

Sign Convention in Kirchoff's Rules:

1. Move through EMF device in assumed direction of polarity (– to +):

$$\varepsilon > 0$$

2. Move through EMF device in opposite direction of polarity (+ to –):

$$\varepsilon < 0$$

3. Move through resistor in assumed direction of current (with current arrow):

$$\Delta V = -IR$$

4. Move through resistor in opposite direction of current (against current arrow):

$$\Delta V = +IR$$

5. Move through capacitor from + plate to – plate (with **E**-field):

$$\Delta V = -q/C$$

6. Move through capacitor from – plate to + plate (against **E**-field):

$$\Delta V = +q/C$$