

\_\_\_\_\_(

Name:

)

Class: <u>4-8</u>

Date: 5 April 2024

At the end of this chapter, you should be able to				
٢	Draw circuit diagrams with power source (cell or battery), switches, lamps, resistors (fixed and variable), fuses, ammeters and voltmeters, bells, light-dependent resistors, thermistors and light-emitting diodes (LED).			
٢	State that the current at every point in a series circuits is the same and apply to new situations or to solve related problems.			
٢	State that the sum of the potential differences in a series circuits is equal to the potential difference across the whole circuit and apply to new situations or to solve related problems.			
٢	State that the current from the source is the sum of the currents in the separate branches of a parallel circuit and apply to new situations or to solve related problems.			
٢	State that the potential difference in a parallel circuit to new situations or to solve related problems.			
٢	Recall and apply the relevant relationship, including $R = V/I$ and those for potential differences in series and in parallel circuits, resistors in series and in parallel, in calculations involving a whole circuit.			
$\odot$	describe the action of a variable potential divider (potentiometer)			
$\odot$	describe the action of thermistors and light-dependent resistors and explain their use as input transducers in potential dividers			
$\odot$	solve simple circuit problems involving thermistors and light-dependent resistors			
$\overline{}$				
Ad	Iditional Circuit Symbol			

### **Additional Circuit Symbol**

Thermistor	Light-Dependent Resistor	Light-Emitting Diode (LED)

Secondary Four (Express) Physics

	SERIES	Parallel
Diagram		
Potential Difference		
Current		
Resistance		

Description	Hybrid
Diagram	$V_{1} \qquad V_{2} \qquad \qquad$
Current	
Potential Difference	
Resistance	

The circuit shown consists of a 12 V cell of negligible resistance. The ammeter measures a current of 0.5 A.

- Find (a) the p.d. across the 15  $\Omega$  resistor
  - (b) the p.d. across the resistor **R**
  - (c) the value of resistor **R**



The circuit shown consists of 2 resistors of 4  $\Omega$  and 2  $\Omega$  connected in series.

- (a) What is the ammeter reading?
- (b) What is the potential difference across the 2  $\Omega$  resistor?



The circuit shown consists of a 6 V cell of negligible resistance. The circuit also consists of 2 resistors of 4  $\Omega$  and 2  $\Omega$  connected in parallel.

- Find (a) current,  $I_1$  across the 4  $\Omega$  resistance.
  - (b) current,  $I_2$  across the 2  $\Omega$  resistance.
  - (c) current,  $I_3$ .



#### Example 4

Find the magnitude of current  $I_1$ ,  $I_2$  and  $I_3$  in the following circuit.



Secondary Four (Express) Physics	Chapter 18 – DC Circuits Notes
Quiz Time	
Would you connect 5 light bulbs in series or parallel? State reasons for it.	

Fig. 5.1 shows a circuit containing four identical resistors,  $R_1$  to  $R_4$  and two switches  $S_1$  and  $S_2$ . The rating for each resistor is '24 W, 12 V'.



Fig. 5.1

(a) Calculate the resistance for each resistor.

(b) When both switches are closed, calculate *I*, the current leaving the cell.