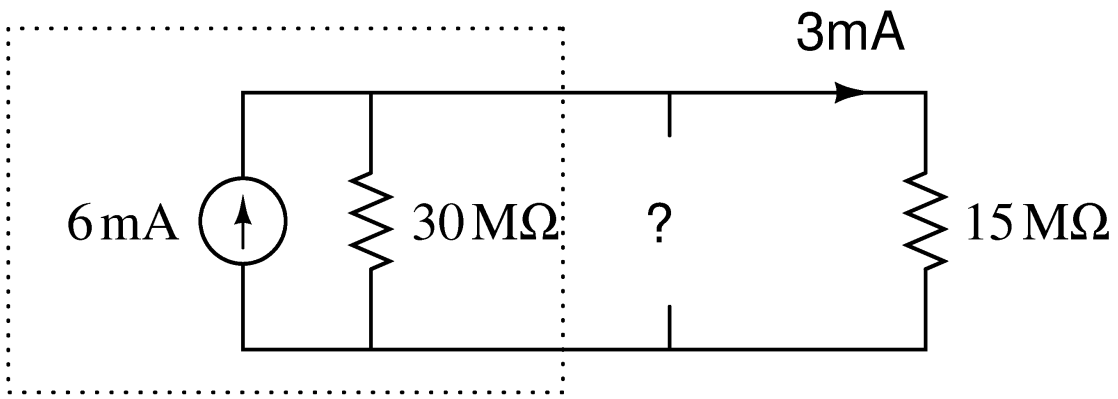

a) In an amplifier design, your company has a non-ideal current source. The amplifier acts like a resister of 15MΩ but can only take 3mA as input or it will overheat and cease function. It was discovered in testing that the above schematic delivered 4mA to the amplifier and most of the amps burned out. Over 1000 of these amps have already been built with such tight space requirements that there is only enough room for one component to be placed in parallel with the amplifier. You are asked to redesign the above schematic so that the 1000 amplifiers that have been already produced can be used.

b) The company is also considering replacing the non-ideal current source with a cheaper one that delivers 5mA and has an internal resistance of 15MΩ. Will this current source work in this design, and if so, what component needs to be placed in the location of the question mark?