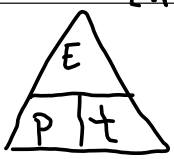
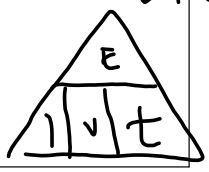
Multiple Formulas

Potential difference	Power	Energy 1	Energy 2
Voltage V = r x I 	P = V I 	E = Pt 	E = IVt 

1. What is the power of an appliance if it works on 2.5 A and has a 5 Ω resistor?

$P = V \times I$ $P = 12.5v \times 2.5A$ $P = 31.25w$ $V = R \times I$ $V = 5\Omega \times 2.5A$ $V = 12.5V$

2. What is the resistance of a resistor if it uses 220 V and 300 W of power?

$R = \frac{V}{I}$ $\frac{220v}{1.36A} = 161.76\Omega$ $P = V \times I$ $I = \frac{P}{V}$ $\frac{300w}{220v}$ $I = 1.36A$

3. What is the resistance of a resistor if a circuit is on for 20 minutes, used 20 000 J of energy and had 4 A?

$R = \frac{V}{I} = \frac{4.2v}{4A} = 1.04\Omega$ $E = IVt$ $\times 60$ $V = \frac{E}{I \times t}$ $\frac{20000}{4 \times 1200}$ $V = 4.2V$

4. What is the resistance of a resistor if a circuit is on for 2 hours, used 50 000 J of energy and 220 V?

$R = \frac{V}{I}$ $\frac{220v}{.032} = 6875\Omega$ $E = IVt$ $I = \frac{E}{Vt}$ $\frac{50000}{220 \times 7200}$ $I = .032A$

5. What is the power of an appliance if it works on 5 A and has a 3.5 Ω resistor?

$P = V \times I$ $17.5V \times 5A = 87.5w$ $V = R \times I$ $V = 3.5\Omega \times 5$ $V = 17.5V$

6. The resistance of a heating element is 10 Ω and the potential difference (voltage) across its terminals is 120 V. This element is used for 3 hours. How much electrical energy was used during this period?

A) 4 320 J B) 259 200 J C) 1440 000 J D) 15 552 000 J

$\times 3600$

$I = \frac{V}{R}$ $\frac{120}{10} = 12A$ $E = IVt$ $(12)(120)(10800)$