THE PROBLEM SOLVING COMPETITION
OCTOBER 30, 2007

Problem
Julio has 6 favorite DVDs. If each DVD is 20 minutes long and Julio wants to watch all 6 DVDs over and over in every conceivable order, how long (in hours) will it take him to accomplish this? He will, for example, watch all 6 in a row in one order and then watch the same 6 in a different order, repeating this until all possible orders are achieved.

Solution: There are $6! = 720$ different orders of the DVDs. Each order requires $6 \cdot 20 = 120$ minutes, or 2 hours, to watch. Watching all possible orders then requires $720 \cdot 2 = 1440$ hours.