

Mathematics 20-2

Mathematics Research Project

Sample Task Difficulty Ratings and Research Support

Math and Music

- Difficulty of Research - Easy
- Difficulty of Analysis - Medium
- Potential Mathematics - Permutations and Combinations, Probability

Research Support

- A site which produces minuets: <http://sunsite.univie.ac.at/Mozart/dice/>
- A partial explanation of the rules: <http://www.amarantpublishing.com/MozartDiceGame.htm>

Misuse of Probability in Court

- Difficulty of Research - Easy
- Difficulty of Analysis - Difficult
- Potential Mathematics – Probability

Research Support

- The case described in the task: http://www.maa.org/devlin/devlin_07_08_07.html
- Another case that relied on faulty probability: http://en.wikipedia.org/wiki/Sally_Clark

Busting Vegas

- Difficulty of Research - Medium
- Difficulty of Analysis - Difficult
- Potential Mathematics - Probability, Permutations and Combinations

Research Support

- Some of the odds involved: <http://www.lolblackjack.com/blackjack/probability-odds/>
- The MIT team: http://en.wikipedia.org/wiki/MIT_Blackjack_Team

Gapminder

- Difficulty of Research - Easy
- Difficulty of Analysis - Easy
- Potential Mathematics – Graphing Relations

Research Support

- The example in the student package compares life expectancy to income per person in a country: <http://www.bit.ly/LGdzdR>. In this example, students might research reasons for the sudden drop in life expectancy in Botswana.
- Help the students find other interesting data to examine on Gapminder. For example, students could examine life expectancy compared to children per woman. When graphed, China sees a big dip in children per woman beginning in about 1970. Students could research the reason for this dip. This is the graph they would generate: <http://www.bit.ly/IX6AMO>

Which Team is Better?

- Difficulty of Research - Easy
- Difficulty of Analysis - Easy
- Potential Mathematics – Graphing Relations, Interpreting Data, Representing Data

Research Support

- Any of the Pro Sport Websites - <http://www.nhl.com/>, <http://www.nba.com>, <http://www.mlb.com>, etc...
- Simulator - Whatifsports is a site that simulates games between teams from any era. Students could simulate series of games between teams - <http://www.whatifsports.com>

****Note:** All the links provided in this resource are for convenience only; AAC does not guarantee the content or accuracy of the sites. **Please preview sites for availability and content before directing your students to use them.**