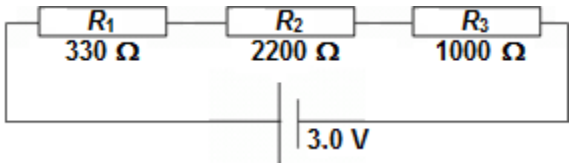
SPH4U Task – Special Circuits Name:

Show formulas, substitutions, answers (in spaces provided) and units!

A series circuit powered by a 3.0 V cell is shown.

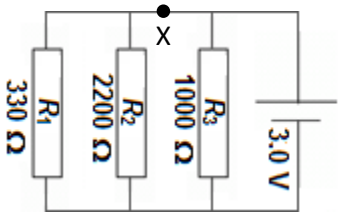


15. What is the total or equivalent resistance of this circuit? 15. _____

16. What is the current through this circuit? 16. _____

17. What are the voltages across each resistor? 17. V_1 = _____
V_2 = _____
V_3 = _____

A parallel circuit powered by a 3.0 V cell is shown.



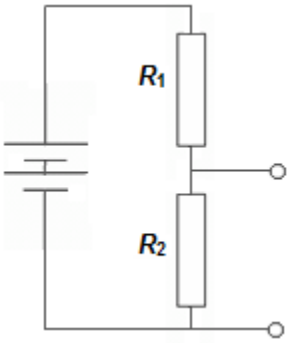
18. What is the total or equivalent resistance of this circuit? 18. _____

19. What is the current through the cell? 19. _____

20. What are the currents through each resistor? 20. I_1 = _____
I_2 = _____
I_3 = _____

21. What is the current through the point X? 21. _____

A series circuit powered by a battery whose voltage is 6.0 V is shown in the schematic diagram.



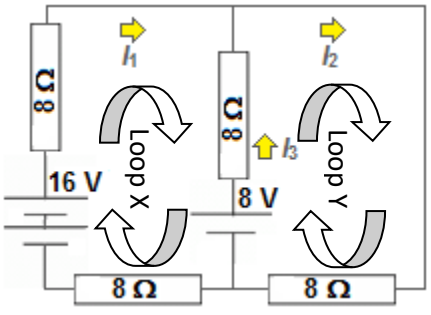
22. Label V_{OUT} and V_{IN} in this circuit. 22. In diagram

23. Suppose the value of R_1 is 2400 Ω. If we would like to "create" 1.5 V at V_{OUT} what should the value of R_2 be? 23. _____

24. Suppose the value of R_2 is 2400 Ω. If we would like to "tap" 1.5 V at V_{OUT} what should the value of R_1 be? 24. _____

25. What is this type of circuit called? 25. _____

A circuit constructed of resistors and two voltage sources is shown.



26. Use Kirchhoff's rule for *I* and write the current equations for each junction. 26. _____

27. Use Kirchhoff's rule for *V* and write the voltage equation for Loop X. 27. _____

28. Use Kirchhoff's rule for *V* and write the voltage equation for Loop Y. 28. _____

29. Find the values of the three currents and the four resistor voltages. Write them in the diagram.