

USING ELECTRICITY

Homework Exercises

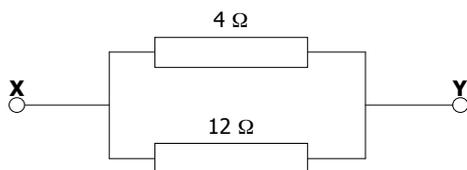
Homework – Resistance

Hand in your HW jotter no later than Tuesday 7th February

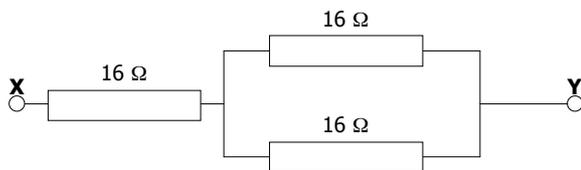
- Variable resistors can be used in two main ways – to alter voltage, or to alter current.
 - What do we call the variable resistor when it is set up to alter the size of the **current** in the circuit?
 - What do we call the variable resistor when it is set up to alter the size of the **voltage** across the resistor?
- A 1200 W hair dryer is connected to the mains electrical supply. Calculate the current drawn.
 - The dryer is used for 5 minutes. How much electrical energy is used in this time?
- A 100 W light bulb is found to draw a current of 0.43 A when it is operating correctly. Use this information to calculate the resistance of its filament.
- Draw a circuit diagram for a circuit that has three lamps in series attached to a battery pack, and add a switch that controls all three lamps.
 - If the three lamps are rated as "6 V, 0.06 A", calculate the **supply voltage** needed to allow them to operate properly.
 - What size of current will be drawn from the battery? Explain why it is this value.
- Draw a circuit diagram for a circuit that has three lamps in parallel attached to a battery pack, and add a switch that controls all three lamps.
 - If the three lamps are rated "6 V, 0.06 A", calculate the current drawn from the battery pack.
 - What size of voltage must the battery be to allow them to operate properly? Explain why it is this value.
- Calculate the equivalent resistance between **X and Y** in each of the following networks, **showing all the working** for each one:



(a)



(b)



(c)

