| A Team Winning the First Round and the Second Round |
| A Team Winning the First Round, the Second Round, and the Third Round |
| A Team Winning the First Round, the Second Round, the Third Round, and the Regionals |
| A Team Winning the First Round, the Second Round, the Third Round, the Regionals, and the Semi-Finals |
| A Team Winning the Entire Tournament |

What patterns do you notice?

**Step 5 – Probability Palooza** Show how you arrived at all answers.

a) If the names of each team in one of the regions were put into a bag, what would be the probability of drawing the winning team for the region out of the bag?

b) What was the probability of winning regionals from Step 4? What do you notice about your answers from Step 5 parts a and b. Is there a connection or not?

c) If the names of each team in one of the regions were put into a bag, how would you calculate the probability of pulling each name out in the order that they are eliminated?

d) If the names of each team in the tournament were put into a bag, what would be the probability of drawing the winning team out of the bag? Show how you arrived at your answer.

e) What is the probability of picking a perfect bracket? Explain your method.

**Step 6 – Take your Chances** Show how you arrived at all answers.

1. Complete your bracket.
2. Explain why you have chosen your winner for the tournament.