The Bound's ELO Rating System:

        Beginning in the spring of 2022, The IAHSSCA will move towards reflecting The
Bound's ELO Rating system for our weekly, in-season rankings for all classes.

About ELO Rating system:

        There are two formulas used in a process that assigns points to a winning team from a
losing team in the ELO rating system. The number of points taken are based on whether the
rating scores of each team are close or not and what the probability of winning is for each team.
Every team starts with 1,000 points as a rating score. If you win games, your rating goes up. If
you lose games, your rating goes down. The number of points earned and lost during games is
determined based on the two formulas mentioned below. The maximum number of points one
team can gain or lose is 30. The number of points earned and lost also fluctuates as more games
are played.

Winning a game is 1 point.
Losing a game is 0 points.
**Draw could be 0.5 points, but we currently do not honor draws in Iowa High School Soccer.

        If every team begins a season with 1,000 points. Then the first games of the season will
consist of teams rated 1,000 vs. 1,000. The probability for winning this game is calculated as
50/50 for each team. The winning team would earn 15 points from the losing team to start. As
the season progresses, these points and formulas are recalculated based on the results from both
teams.

Two Team Rating Example:
Team A: 1656
Team B: 1763

Formula 1: Probability of winning.

- P (Team A wins) = 1 divided by 1 + 10 (RB-RA)/400.
For each win, **add your opponent's rating plus 400**, For each loss, add your opponent's rating
minus 400, And divide this sum by the number of played games.
- P (Team B wins) = 1- P(Team A wins).
- **400** is the divisor for computing the transformed rating.

        Using the ratings from the teams listed in the example and plugging them into the formula,
the formula yields that **Team A** has a 35% probability of winning the match while **Team B** has a
65% probability of winning the game. The probability of winning for a team is used in the
calculation of the second formula which updates a team's rating based on the outcome of the
game. After a game, a team's rating is updated using what is called an *update formula* as seen
below:

: Update Formula.

New rating = rating + 30(score – expected score).

Explanation: **Rating**- your current team rating.
30- maximum number of points.
Score: 1 point for a win, 0 for a loss.
Expected score: probability of winning.

If you apply the example teams to this formula:
Team A wins = 1656 + 30(1- 0.35)   + 19.5 pts for winning.
Team B wins = 1763 + 30(1 – 0.65). +10.5pts for winning.

Team A would gain 19.5 pts for winning, lose 10.5 pts in a loss.
Team B would gain 10.5 points for winning, lose 19.5 for a loss.

   Whichever team does better than expected, their rating will increase and the more surprising a victory or defeat is, the more points they will earn or lose. A team can earn up to 30 points max for an "upset" just as a team can lose up to 30 points for an "upset."

   The complexity of ELO comes from when multiple games have been played. The accuracy of ELO system is seen once multiple games from schools of different regions and class sizes play each other. The ELO system is run through multiple times for accuracy thus resulting in a clearer picture of rankings for teams as the season progresses.

Process:
   Our goal with using The Bound's ELO system and rankings is to have a clearer picture of where teams rank in our state by the 6th and 7th week of the season. The weekly rankings will include the top 16 teams from each class. The process for releasing our rankings will require all coaches to submit stats by noon (12:00 pm) on Sunday from the previous week. The rankings for then next week will be posted later that Sunday evening.