NMSU MATH PROBLEM OF THE WEEK

Solution to Problem 1

Spring 2025

Five mascots, including Pistol Pete and Paydirt Pete, line up for a photo. How many ways can the five mascots line up such that Pistol Pete and Paydirt Pete are not standing next to each other?

Solution. First, we observe that the total number of ways for the mascots to line up with no restriction is $5! = 120$. Then we count the number of ways the mascots can line up with with Pistol Pete and Paydirt Pete next to each other. Treating these two mascots as a pair, we have $4! = 24$ ways to arrange the three other mascots plust the pair of Petes. Since the Petes could appear in either order we have $2 \cdot 4! = 48$ ways for the lineup to have both Petes adjacent. Subtracting these, we have $120 - 48 = 72$ ways to have a lineup without the Petes next to each other.