### ***Four basic units of electricity***

1. ***Voltage (V)*** *→ Variable:* ***V****, Unit:* ***volt (V)***
2. ***Current (I)*** *→ Variable:* ***I****, Unit:* ***ampere (A)***
3. ***Resistance (R)*** *→ Variable:* ***R****, Unit:* ***ohm (Ω)***
4. ***Power (P)*** *→ Variable:* ***P****, Unit:* ***watt (W)***

### ***B. Equation for Ohm’s Law***

*V=I×RV = I \times RV=I×R*

***C. Rearranged Ohm’s Law equations***

* *To solve for current: I=VRI = \frac{V}{R}I=RV​*
* *To solve for resistance: R=VIR = \frac{V}{I}R=IV​*

### ***D. Power equations***

### *Power is P=V×IP = V \times IP=V×I. Rearranging with Ohm’s Law gives:*

* *P = V \times 1*
* *Substitute V=I×RV = I \times RV=I×R:  
  P=I2×RP = I^2 \times RP=I2×R*
* *Substitute I=VRI = \frac{V}{R}I=RV​: P= V2RP = \frac{V^2}{R}P=RV2​*

### ***E. Yellow wire problem***

*Given:*

* *V=12 VV = 12 \, VV=12V*
* *P=60 WP = 60 \, WP=60W*
* *Formula: P=V×IP = V \times IP=V×I  
  I=PV=6012=5 AI = \frac{P}{V} = \frac{60}{12} = 5 \, AI=VP​=1260​=5A*

***Answer: 5 A***

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### ***F. Orange wire problem***

*Given:*

* *V=3.3 VV = 3.3 \, VV=3.3V*
* *R=0.25 ΩR = 0.25 \, \OmegaR=0.25Ω*
* *Formula: P=V2RP = \frac{V^2}{R}P=RV2​  
  P=3.320.25=10.890.25=43.56 WP = \frac{3.3^2}{0.25} = \frac{10.89}{0.25} = 43.56 \, WP=0.253.32​=0.2510.89​=43.56W*

***Answer: 43.56 W***

### ***G. Power supply wire problem***

*Given:*

* *P=120 WP = 120 \, WP=120W*
* *I=24 AI = 24 \, AI=24A*
* *Formula: P=V×IP = V \times IP=V×I*

*V=PI=12024=5 VV = \frac{P}{I} = \frac{120}{24} = 5 \, VV=IP​=24120​=5V*

***Answer: 5 V***