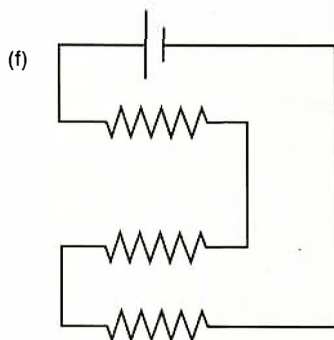
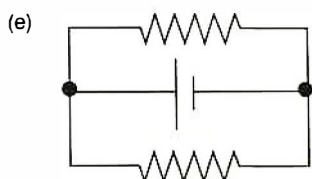
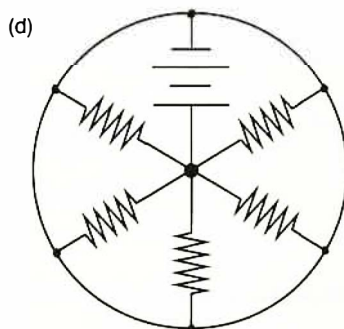
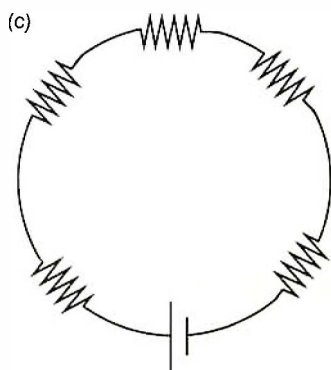
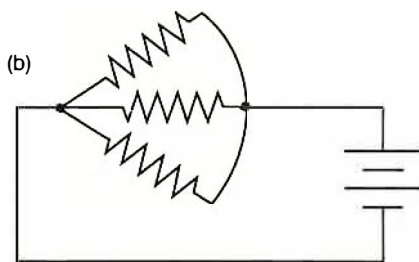
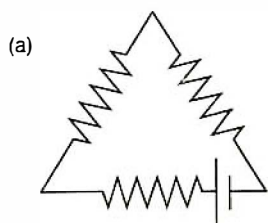
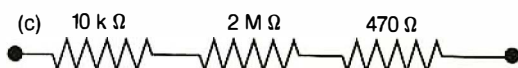
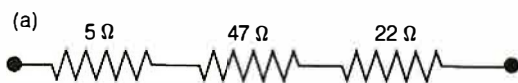


Intro to series and parallel Circuits

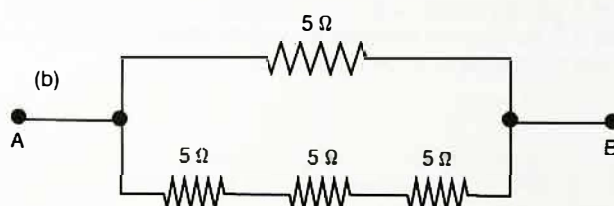
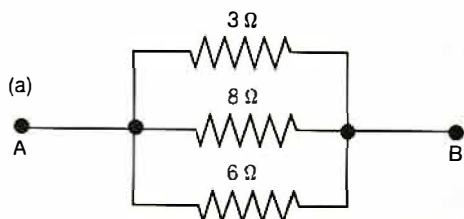
1. In each of the circuits below identify whether the resistors are connected in series or parallel.

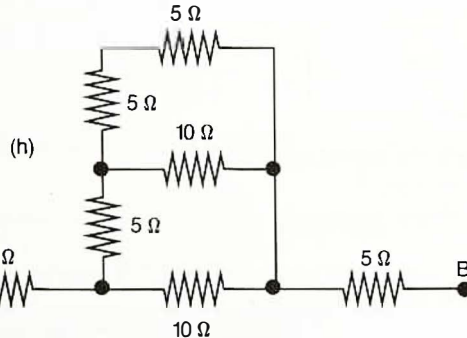
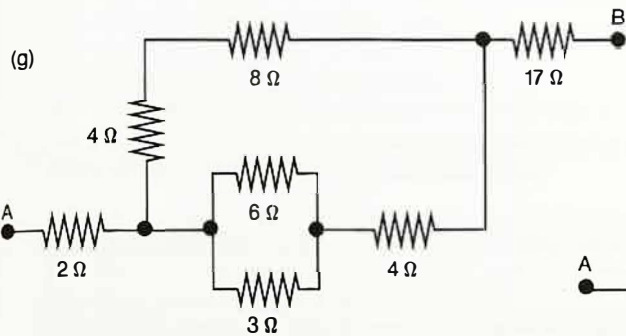
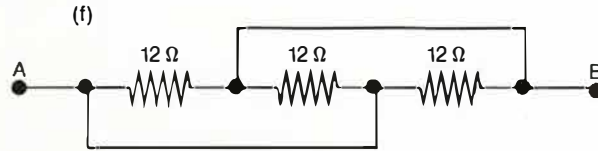
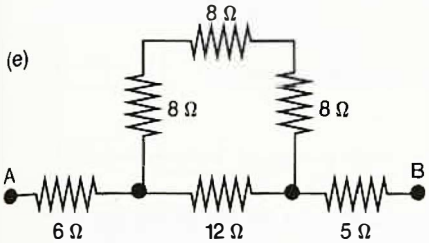
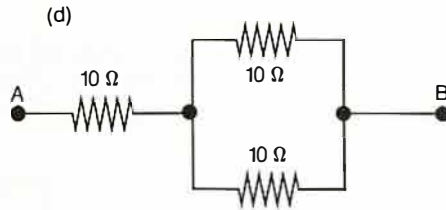
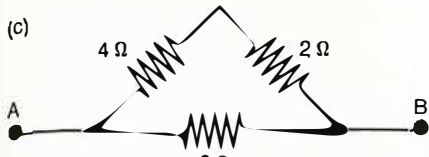


2. Determine the equivalent resistance of the following circuits.

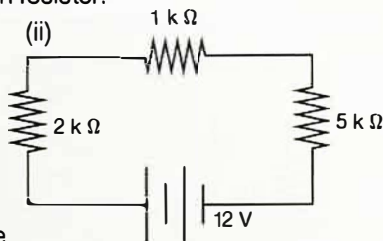
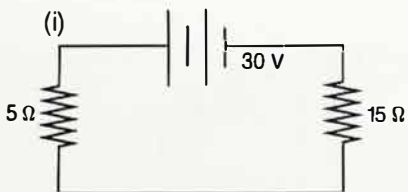


3. Determine the equivalent resistance between terminals A and B of the following network of resistors.

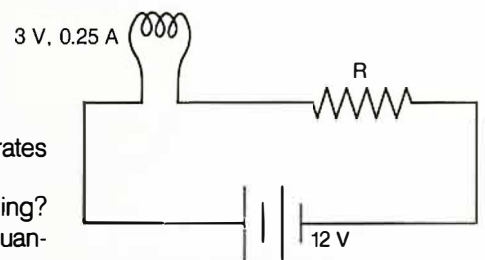




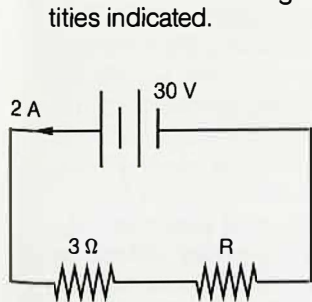
4. Two resistors of $10\ \Omega$ and $15\ \Omega$ are connected in series. What resistance should a third resistor, connected in parallel with the $15\ \Omega$ resistor, have so that the net resistance of the combination is $20\ \Omega$?
5. In the accompanying series circuits, determine:
- the effective circuit resistance;
 - the current in each resistor;
 - the potential difference across each resistor.



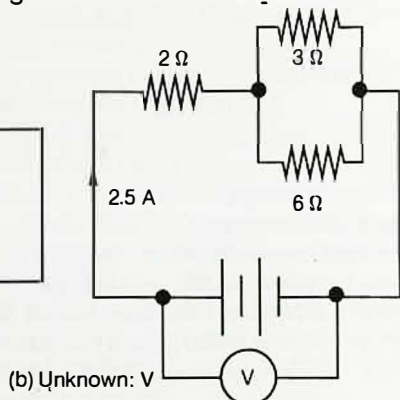
6. The circuit shown in the diagram may be used to light a $3\ \text{V}$ ($0.25\ \text{A}$) bulb from a $12\ \text{V}$ supply.



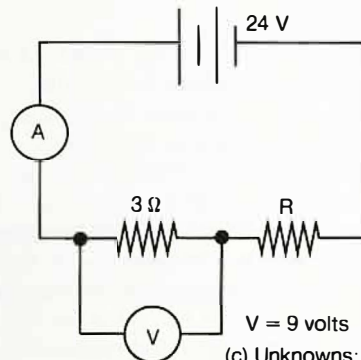
- What should the voltage drop across the resistor R be so that the bulb operates at its normal rating?
 - What should the resistance R be so that the bulb operates at its normal rating?
7. In each of the following circuits determine the value of the unknown quantity or quantities indicated.



(a) Unknown: R



(b) Unknown: V



(c) Unknowns: A and R

Answers

- (a) S (b) P (c) S (d) P (e) P (f) S
- (a) 74Ω (b) $57.3 \text{ k}\Omega$ (c) $2.01 \text{ M}\Omega$
- (a) 16Ω (b) 3.8Ω (c) 3Ω (d) 15Ω
(e) 19Ω (f) 4Ω (g) 23Ω (h) 15Ω
- 30Ω
- (a) (i) 20Ω (ii) $8 \text{ k}\Omega$ (b) (i) 15 A (ii) 1.5 mA

(c) (i) $V_5 = 7.5 \text{ V}$
 $V =_{15} 22.5 \text{ V}$

(ii) $V_1 = 15 \text{ V}$
 $V_2 = 3 \text{ V}$
 $V_5 = 7.5 \text{ V}$

- (a) 9 V (b) 36Ω
- (a) 12Ω (b) 10 V (c) $3 \text{ A}, 5 \Omega$