

### Answer on Question #42956-Physics-Electric Circuits

750 w electric heater plugged into 240 v power supply. A trolley passing caused insulation distort and reduced resistance between live and neutral to 60 ohms.

1. what is the rate of heat production in watts

**Solution**

$$N = \frac{U^2}{R} = \frac{240^2}{60} = 960 W.$$

2. plug fitted carries 3 amps fuse is this correct for appliance

**Solution**

This is incorrect:

$$I_{\text{heater}} = \frac{750}{240} = 3.125A > I_{\text{fuse}} = 3A.$$

That's why electric heater wouldn't work.

3. would correctly rated fuse blown as result of fault

**Solution**

Yes, correctly rated fuse would blow as result of fault because  $I_{\text{fault}} = \frac{U}{R} = \frac{240}{60} = 4A$  is bigger than  $I_{\text{fusecorrect}} = 3.125A$ .