Application Problem 2: Linear Systems

Let's consider the SAA 2019 football season. Below are the outcomes of the SAA in-conference games:

Austin beat Centre 20 to 13
Austin beat Millsaps 20 to 7
Austin beat Rhodes 36 to 28
Austin beat Sewanee 21 to 14
Berry beat Austin 55 to 28
Berry beat Centre 45 to 22
Berry beat Hendrix 27 to 9
Berry beat Millsaps 31 to 14
Berry beat Rhodes 54 to 10
Berry beat Sewanee 55 to 0
Berry beat Trinity 14 to 10
Birmingham Southern beat Austin 52 to 42
Birmingham Southern beat Berry 28 to 15
Birmingham Southern beat Centre 38 to 21
Birmingham Southern beat Millsaps 30 to 20
Birmingham Southern beat Rhodes 46 to 7
Birmingham Southern beat Sewanee 49 to 30
Centre beat Hendrix 37 to 34
Centre beat Rhodes 42 to 27
Centre beat Sewanee 24 to 21
Hendrix beat Austin 41 to 12
Hendrix beat Birmingham Southern 34 to 24
Hendrix beat Millsaps 33 to 22
Hendrix beat Rhodes 33 to 0
Hendrix beat Sewanee 47 to 17
Millsaps beat Centre 20 to 17
Millsaps beat Rhodes 14 to 0
Millsaps beat Sewanee 49 to 25
Rhodes beat Sewanee 14 to 3
Trinity beat Austin 52 to 35
Trinity beat Birmingham Southern 20 to 10
Trinity beat Centre 20 to 13
Trinity beat Hendrix 20 to 17
Trinity beat Millsaps 24 to 17
Trinity beat Rhodes 52 to 7
Trinity beat Sewanee 51 to 12

We want to determine the rankings for these teams based on the number of points a team wins each game by. There are only a total of 50 ranking points available to award to the collection of teams.

What should the ranking of these teams be?

Rubric: Each of the following categories will be classified as Achieved or Opportunity. All categories must earn an Achieved ranking in order for the Application Problem to earn an Achieved Ranking.

Transforming the scenario into a mathematical problem.

- Recognizes information that is relevant to the scenario.
- Correctly relates relevant information.

Correctly implementing a relevant numerical technique.

- Chooses and appropriate numerical technique for solving the problem.
- Correctly implements the chosen numerical technique for solving the problem.
- Gives appropriate explanation as to why technique was chosen.

Clearly communicating your process and results.

- Provides necessary information to motivate and put the question in context.
- States the question and explains why it is important and interesting.
- Explains data.
- Explanation of mathematical interpretation of problem.
- States what methods are used to arrive at the solution AND why they were chosen.
- States solution of the problem.
- Interprets meaning of the solution and puts it in context of the background information.
- Clear and concise.
- All variables are clearly defined.
- Units for all quantities are given.