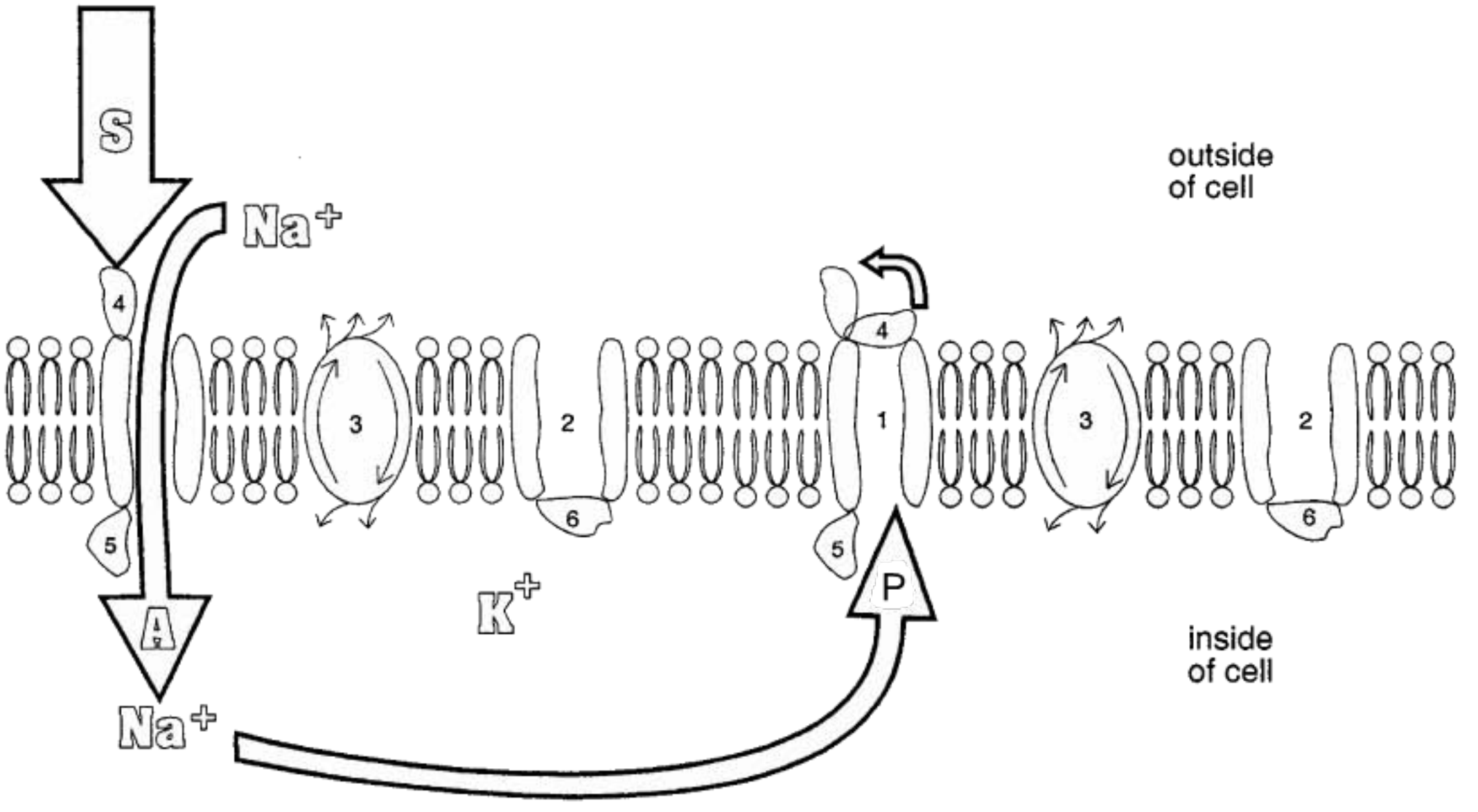

_____ 1. When the membrane is at equilibrium, it is polarized. This means that its inside and outside surfaces carry opposite _____ .

_____ 2. The charge on the outside of the membrane is _____ .

_____ 3. Since the sodium ion carries a _____ (positive, negative) charge, it would be attracted to the _____ (inside, outside) of the membrane.

_____ 4. Since the sodium ion is more concentrated _____ (inside, outside) the membrane, its tendency is to flow to the _____ (inside, outside) of the membrane.

_____ 5. Even though these two gradients (electrical and concentration) predict that sodium will flow into the cell, it does not flow in the resting membrane because the _____ are closed on the sodium channels.

_____ 6. If something (a stimulus) causes the activation gates on sodium channels to open, then sodium will _____ , as shown by arrow _____ .

_____ 7. When sodium enters the cell, the polarity of the membrane will _____ (increase, decrease).

_____ 8. When the membrane depolarizes, the gates in the immediate area _____ (open, close). This is shown by arrow _____ .

_____ 9. As more sodium gates open, the polarity (voltage) of the membrane continues to _____ (increase, decrease).

_____ 10. If the membrane depolarizes enough to open large numbers of adjacent gates (threshold), then these parts of the membrane will also _____ .

_____ 11. This then becomes a self-sustaining wave of depolarization called the _____ .

13. The action potential conforms to the all-or-none principle. This means that when compared to an action potential produced by a threshold stimulus

_____ a. the action potential produced by a stimulus of greater magnitude would be _____ (the same, larger).

_____ b. a subthreshold stimulus would produce _____ (no, a smaller) action potential.