18. We denote the mass of Ricardo as M_R and that of Carmelita as M_C. Let the center of mass of the two-person system (assumed to be closer to Ricardo) be a distance x from the middle of the canoe of length L and mass m. Then $M_R(L/2 - x) = mx + M_C(L/2 + x)$. Now, after they switch positions, the center of the canoe has moved a distance $2x$ from its initial position. Therefore, $x = 40\,\text{cm}/2 = 0.20\,\text{m}$, which we substitute into the above equation to solve for M_C:

$$M_C = \frac{M_R(L/2 - x) - mx}{L/2 + x} = \frac{(80)\left(\frac{3.0}{2} - 0.20\right) - (30)(0.20)}{(3.0/2) + 0.20} = 58 \text{ kg} .$$