Circuits and Lab Equipment$_{\text{PreLAB}}$

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1 Questions

1. For resistors with the following colors bands give the resistance and tolerances:

   (a) Brown, Black, Red, Silver =

   - **Resistance:** 1,000 ohms
   - **Tolerance:** +-10%

   (b) Blue, Gray, Black, None

   - **Resistance:** 68 ohms
   - **Tolerance:** +-20%

   (c) Green, Blue, Orange, Gold =

   - **Resistance:** 56,000 ohms
   - **Tolerance:** +-5%

   (d) Brown, Black Blue, None =

   - **Resistance:** 10,000,000 ohms
   - **Tolerance:** +-20%

2. Determine the maximum current that a 470 Ohm, 1/4 W Resistor can have across it without exceeding its power rating.

$$I = \sqrt{(P/R)}$$
$$= \sqrt{(0.25W/470\Omega)}$$
$$= \sqrt{(0.0005319)}$$
$$= 23mA$$

3. Determine the maximum voltage that a 470 Ohm, 1/4 W Resistor can have across it without exceeding its power rating.

$$V = \sqrt{(P * R)}$$
$$= \sqrt{(0.25W * 470\Omega)}$$
$$= \sqrt{(117.5)}$$
$$= 10.84V$$

4. Find the missing value using Ohm's Law with the values below:

(a) **Current = 3A, Resistance = 10 Ohms, Voltage** = 3 * 10 = 30V

(b) **Voltage = 12V, Resistance = 10 Ohms, Current** = 12/4 = 3A

(c) **Voltage = 120V, Current = 0.5A, Resistance** = 120/0.4 = 240 Ohms