Task:

How many moles of phosphoric acid are contained in 65.0 ml of 0.80 M solution of H_3PO_4?

Solution:

Convert mL to L: 65.0 mL = 0.065 L.

$C_m(H_3PO_4)$ = 0.80 M = 0.80 moles/L.

1) We know that molarity = moles/liter [C_m = n / V].
2) We also know that the H_3PO_4 solution is 0.80 M so that in 1 liter of that H_3PO_4 solution there would be 0.80 moles of H_3PO_4.
3) However, we don't have 1 liter of H_3PO_4 solution, we have 0.065 L instead. So we can multiply the 0.80 moles that we would have in 1 liter by 0.065 L to get 0.052 moles of H_3PO_4.

$$\frac{0.8\,moles}{1L} * 0.065L = 0.052\,moles\,of\,H_3PO_4$$

Answer: **0.052 moles** of phosphoric acid.