MATH 290 NUMBER THEORY FOR TEACHERS
PROBLEM OF THE DAY # 3
DUE: JANUARY 22, 2014

1. In football, teams can score either 7 or 3 points at a time. (Yes, I know about safeties, extra points, and two point conversions, but let's make things simpler.) What are the possible scores a team can attain? For example, a team can't have a score of 4 points. Can a team score 12 points? 29? 36? Is there a maximum unattainable score? What is it?

2. What if there were a game where teams could score either 5 or 8 points at a time? What are the attainable and unattainable scores then?

Can you predict, given relatively prime a and b in $\mathbb{N}$, what the maximum unattainable score will be in a game where you can score a or b points at a time?