Answers to Homework 2.2 – From the Wall Socket II

1. Water increases the human body's ability to conduct electricity. (The conductivity is increased.)

2.

a) 10A

b) 1.50mm^2. (You can't use 1.25mm^2 as this has a maximum current rating of just 13.0A)

c)

double in size:	0.50 mm^2 – 1.00 mm^2
change in max current:	3A - 10A
double in size:	0.75 mm^2 – 1.50mm^2
change in max current:	6A - 16A
double in size:	1.25mm^2 – 2.50mm^2
change in max current:	13A - 30A

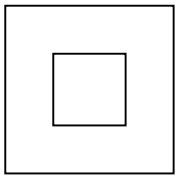
These values show that you can carry double the current if you double the size of the flex.

d) electrical energy to heat energy

The maximum current for a 0.75mm^2 flex is 6A. The flex has too great a resistance to safely carry a current of 13A and it will start to heat up.

3.

a)



b) The earth wire is not required in the flex of double insulated appliances.

4.

a) The earth wire is connected to the casing of an appliance. If the appliance develops a fault that results in part of the casing of the equipment becoming "live", the earth wire provides a route for the electricity to flow to ground. As the earth wire has a low resistance, the current becomes very large – large enough to blow the fuse and stop the appliance from working.

b) The fuse and any switches must be placed in the live lead to make sure that the rest of the appliance does not stay "live" when the fuse blows or the switch is turned off.