(1) **Warm-up/Motivation:** Consider 5 teams. Can you create a tournament where each team plays against *exactly* 2 other teams?

(2) Can you create a tournament where each of the 5 teams plays against exactly 3 other teams?

(3) **Question:** When is it possible for n teams to play exactly r different teams?

   Definitions:

   - A **Graph** G is made of two sets: the ⸺⸺⸺⸺⸺, $V = \{v_1, v_2, \ldots, v_n\}$, and a set of pairs of vertices $v_i v_j$ called the ⸺⸺⸺⸺⸺, E.

   - Instead of writing graphs as sets, we most often **draw them as diagrams**. We draw vertices as dots, labeled with the vertex name, and edges as lines between two vertices.

   Vocab:

   - The **degree** of a vertex is the number of edges it touches.

(4) **Examples:** Make a table!

Graph	number of edges	list of degrees	sum of degrees

(5) What patterns/observations can you make?

(6) **The First Theorem of Graph Theory:**

(7) What can we conclude about our original question?