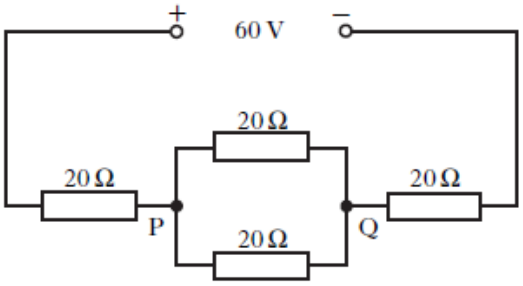
Unit 3 – Electricity
Section 2 – Current, Potential Difference, Power & Resistance

2007 9. Four resistors, each of resistance 20 Ω, are connected to a 60 V supply of negligible internal resistance, as shown.



The potential difference across PQ is

A 12 V

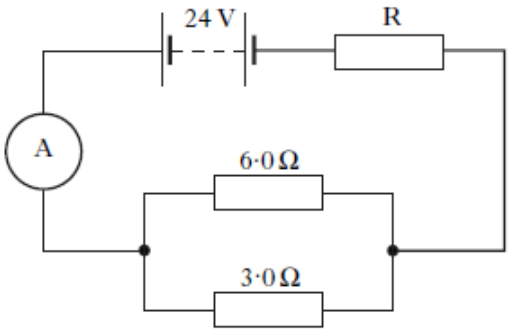
B 15 V

C 20 V

D 24 V

E 30 V.

2009 9. A battery of e.m.f. 24 V and negligible internal resistance is connected as shown.



The reading on the ammeter is 2·0 A.

The resistance of R is

A 3·0 Ω

B 4·0 Ω

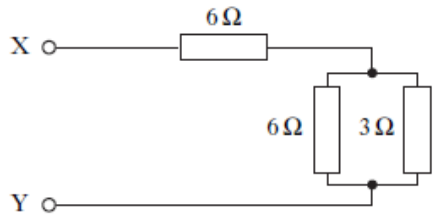
C 10 Ω

D 12 Ω

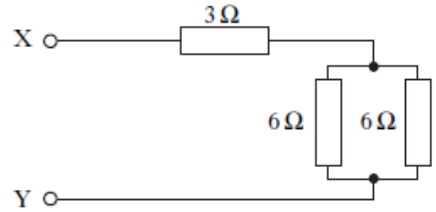
E 18 Ω.

2010 9. Which of the following combinations of resistors has the greatest resistance between X and Y?

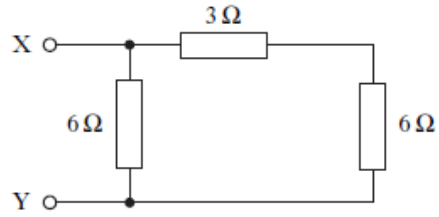
A



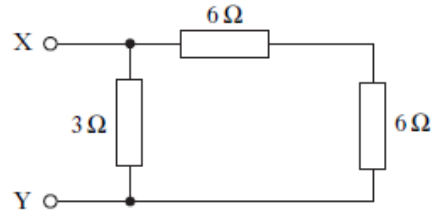
B



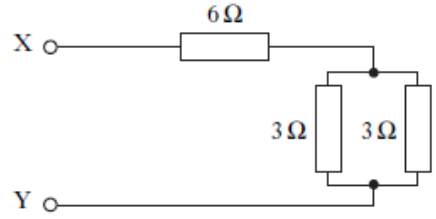
C



D



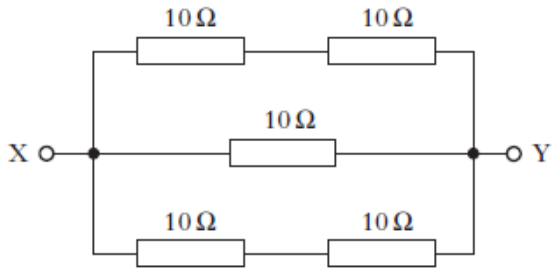
E



2011 8. One volt is equivalent to one

A farad per coulomb
B ampere per ohm
C joule per ampere
D joule per ohm
E joule per coulomb.

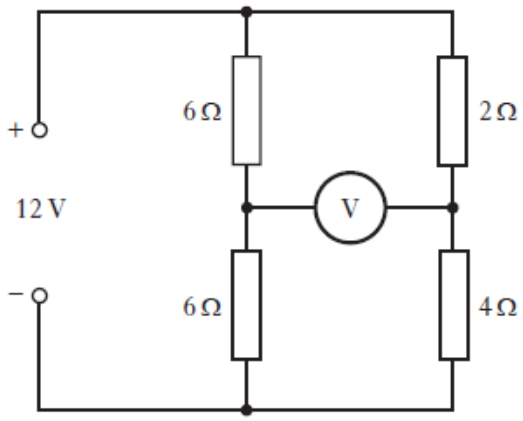
2012 9. The diagram shows part of an electrical circuit.



What is the resistance between X and Y?

A 0·2 Ω
B 5 Ω
C 10 Ω
D 20 Ω
E 50 Ω

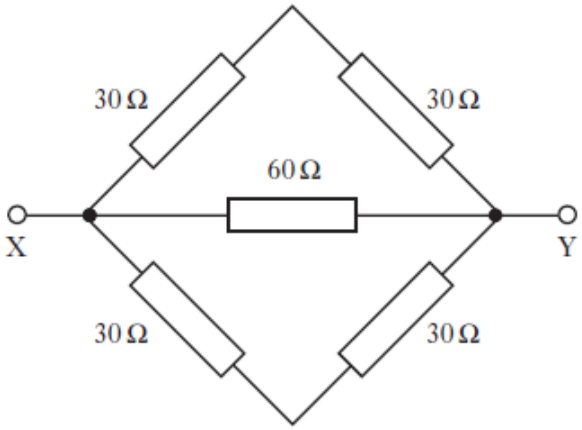
2013 Revised 17. The following circuit is set up.



The reading on the voltmeter is

A 0 V
B 2 V
C 6 V
D 8 V
E 12 V.

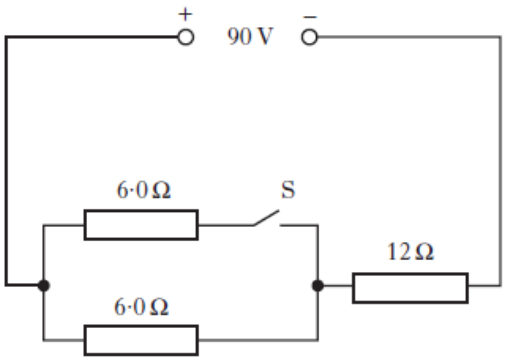
2014 8. Five resistors are connected as shown.



The resistance between X and Y is

A 12 Ω
B 20 Ω
C 30 Ω
D 60 Ω
E 180 Ω.

2014 9. A circuit is set up as shown.

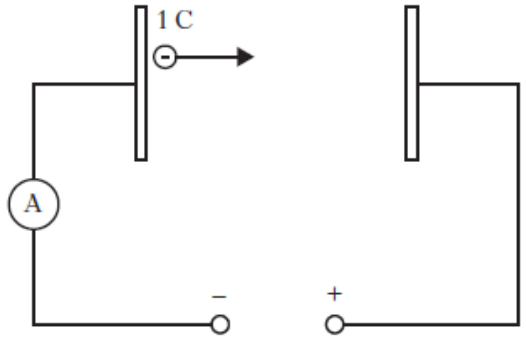


The internal resistance of the supply is negligible.

Which row in the table shows the potential difference (p.d.) across the 12 Ω resistor when switch S is open and when S is closed?

	p.d. across 12 Ω resistor when S is open/V	*p.d. across 12 Ω resistor when S is closed/V*
A	30	18
B	45	45
C	60	45
D	60	72
E	72	60

2015 8. One joule of work is done in moving one coulomb of charge between two plates as shown.



From the information given, which of the following statements must be true?

A The distance between the plates is one metre.

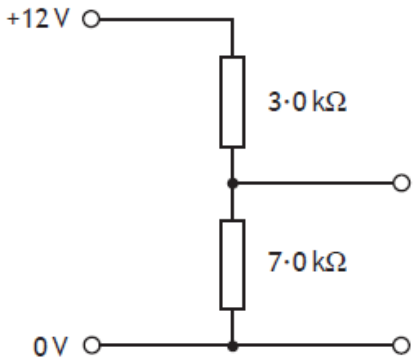
B The capacitance of the circuit is one farad.

C The current in the circuit is one ampere.

D The potential difference between the plates is one volt.

E The resistance of the circuit is one ohm.

2016 18. A potential divider circuit is set up as shown.



The potential difference across the 7·0 kΩ resistor is

A 3·6 V

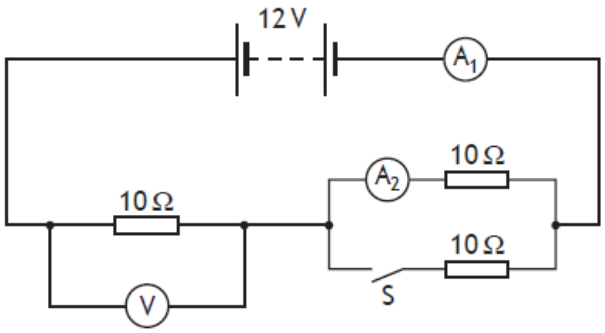
B 4·0 V

C 5·1 V

D 8·4 V

E 9·0 V.

2018 **15.** A circuit is set up as shown.



The battery has negligible internal resistance.

A student makes the following statements about the readings on the meters in this circuit.

I When switch S is open the reading on the voltmeter will be 6·0 V.

II When switch S is open the reading on A_2 will be 0·60 A.

III When switch S is closed the reading on A_1 will be 0·80 A.

Which of these statements is/are correct?

A I only

B II only

C I and II only

D II and III only

E I, II and III

2018 **16.** The power dissipated in a 120 Ω resistor is 4·8 W.

The current in the resistor is

A 0·020 A

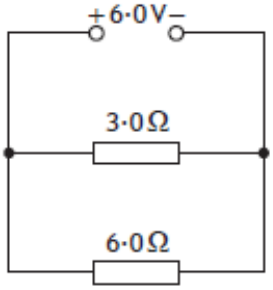
B 0·040 A

C 0·20 A

D 5·0 A

E 25 A.

2019 23. A circuit is set up as shown.

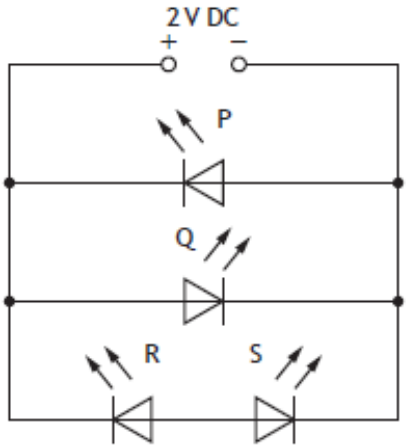


The power supply has negligible internal resistance.

The power dissipated in the 3·0Ω resistor is

A 3·0W
B 6·0W
C 9·0W
D 12W
E 18W.

2019 24. A student connects four identical light emitting diodes (LEDs) to a 2 V DC supply as shown.



Which of the LEDs P, Q, R, and S will light?

A P only
B Q only
C P and Q only
D P and R only
E Q and S only.