Sample question from ACEPhysics activity:

A. Consider the following circuit.

\[ |\psi_1\rangle \quad Z \quad |\psi_2\rangle \]

Which represents the output state? Select all correct expressions.

- \[ Z(|\psi_1\rangle \otimes |\psi_2\rangle) \]
- \[ (Z |\psi_1\rangle) \otimes |\psi_2\rangle \]
- \[ (Z \otimes I)(|\psi_1\rangle \otimes |\psi_2\rangle) \] (Correct)
- \[ (I \otimes Z)(|\psi_1\rangle \otimes |\psi_2\rangle) \]

There are two correct answers!

\[ (Z \otimes I)(|\psi_1\rangle \otimes |\psi_2\rangle) \] is correct.

Link to activity: https://acephysics.net/tutorials/tensor-products