Belong (Division/Team)

- Justifications for Cardinality (1 to Many):
    - 1 team can only belong to 1 division while 1 division can have 5 teams (many). Thus, the relationship is 1 to Many (Division -> Team)
- Justifications for Participation:
    - Division has total participation since it requires teams to be a part of it for it to exist. Teams also have total participation since every team must belong to some division.

In (Conference/Division)

- Justifications for Cardinality (1 to Many):
    - 1 division can belong to only one conference while 1 conference can have 3 divisions (many). Thus, the relationship is 1 to Many (Conference -> Division)
- Justifications for Participation:
    - Conference has total participation since they must be comprised by divisions in order to exist. Divisions have total participation since they all must be part of either the Eastern or Western Conference.

Born (Players/Location)

- Justifications for Cardinality (1 to Many):
    - 1 location can be the birthplace of many players while 1 player can only be born in 1 location. Thus, the relationship is 1 to Many (Player -> Location)
- Justifications for Participation:
    - Players have total participation since everyone is born in one location. Location has partial participation since a Location in our database can exist without a player being born in it. (E.g. Toronto, Canada can be a location in our database due to the Toronto Raptors being a team in the NBA. However, there may not be a single player in the NBA that is born in Toronto).

Has (Team/Stadium)

- Justifications for Cardinality (1 to 1):
    - 1 stadium can only be associated with one team. One team can only have one stadium. Thus, the relationship is 1 to 1.
- Justifications for Participation:
    - Team has total participation since every team must have a stadium. Stadium has total participation since a Stadium in our database must be associated with a team.

Has (Location/Stadium)

- Justifications for Cardinality (1 to Many):
    - 1 location can have many stadiums (LA Lakers and Clippers) while 1 stadium can only belong to 1 location. Thus, the relationship is 1 to many (location -> stadium)
- Justifications for Participation:
    - Location has partial participation since a Location can exist in our database without a Stadium residing in it. (E.g. A player can be born in Sydney, Australia, but there are no NBA stadiums in Sydney, Australia). Stadium has total participation since every stadium must exist in some location in the world.

Play (Game/Stadium)

- Justifications for Cardinality (Many to 1):
    - 1 Game can be played in only one stadium while one stadium can have numerous games played within it. Thus, the relationship is many-to-one
- Justifications for Participation:
    - Game has total participation since every game must be played in some stadium. Stadium has partial participation since it can exist in the database without a game being played in it (e.g. a brand-new stadium is constructed).

Officiate (Official/Game)

- Justifications for Cardinality:
    - 1 official can officiate multiple games over the course of the season and their career. 1 game is officiated by many officials (3 to be exact). Thus, this relationship is many to many.
- Justifications for Participation:
    - Officials have total participation since in our database, to be considered an official, you must have officiated at least one game. Games have total participation since they must be officiated by officials/referees to be played.

PlayerStat (Game/Player)

- Justifications for Cardinality:
    - 1 player can have player stats for many games. 1 game can have player stats for many players. Thus, this relationship is many to many.
- Justifications for Participation:

o Game has total participation since for a game to be carried out, it must have players playing in them. So, a game must have players stats. Players also have total participation since all Players in our database will need to have taken part in at least 1 game. Even if they don't play, they will still generate stats for that game (e.g. 0 points, 0 rebounds, etc.)

TeamStat(Game/Team)

- Justifications for Cardinality:
    o 1 team can have game stats for many games. 1 game can have game stats for many teams (2 teams). Thus, this relationship is many to many.
- Justifications for Participation:
    o Games have total participation since it requires teams to play in them for it to be carried out. Teams will generate stats in those games when they play. Teams have total participation since teams must play in games in the NBA.

Manage (Coach/Team/Season)

- Justifications for Cardinality (1 to 1 to many):
    o One coach can manage a single team for many seasons. For 1 coach and one season, the coach can only manage one team (in our database). For 1 Team and 1 season, only one coach can manage them (in our dataset a coach is linked to only one team for a season, they can't get fired and then hired on a different team).
- Justifications for Participation:
    o Coaches have total participation since to be in our database, you must have coached at least one team for a season. Teams have total participation since every team in the NBA requires a coach for a season. Season has total participation since it must have coaches managing teams during it.

Teach (Coach/Players)

- Justifications for Cardinality:
    o 1 coach teaches many players both presently and historically. 1 player can be taught by many coaches throughout their career. Thus, this relationship is many to many.
- Justifications for Participation:
    o Coaches have total participation since to be in our database, you need to have taught/coached players (i.e. we have no coaches with 0 experience in our database). Players have total participation since they must be taught/coached by a coach to be present in our database.

Draft (Team/Player)

- Justifications for Cardinality:
  - 1 team can draft many players while 1 player can only be drafted by 1 team. Thus, this relationship is 1 to many.
- Justifications for Participation:
  - Teams have partial participation since they do not necessarily need to draft players (e.g. Teams can trade their draft picks for other players). Players have total participation since drafted players will be in the draft table. Undrafted players will also be included since we will have a isDrafted attributed associated with the relationship.

Play (Player/Team/Season)

- Justifications for Cardinality (Many-to-1-to-many):
  - 1 team and 1 season can have many players. 1 season and 1 player can only play on one team (since our dataset doesn't consider mid-season trades). For a single team, a player can play for them for multiple seasons. Hence, Team is 1, Player is many, and Season is 1.
- Justifications for Participation:
  - Teams have total participations since they must have players and take part in a specific season. Season has total participation since teams and player during the season (or there would not be any season). Player have total participation since they must play for at least one season to be in our database and if they are playing they must be on team.

Champion(Season/Team)

- Justifications for Cardinality (many-to-1):
  - One season can only crown one team as a champion. One team can be champions for multiple seasons.
- Justifications for Participation:
  - Seasons have total participation since they must crown a champion. A Team has partial participation since they don't have to be a champion of a season to be in the database.

SeasonGame(Season/Game)

- Justifications for Cardinality (1 to many):
  - One season contains many games, whereas one game can only take part in one season. Hence the relationship is one to many.

- Justifications for Participation:
  - Season has total participation since it must have games included in it for the season to take place. A game has total participation since it must take part in some season.

Justification for Game Subclasses

- Games have total participation since a game must either occur during the regular season or the playoffs. Since a game is either a regular season game or a playoff game, regular season games and playoff games are disjoint.