**Problem of the Week #47**

**- Sam’s Dilemma**

One day, Sam was thinking about decimals, repeating decimals to be specific. He was able to come up with factions that represent decimals like $0.\overbar{1}$ or $0.\overbar{2}$, but when he came to $0.\overbar{9}$, he wasn’t sure.

After a lot of thinking and playing with numbers, Sam decided that $0.\overbar{9}$ must be the same thing as 1.

Your challenge is to decide if Sam is right or wrong and to use mathematical reasoning to backup your decision. Sam kept in mind that rounding technically wouldn’t be right since we are dealing with exact values.