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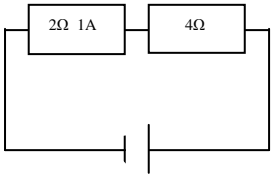
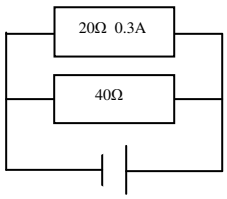
**Physics worksheet – Series and parallel circuits (Assume zero internal resistance for the batteries)**

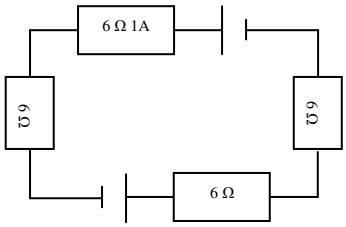
Q1 Determine (i) the current through the battery, (ii) the voltage of the battery.



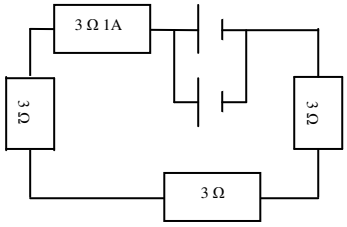

Q2 Determine (i) the current through the battery, (ii) the voltage of the battery.



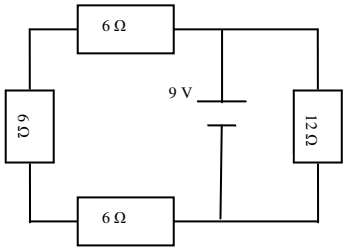

Q3 The two batteries are identical. Determine (i) the current through each battery, (ii) the voltage of each battery.



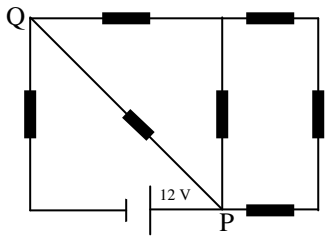

Q4 The two batteries are identical. Determine (i) the current through each battery, (ii) the total power of the batteries.



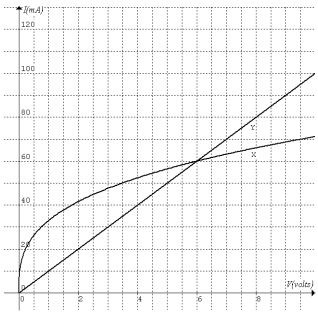

Q5 Determine (i) the current through each resistor, (ii) the potential difference across each resistor, (iii) the power supplied by the battery.




Q6 The seven resistors are 10 Ω each. The voltage of the battery is 12 V. Determine (i) the current through the battery, (ii) the potential difference between P and Q.




Q7 The I-V characteristics of two electronic components X and Y are shown below. They are connected with a power supply. Find the potential difference across each component when they have the same resistance.




Q8 Refer to the two components in Q7.
(i) The voltage across X is 3.5 V when they are in series with a battery. What is the voltage supplied by the battery?
(ii) The voltage across X is 8.0 V when they are parallel to a battery. What is the current through the battery?

Q9 Refer to the two components in Q7. (i) If they are connected in series with a 3-V battery, what is the current through the battery? (ii) If they are connected parallel to a battery and the current through the battery is 100 mA, what is the voltage of the battery?

Q10 Determine the potential difference between (i) A and C, (ii) B and C.