A Common Type of Problems in AMC

Problem	Solution
AMC8 – Beginner Level In a school marathon, the number of girls is three times the number of boys. If there are 12 more girls than boys, how many runners participated in total?	girls : boys = 3 : 1 D: 3 − 1 = 2 (difference) T: 3 + 1 = 4 (total) D : T = 2 : 4 = 1 : 2 = 12 : 24 So, there are a total of 24 runners.
AMC8 – Intermediate Level A school organized a chess tournament with the rule that each table hosts one game between a boy and a girl. In the tournament, $\frac{2}{3}$ of the girls and $\frac{3}{5}$ of the boys participated. If there were a total of 60 tables used for the games, how many students are enrolled in the school?	2 : 3 = **6** : 9 3 : 5 = **6** : 10 **6 = 6** Total = 9 + 10 = 19 #table : #players : #students = 6 : 19 = 60 : 190 So, there are 190 students in the school.
AMC8 – Advanced Level (AMC10) A school held a science fair where a booth accommodated only one student. Due to space constraints, the booth allocation for the 6th, 7th, and 8th grades followed a ratio of 1:2:3. The participants from each grade were as follows: $\frac{1}{3}$ of the 6th grade, $\frac{2}{5}$ of the 7th grade, and $\frac{3}{7}$ of the 8th grade. If the fair had a total of 60 booths, how many students are enrolled in the school?	Let x, y, and z be the number of 6th, 7th and 8th graders, respectively. $\frac{\frac{1}{3}}{1}x = \frac{\frac{2}{5}}{2}y = \frac{\frac{3}{7}}{3}z$ Simplifying: $\frac{x}{3} = \frac{y}{5} = \frac{z}{7}$ Since there are 60 booths, 6th grade has 10, 7th grade has 20, and 8th grade has 30 booths. Therefore, 6th grade: 30 7th grade: 50 8th grade: 70 Thus, the school has 150 (= 30 + 50 + 70) enrolled.