

## **4.11 SYSTEM MODELING AND ANALOGIES**

### **Steps in Converting from One System to an Analogous System**

1. *Label the flows with the appropriate sign for each element in the system and its analogy.*
2. *Formulate the system equations at each node using the equations of motion ( $\Sigma F = ma$ ) for mechanical systems or KVL loop equations for electrical systems.*
3. *Pick an element to start with and begin constructing the schematic for the analogy using the flows for guidance. It is best to start with an element that is embedded in the system (i.e., its flow affects many other elements), although any element would suffice.*
4. *Verify the graph with the analogous system equations.*