Problem of the Week
Problem A and Solution
Can You Kayak?

Problem

At Bo's Boat Shop, all kayaks have the same number of seats and all rowboats have the same number of seats. A kayak has fewer seats than a rowboat. Two kayaks and two rowboats have a total of 10 seats. One kayak and three rowboats have a total of 11 seats.

How many seats are in one kayak?

Solution

Since two kayaks and two rowboats have a total of 10 seats, then half as many kayaks and rowboats will have half as many seats. That is, one kayak and one rowboat will have a total of $10 \div 2 = 5$ seats.

Since a kayak has less seats than a rowboat, then it must be the case that one kayak has 1 seat and one rowboat has 4 seats, or that one kayak has 2 seats and one rowboat has 3 seats.

If one kayak has 1 seat and one rowboat has 4 seats, then one kayak and three rowboats have $1 + 4 + 4 + 4 = 13$ seats. Since we're told that one kayak and three rowboats have 11 seats, this is not a possible solution.

If one kayak has 2 seats and one rowboat has 3 seats, then one kayak and three rowboats have $2 + 3 + 3 + 3 = 11$ seats. Since we're told that one kayak and three rowboats have 11 seats, this is a possible solution.

Thus, 2 seats are in one kayak.