Example circuits Part II

- **Resistor**
- **Single Pole, Single Throw (SPST) Switch**
- **Single Pole, Double Throw (SPDT) Switch**
- **Potentiometer (Variable Resistor)**
- **Phototransistor (Light-dependent Resistor)**

**Ohm's Law:** Voltage = current × resistance, or \( V = I \times R \)

**Key for circuit:**
- B1: 3V coin cell
- B2: 9V battery
- S1: SPST push button switch
- S2: SPDT slide switch
- DL: 5mm LED
- R1: 10kΩ
- R2: ?Ω
- R3: 10kΩ potentiometer
- R4: 45 ~ 150kΩ phototransistor
Circuit #1: Resistor

Circuit #2: Mixture Resistor

\[ V_{D1} = 3 \text{V} \]
\[ V = I \times R \]
\[ V_{R2} = 6 \text{V} \]
\[ I_{R2} = 20 \text{mA} \]
\[ 6\text{V} = 20\text{mA} \times R_{R2} \]

\[ R_{R2} = \frac{V}{I} = \frac{6}{0.02} = 300 \Omega \]

Circuit #3

Remove last LED if battery cannot light four LEDs in series (units)