Problem of the Week
Number Seven
October 23, 2017

This week's problem has only a tenuous "10" connection, though the number *does* appear. However, it is a nice illustration of a "kinship" problem.

Recently I had cause to wonder if my sister-in-law's sibling's children are considered my nieces and nephews. It turns out the answer is no, but ferreting out these sorts of relationships can prove very challenging indeed.

The absolute, slam-dunk classic of this genre involves a man looking at a painting of a second man. Referring to the man in the painting, he says, "Brothers and sisters I have none, but this man's father is my father's son." Who is the man in the painting?

Raymond Smullyan has proposed the following variation on this problem: What if the man says of the person in the painting, "Brothers and sisters I have none, but this man's son is my father's son." Now who is he looking at?

These kinship problems can get very tricky. Suppose two men each take the other's mother in marriage. What would be the relationship between their sons?

Here's one from Lewis Carroll: The Governor of Whatchamacallit wants to give a very small dinner party. He intends to ask his father's brother-in-law, his brother's father-in-law, his father-in-law's brother, and his brother-in-law's father. How many guests will there be, if the dinner part is to be s small as possible.

If you manage to work through all of these, then this week's problem should be a snap!

I have 1 brother and 2 sisters. My mother's parents have 10 grandchildren, while my father's parents have 11 grandchildren. If no divorces or re-marriages occurred, and if none of my father's brothers or sisters married any of my mother's sisters or brothers, how many first cousins do I have?

When you think you have the problem figured out, follow the instructions below.

*Submissions are due to Jason Rosenhouse by 5:00 on **Friday, October 27**. Solutions, complete with a brief explanation, should be written on the back of an official POTW handout. Place your name, e-mail address, and the section numbers and professors of any math courses you are taking, in the **upper right corner** of the front of the page. One weekly winner will receive a five-dollar gift card from Starbucks. Solutions will be posted at the POTW website:*