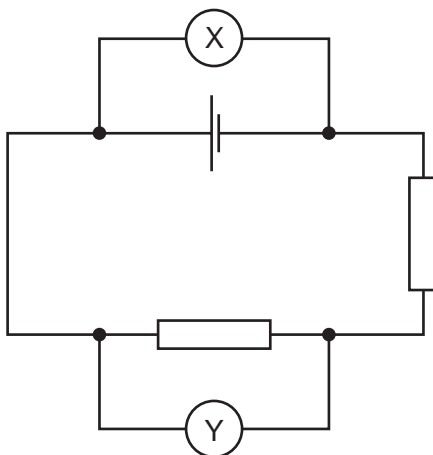


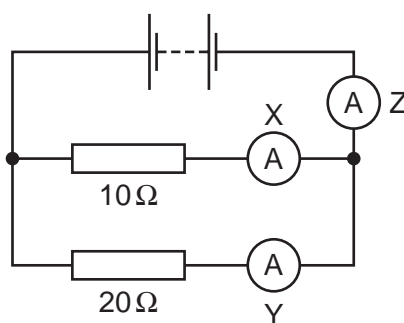
1 The circuit shown includes two meters X and Y, connected correctly.



Which row gives the unit of the quantity measured by X and the unit of the quantity measured by Y?

	meter X	meter Y
A	ampere	ampere
B	ampere	volt
C	volt	ampere
D	volt	volt

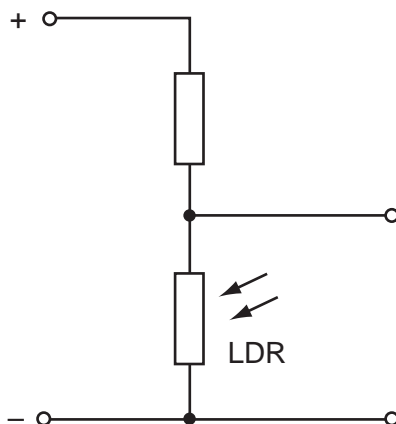
2 The circuit shown contains three ammeters X, Y and Z.



Which ammeter has the largest reading?

- A** X
- B** Y
- C** Z
- D** They all have the same reading.

3 The diagram shows part of a circuit used to switch street lamps on and off automatically.



In the evening it gets dark.

Which row shows the effect on the resistance of the light-dependent resistor (LDR) and on the potential difference (p.d.) across it?

	resistance of LDR	p.d. across LDR
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

4 Two meters are connected in a circuit to measure the current in a component and the potential difference across the component.

Which meters are used and how are they connected to the component?

- A** an ammeter in parallel for current, a voltmeter in series for potential difference
- B** an ammeter in series for current, a voltmeter in parallel for potential difference
- C** a voltmeter in parallel for current, an ammeter in series for potential difference
- D** a voltmeter in series for current, an ammeter in parallel for potential difference

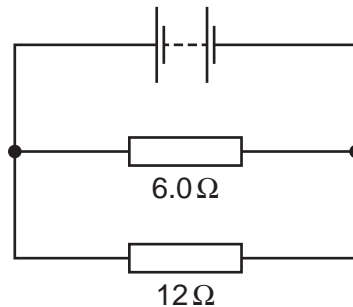
5 P and Q are the circuit symbols for two electrical components.



Which components are represented by P and by Q?

	P	Q
A	thermistor	fuse
B	thermistor	relay
C	variable resistor	fuse
D	variable resistor	relay

6 The diagram shows two resistors connected in a circuit.



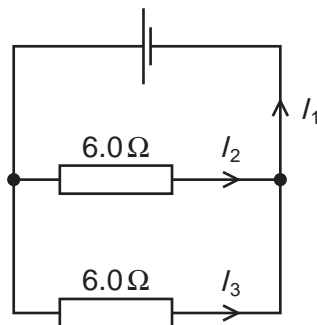
What could be the combined resistance of this arrangement of resistors?

- A** $4.0\ \Omega$ **B** $6.0\ \Omega$ **C** $9.0\ \Omega$ **D** $18\ \Omega$

7 Why are lamps in a house lighting circuit connected in parallel rather than in series?

- A** If one lamp stops working, the remaining lamps become brighter.
- B** Less current is taken from the power supply.
- C** The lamps can be turned off independently using switches.
- D** When more lamps are added, their brightness decreases.

- 8 The diagram shows a cell connected to two $6.0\ \Omega$ resistors. Three currents, I_1 , I_2 and I_3 , are labelled.



Which row correctly compares I_2 and I_3 with I_1 ?

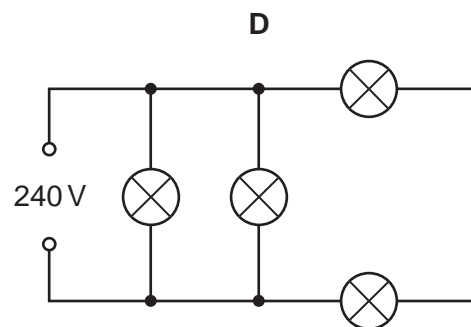
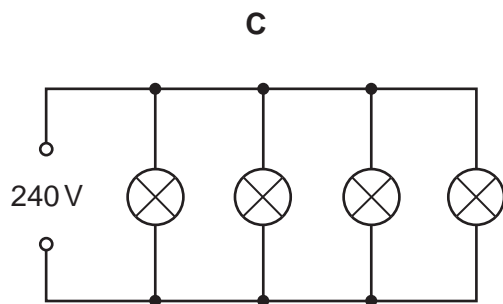
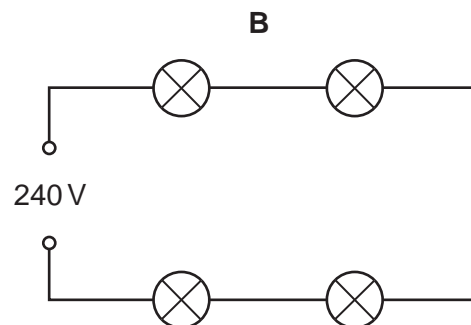
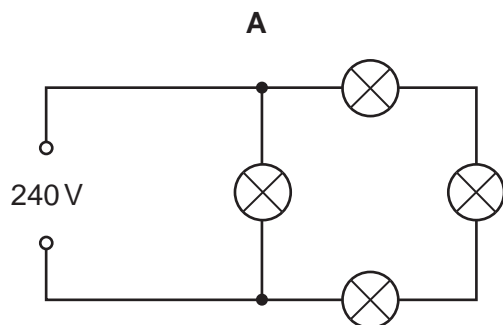
	I_2	I_3
A	same as I_1	same as I_1
B	same as I_1	smaller than I_1
C	smaller than I_1	same as I_1
D	smaller than I_1	smaller than I_1

- 9 Which produces an electromotive force (e.m.f.)?

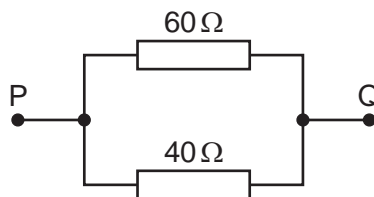
- A** a battery
- B** a filament lamp
- C** a resistor
- D** a spring balance

10 Four lamps are each labelled 240V.

In which circuit do all four lamps have normal brightness?



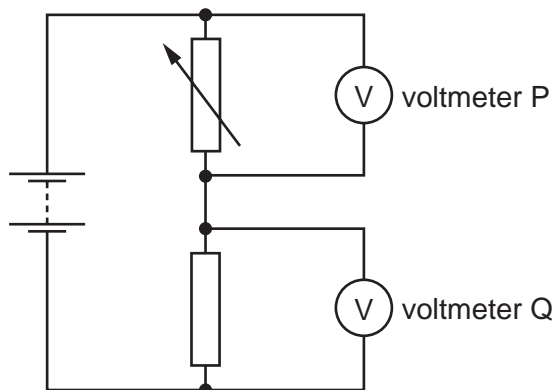
11 The diagram shows a 40Ω resistor and a 60Ω resistor connected in parallel.



What is the total resistance between points P and Q?

- A less than 40Ω
- B 50Ω
- C between 60Ω and 100Ω
- D 100Ω

12 The diagram shows a potential divider connected to two voltmeters P and Q.

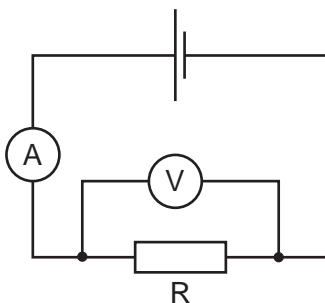


The resistance of the variable resistor is decreased.

Which row shows what happens to the reading on each voltmeter?

	reading on voltmeter P	reading on voltmeter Q
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

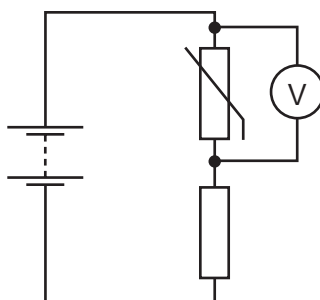
13 A circuit is set up to determine the resistance of a resistor R. The meter readings are 2.0A and 3.0V.



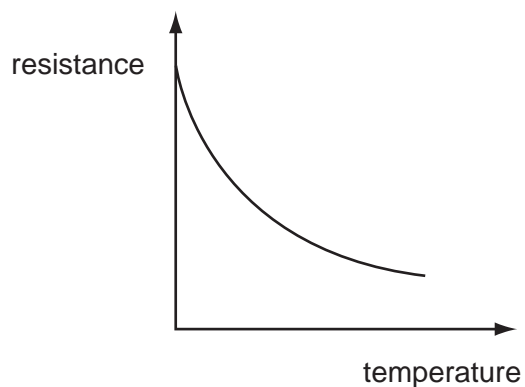
What is the resistance of the resistor R?

- A** 0.67Ω **B** 1.5Ω **C** 5.0Ω **D** 6.0Ω

- 14 The circuit diagram shows a thermistor in a potential divider. A voltmeter is connected across the thermistor.



The graph shows how the resistance of the thermistor changes with temperature.



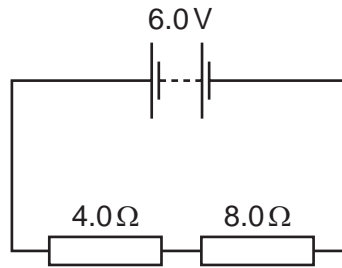
As the thermistor becomes warmer, what happens to its resistance and what happens to the reading on the voltmeter?

	resistance	voltmeter reading
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

- 15 What is the unit of electromotive force (e.m.f.)?

- A** ampere
- B** joule
- C** volt
- D** watt

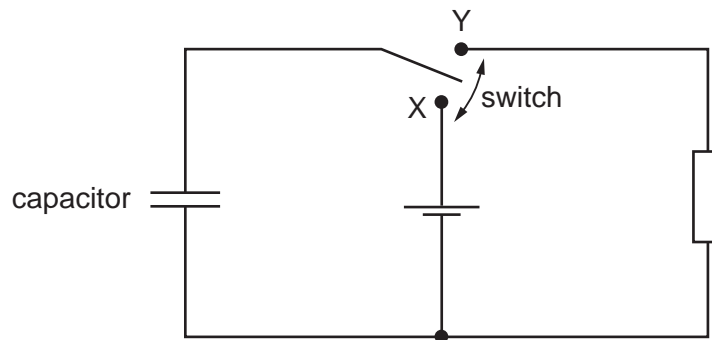
16 The circuit diagram shows a 6.0V battery, a 4.0Ω resistor and an 8.0Ω resistor connected to a 6.0V battery.



What is the current in the battery?

- A** 0.50A **B** 0.75A **C** 1.5A **D** 2.0A

17 The diagram shows a circuit which includes an uncharged capacitor and a switch.

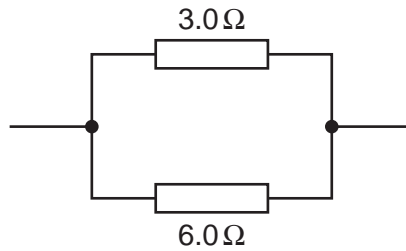


The switch can be moved between position X and position Y.

What happens to the capacitor when the switch is moved to position X, and what happens when the switch is then moved to position Y?

	switch at X	switch at Y
A	capacitor charges	capacitor charges
B	capacitor charges	capacitor discharges
C	capacitor discharges	capacitor charges
D	capacitor discharges	capacitor discharges

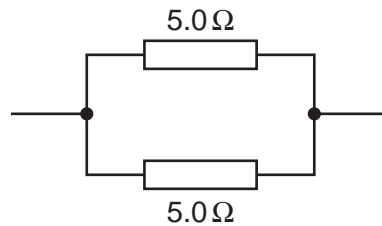
18 The diagram shows a $3.0\ \Omega$ resistor and a $6.0\ \Omega$ resistor connected in parallel.



What is the total resistance of this arrangement?

- A less than $3.0\ \Omega$
- B $3.0\ \Omega$
- C $4.5\ \Omega$
- D more than $6.0\ \Omega$

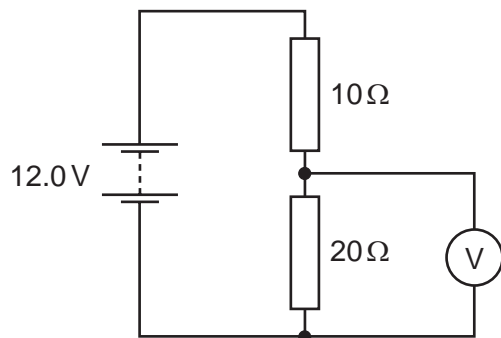
19 Two $5.0\ \Omega$ resistors are connected as shown in the diagram.



What is the total resistance of this combination?

- A less than $5.0\ \Omega$
- B $5.0\ \Omega$
- C more than $5.0\ \Omega$ but less than $10.0\ \Omega$
- D $10.0\ \Omega$

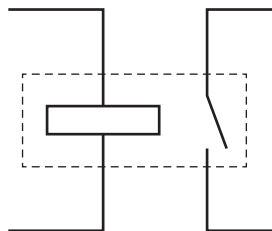
20 The diagram shows a 10Ω resistor and a 20Ω resistor connected in a potential divider circuit.



What is the reading on the voltmeter?

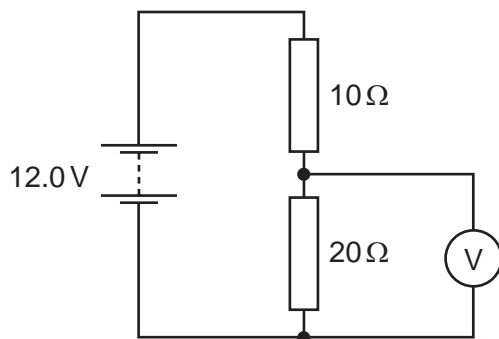
- A** 4.0V **B** 6.0V **C** 8.0V **D** 12.0V

21 Which component is represented by this circuit symbol?



- A** a bell
B a fuse
C a relay
D a transformer

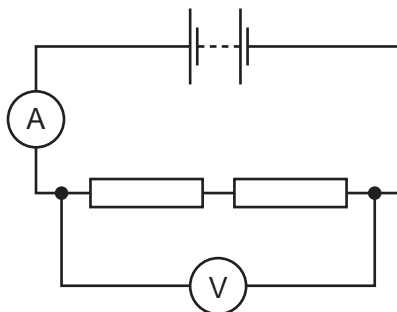
22 The diagram shows a $10\ \Omega$ resistor and a $20\ \Omega$ resistor connected in a potential divider circuit.



What is the reading on the voltmeter?

- A** 4.0V **B** 6.0V **C** 8.0V **D** 12.0V

23 A student uses the circuit shown to determine the resistance of the two identical resistors.

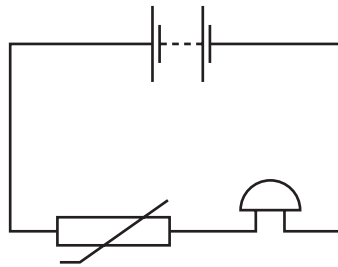


The voltmeter reading is 2.2V and the ammeter reading is 0.25A.

What is the resistance of each resistor?

- A** $0.275\ \Omega$ **B** $0.55\ \Omega$ **C** $4.4\ \Omega$ **D** $8.8\ \Omega$

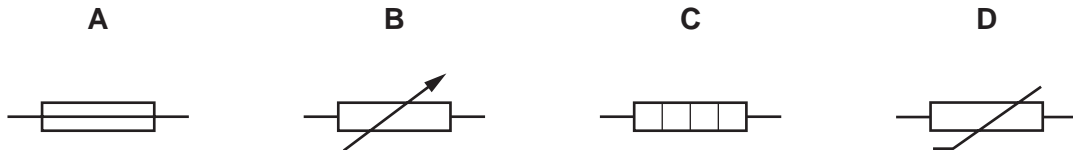
24 A student sets up this circuit.



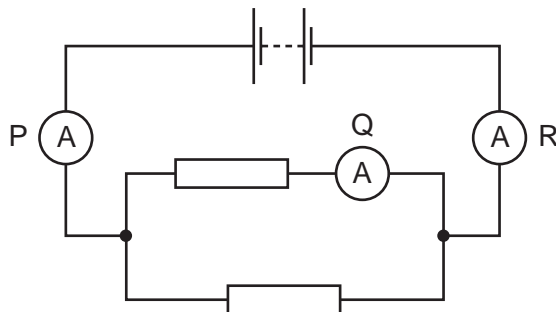
What is the purpose of the circuit?

- A** to allow a lamp to be made dimmer or brighter as required
- B** to amplify the sound of a voice
- C** to light a lamp in the dark
- D** to sound a bell when the temperature rises

25 What is the circuit symbol for a variable resistor?



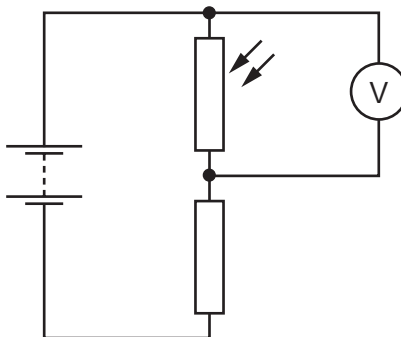
26 The diagram shows a circuit containing three ammeters P, Q and R.



Which statement about the readings on the ammeters is correct?

- A The reading on P is equal to the reading on Q.
- B The reading on P is equal to the reading on R.
- C The reading on Q is greater than the reading on P.
- D The reading on Q is greater than the reading on R.

27 The diagram shows a light-dependent resistor (LDR) connected in a potential divider circuit.



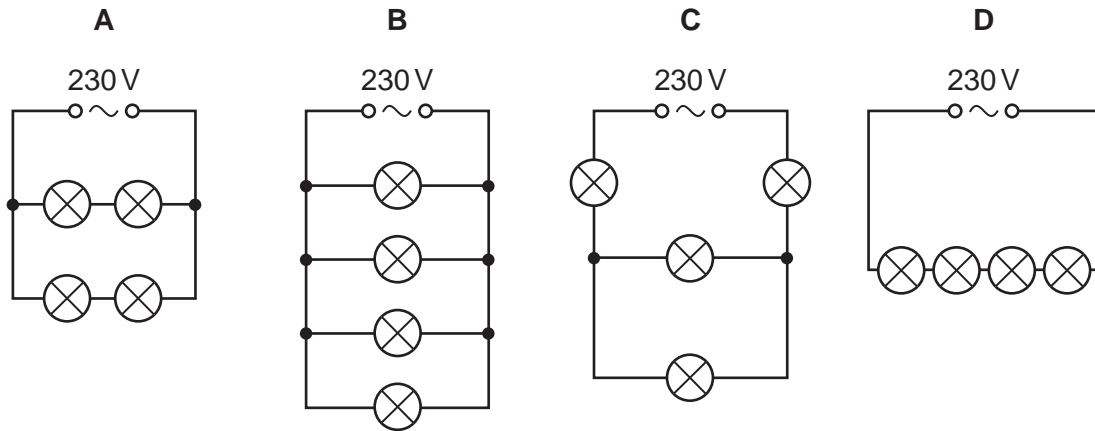
The brightness of the light falling on the LDR is increased.

Which row shows what happens to the resistance of the LDR, and what happens to the reading on the voltmeter?

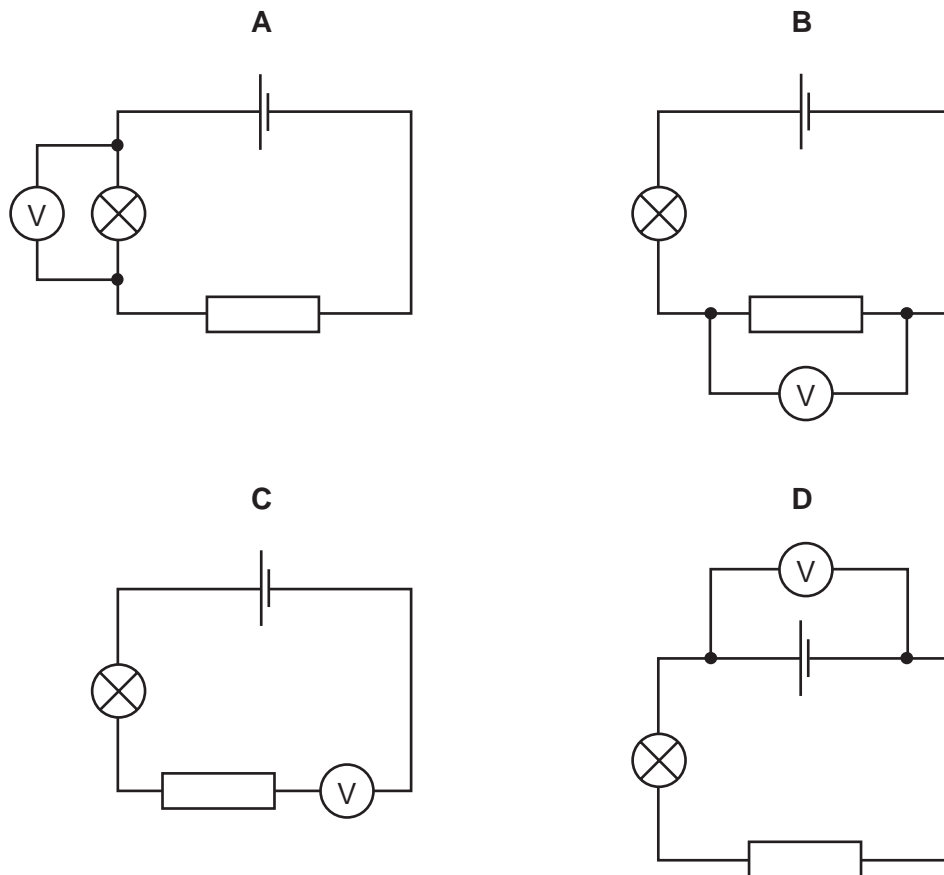
	resistance of LDR	reading on voltmeter
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

28 Four lamps are each labelled '60 W 230 V'.

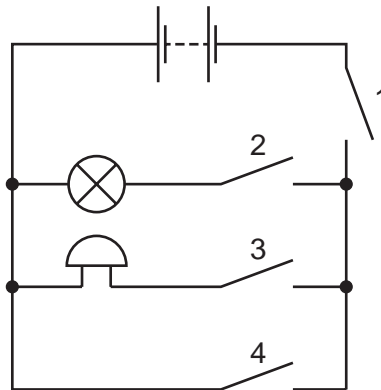
In which circuit are the lamps connected so that they operate at normal brightness?



29 Which circuit shows a voltmeter measuring the p.d. across a resistor?



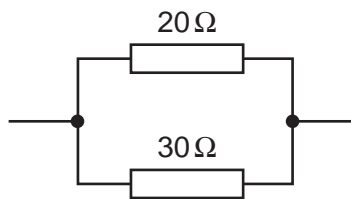
30 A student connects the circuit shown.



Which switches must be closed for both the bell to ring and the lamp to light?

- A 1 and 4 only
- B 2 and 3 only
- C 1, 2 and 3 only
- D 1, 2, 3 and 4

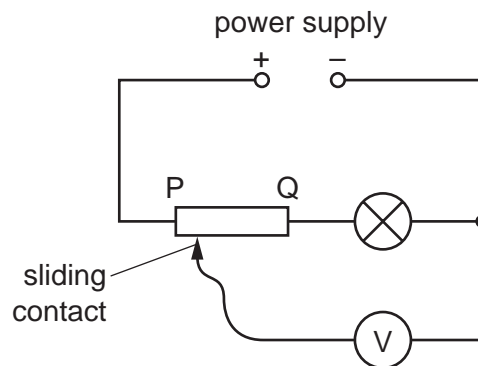
31 Two resistors are connected in parallel.



Which value could be the resistance of the combination?

- A $12\ \Omega$
- B $20\ \Omega$
- C $25\ \Omega$
- D $50\ \Omega$

32 The circuit contains a variable potential divider PQ, a lamp and a voltmeter.



The sliding contact of the potential divider is moved towards end Q.

What happens to the brightness of the lamp and what happens to the voltmeter reading?

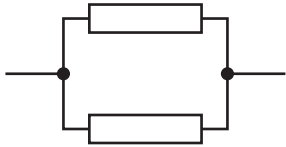
	brightness of lamp	voltmeter reading
A	becomes brighter	decreases
B	becomes brighter	increases
C	does not change	decreases
D	does not change	increases

33 A student designs a circuit to switch on a lamp after a time delay.

Which components are used in a time-delay circuit?

- A** a light-dependent resistor and a relay
- B** a resistor and a capacitor
- C** a resistor and a transformer
- D** a thermistor and a variable resistor

34 Identical resistors are connected together to form arrangements X, Y and Z.



arrangement X



arrangement Y

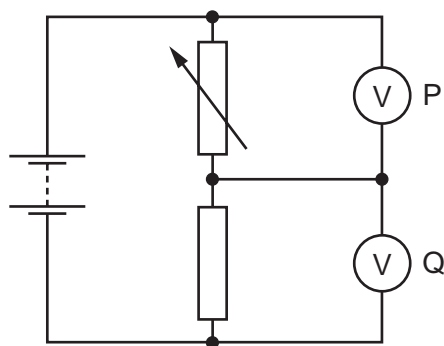


arrangement Z

What is the correct order of the resistances of the arrangements from the largest to the smallest?

- A** $X \rightarrow Y \rightarrow Z$
- B** $Y \rightarrow X \rightarrow Z$
- C** $Z \rightarrow X \rightarrow Y$
- D** $Z \rightarrow Y \rightarrow X$

35 The diagram shows a potential divider circuit.



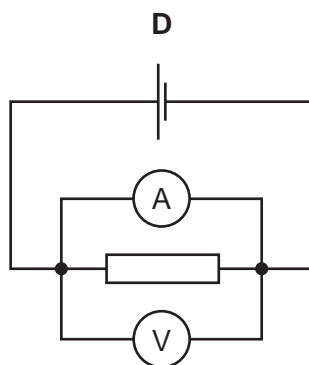
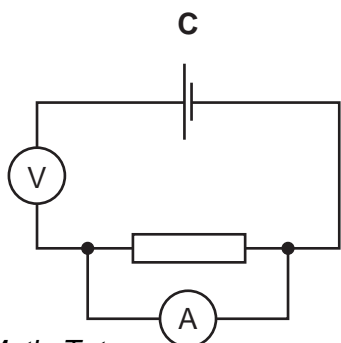
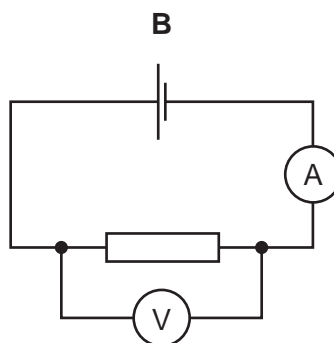
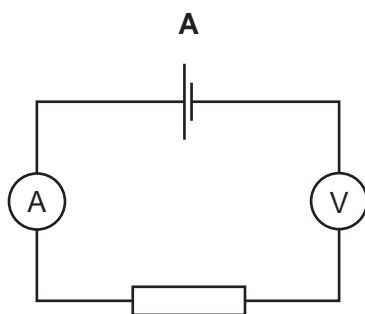
The resistance of the variable resistor is increased.

Which row shows what happens to the readings on voltmeter P and on voltmeter Q?

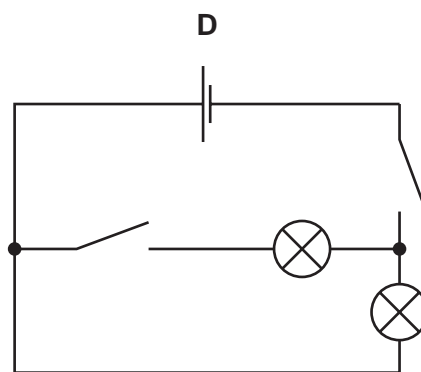
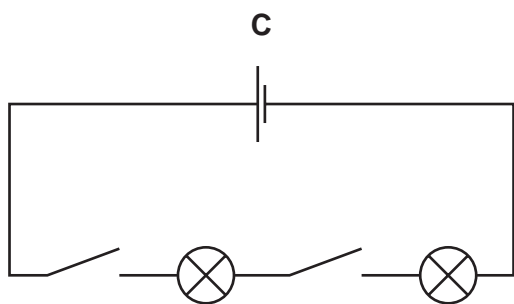
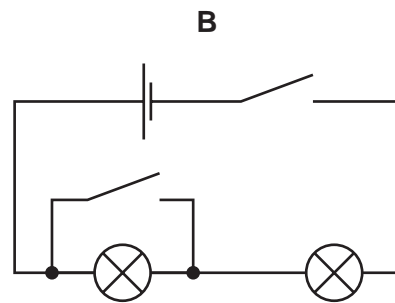
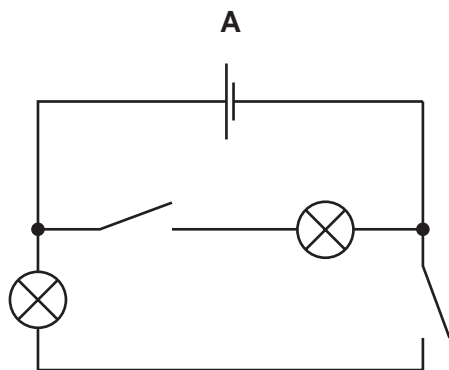
	reading on voltmeter P	reading on voltmeter Q
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

36 A student wishes to determine the resistance of a resistor. She uses an ammeter and a voltmeter in a circuit.

In which circuit are the ammeter and voltmeter connected correctly?

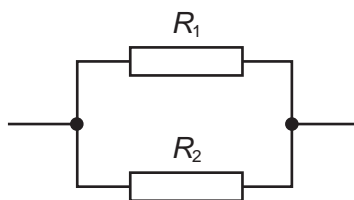


37 In which circuit can the lamps be switched on and off independently?



38 Two resistors, with resistances R_1 and R_2 , are connected in parallel.

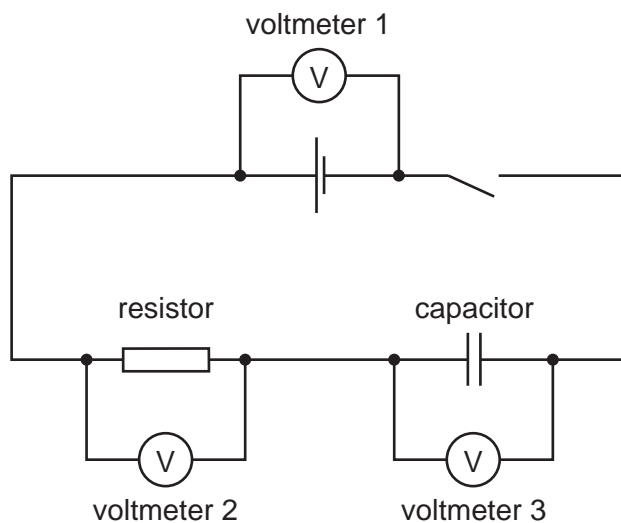
The resistance R_1 is greater than the resistance R_2 .



What is the resistance of the parallel combination?

- A** less than either R_1 or R_2
- B** equal to R_1
- C** equal to R_2
- D** the average of R_1 and R_2

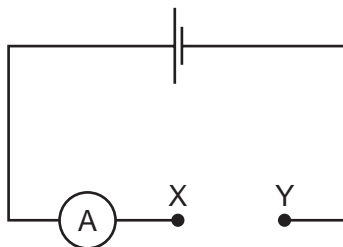
39 In the circuit shown, the switch is closed for a long time, then opened.



Immediately after the switch is opened, which of the voltmeters reads zero?

- A voltmeter 1 only
- B voltmeter 2 only
- C voltmeter 3 only
- D voltmeter 1, voltmeter 2 and voltmeter 3

40 The diagram shows an incomplete circuit.



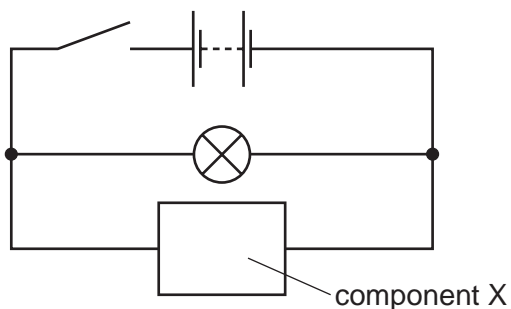
Four wires of different length and thickness are connected in turn between point X and point Y. All four wires are made of the same metal.

Which wire will cause the greatest reading on the ammeter?

- A long and thick
- B long and thin
- C short and thick
- D short and thin

- 41 The diagram shows a circuit containing a battery, a lamp, a switch and another component X. The switch is initially closed and the lamp is lit.

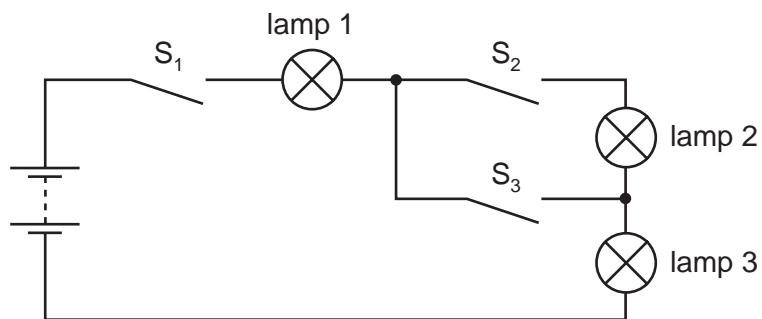
The switch is now opened and the lamp remains lit for several seconds before slowly going out.



What is component X?

- A a capacitor
- B a light-dependent resistor
- C a thermistor
- D a variable resistor

- 42 The diagram shows a circuit containing three lamps and three switches S_1 , S_2 and S_3 .

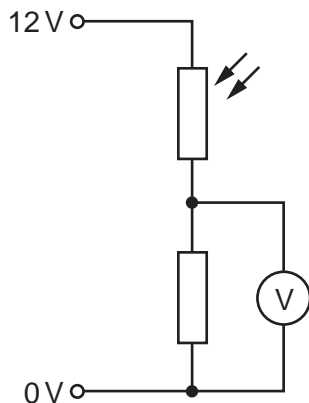


Lamp 1 and lamp 3 are lit, but lamp 2 is not lit.

Which switch or switches is/are closed?

- A S_1 only
- B S_1 and S_2
- C S_1 and S_3
- D S_2 and S_3

43 The diagram shows part of an electric circuit.

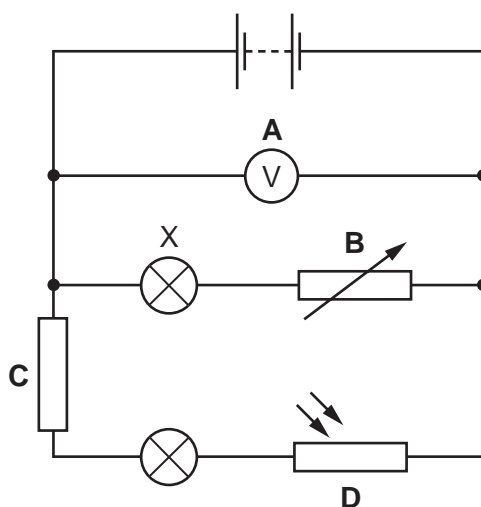


The light falling on the light-dependent resistor (LDR) increases in brightness.

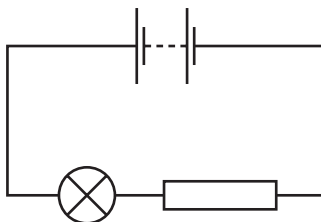
What happens to the resistance of the LDR and what happens to the reading on the voltmeter?

	resistance of LDR	reading on voltmeter
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

44 Which labelled component in the circuit shown controls the brightness of lamp X?



45 The diagram shows a lamp and a resistor connected in a circuit. The lamp is too bright.



Which change to the circuit will decrease the current in the lamp and make it less bright?

- A** connecting another resistor in parallel with the one in the circuit
- B** connecting another resistor in series with the one in the circuit
- C** exchanging the positions of the lamp and the resistor in the circuit
- D** increasing the e.m.f. of the battery in the circuit

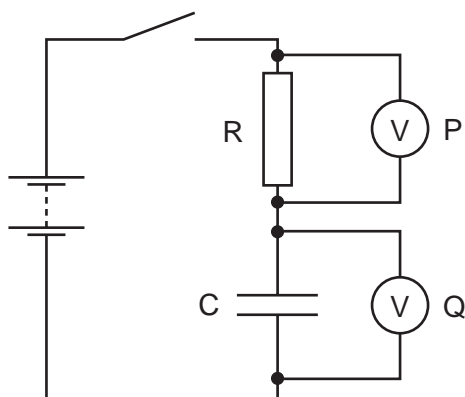
46 Which statement is **not** correct for lamps connected in parallel?

- A** They can be switched on and off separately.
- B** They will remain bright if another lamp is connected in parallel.
- C** They share the supply voltage equally between them.
- D** They still operate if one lamp is removed.

47 A student connects a resistor R, with a high

large capacitance, and a

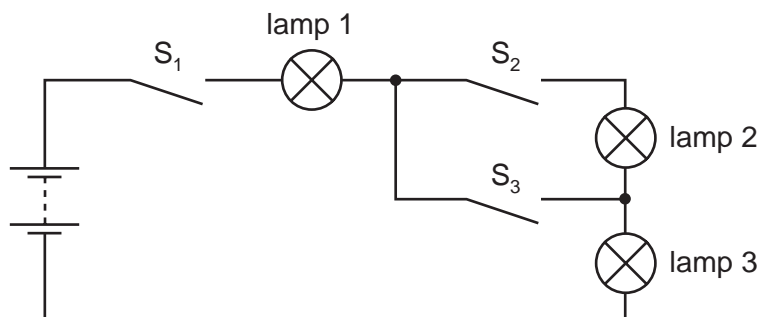
The switch is closed. The reading on the voltmeter P rises immediately to a maximum value, then starts to fall gradually.



What happens to the reading on the voltmeter Q and what happens to the energy stored in the capacitor?

	reading on voltmeter Q	energy stored in capacitor
A	falls	decreases
B	falls	increases
C	rises	decreases
D	rises	increases

48 The diagram shows a circuit containing three lamps and three switches S_1 , S_2 and S_3 .



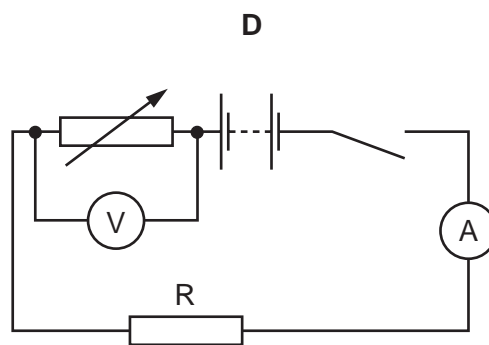
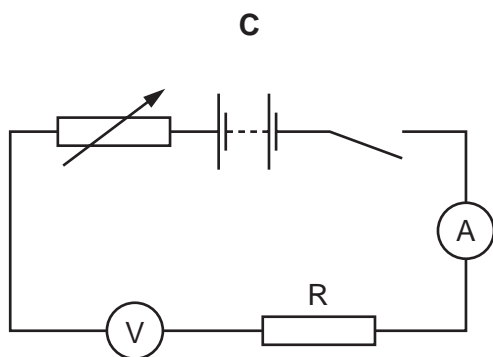
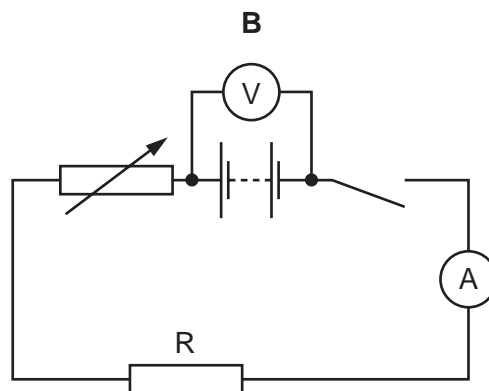
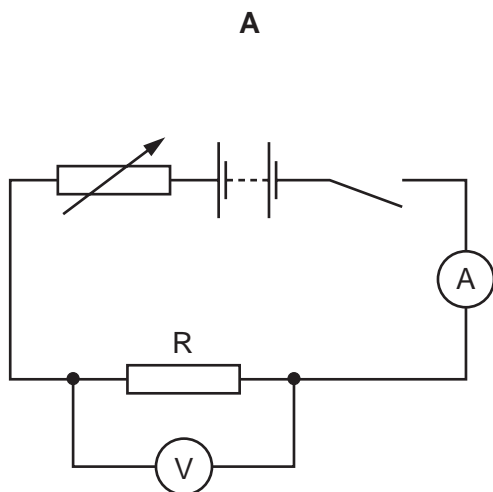
Lamp 1 and lamp 3 are lit, but lamp 2 is not lit.

Which switch or switches is/are closed?

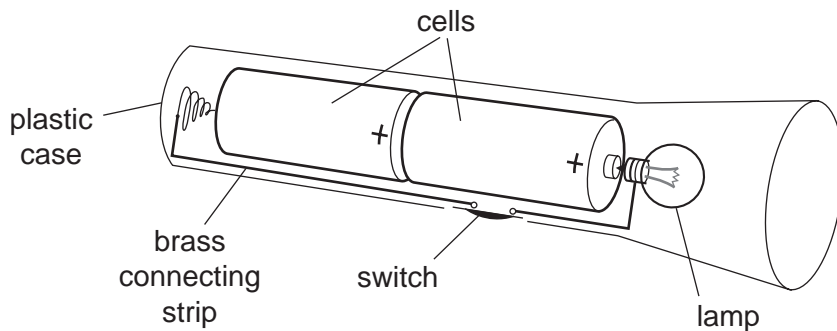
- A** S_1 only
- B** S_1 and S_2
- C** S_1 and S_3
- D** S_2 and S_3

- 49 A student carries out an experiment to investigate the resistance of a resistor R . She takes a series of readings of potential difference (p.d.) and current, and plots a graph of her results.

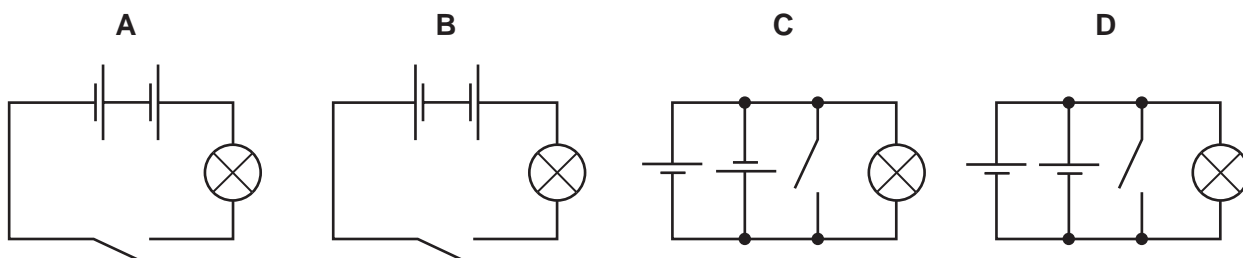
Which circuit should she use?



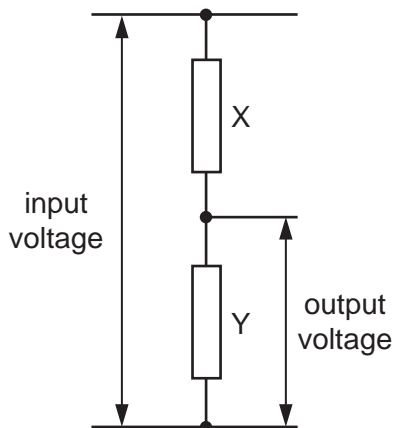
50 The diagram shows a torch containing two cells, a switch and a lamp.



Which is the circuit diagram for the torch?



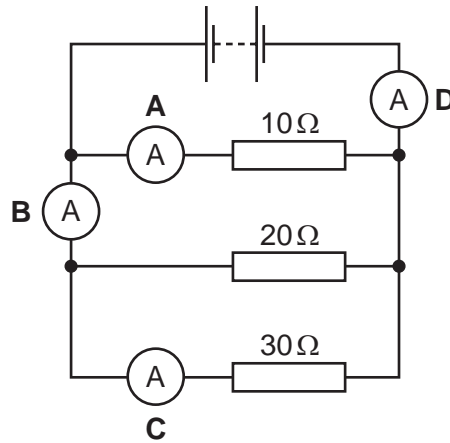
51 An engineer uses the potential divider shown in the diagram. He needs the output voltage to be one tenth ($\frac{1}{10}$) of the input voltage.



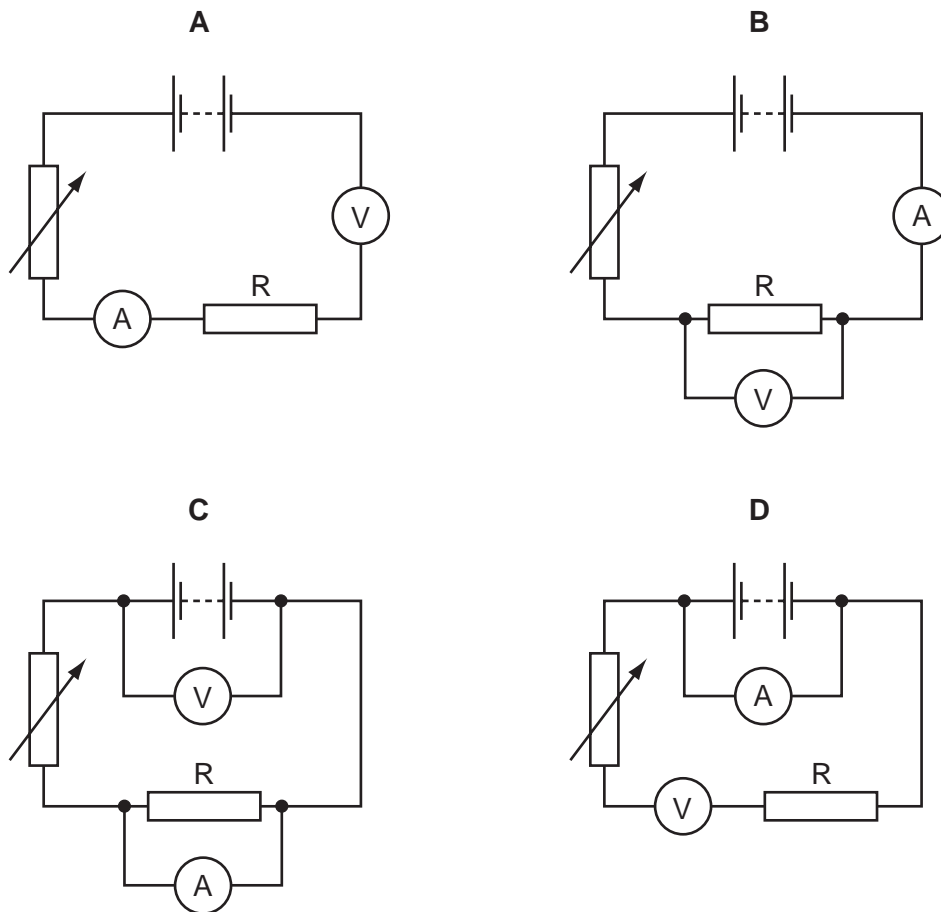
Which pair of values could he use for the two resistors X and Y?

	X/k Ω	Y/k Ω
A	1.0	9.0
B	1.0	10.0
C	9.0	1.0
D	10.0	1.0

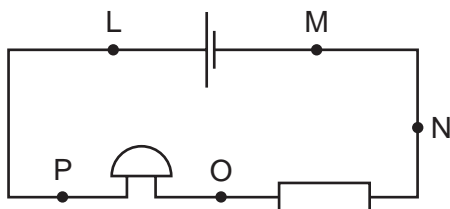
- 52 A circuit contains four ammeters **A**, **B**, **C** and **D**, and three resistors with different values. Which ammeter shows the largest reading?



- 53 Which circuit could be used to determine the resistance of the resistor R?



54 The diagram shows an electrical circuit.



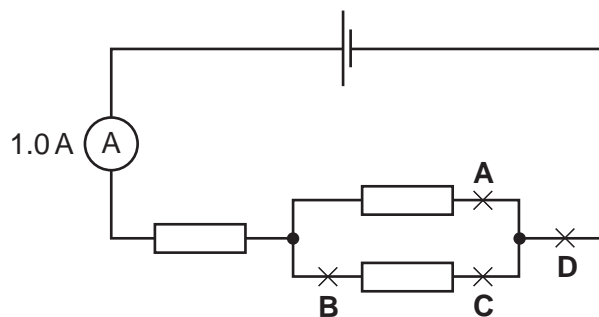
Between which two points must a voltmeter be connected to find the potential difference across the bell?

- A** L and M **B** M and N **C** N and O **D** O and P

55 The reading on the ammeter in the circuit is 1.0 A.

A second ammeter is connected in the circuit. It also reads 1.0 A.

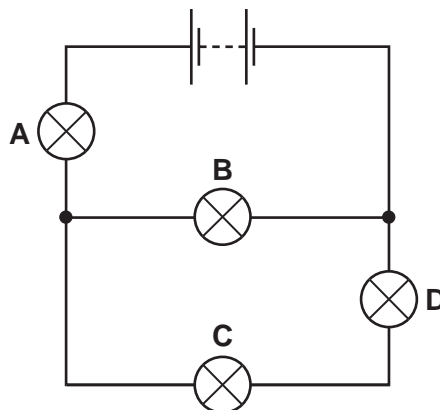
At which labelled point is it connected?



56 The circuit shows a battery and four lamps. All the lamps are lit.

One lamp fails and all the lamps go out.

Which lamp failed?

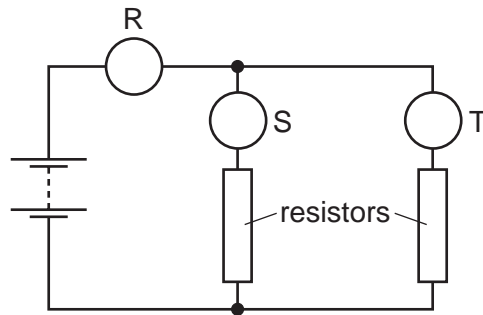


57 An electric current can produce a heating effect and a magnetic effect.

Which row shows the effect that a relay uses, together with one application of a relay?

	effect used by a relay	one application of a relay
A	heating effect	allowing a small current to switch on a large current
B	heating effect	changing the voltage of an alternating current
C	magnetic effect	allowing a small current to switch on a large current
D	magnetic effect	changing the voltage of an alternating current

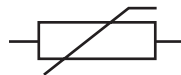
- 58 A student investigates a circuit that contains two parallel resistors. The circuit includes meters R, S and T which are all connected correctly.



Which types of meter are R, S and T?

	meter R	meter S	meter T
A	ammeter	ammeter	ammeter
B	ammeter	voltmeter	voltmeter
C	voltmeter	ammeter	ammeter
D	voltmeter	voltmeter	voltmeter

- 59 A circuit contains the component shown by the following symbol.

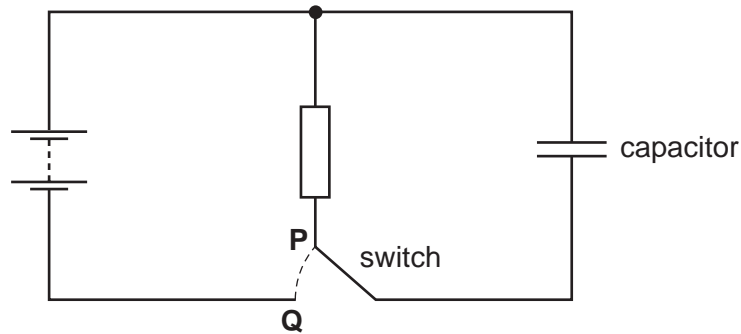


Which change would the component detect?

A change in

- A** light level.
- B** potential difference.
- C** radioactivity.
- D** temperature.

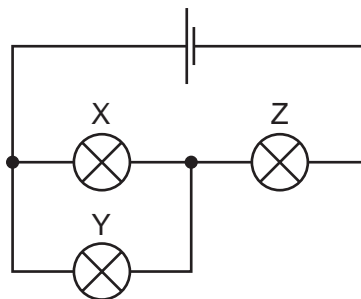
60 The diagram shows a circuit which includes a switch and a capacitor.



What happens to the capacitor when the switch is at **P** and when it is at **Q**?

	switch at P	switch at Q
A	charging	charging
B	charging	discharging
C	discharging	charging
D	discharging	discharging

61 The circuit diagram shows a cell connected to three identical lamps X, Y and Z. All the lamps are lit.

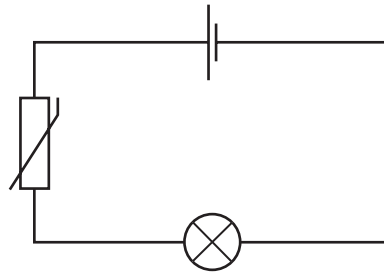


Lamp Y is removed by unscrewing it from its holder.

What happens to lamp Z?

- A** It goes out completely.
- B** It becomes dimmer but stays lit.
- C** It stays the same brightness.
- D** It becomes brighter.

62 When the thermistor in the circuit below is heated, the current in the lamp increases.



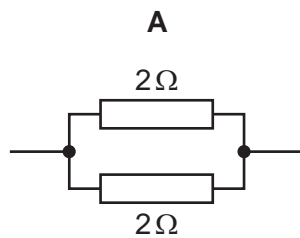
Why does this happen?

- A The resistance of the lamp decreases.
- B The resistance of the lamp increases.
- C The resistance of the thermistor decreases.
- D The resistance of the thermistor increases.

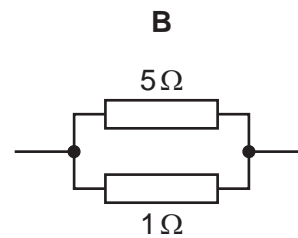
63 A student connects various resistors in parallel pairs.

Underneath each diagram is a statement about the total resistance of each pair of resistors.

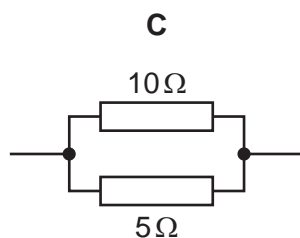
Which statement is correct?



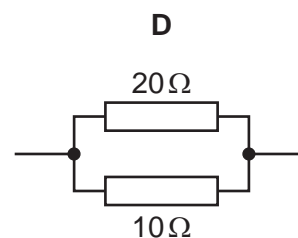
The total resistance is 4Ω .



The total resistance is between 1Ω and 5Ω .

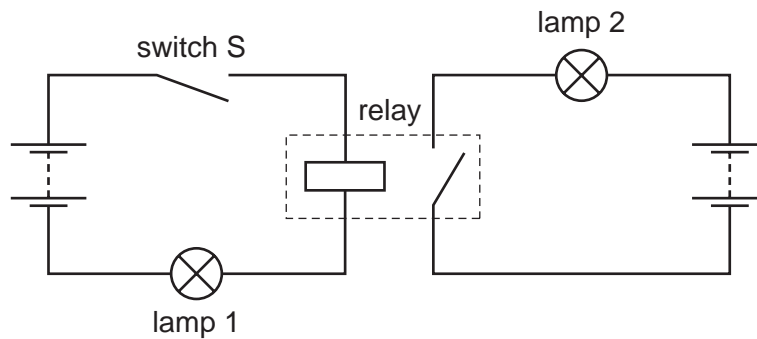


The total resistance is less than 5Ω .



The total resistance is more than 20Ω .

- 64 The circuit shown contains a relay. Both lamps are initially off.



When switch S is closed, the relay operates. What is the state of the lamps?

	lamp 1	lamp 2
A	on	on
B	on	off
C	off	on
D	off	off

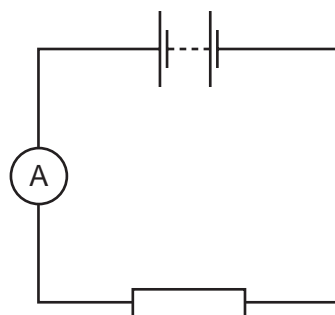
- 65 The diagram shows an electrical component.



What is it?

- A** a capacitor
- B** a light-dependent resistor
- C** a thermistor
- D** a variable resistor

66 The diagram shows a circuit.

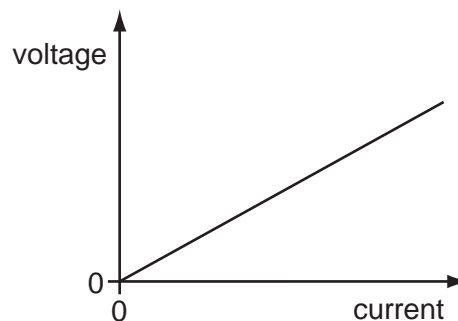
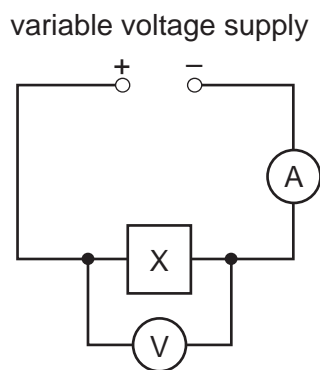


What should be increased to increase the current in the circuit?

- A** the e.m.f. of the battery
- B** the length of the connecting wires
- C** the resistance of the resistor
- D** the temperature of the resistor

67 The circuit shown in the diagram contains an unknown component X, hidden in a box.

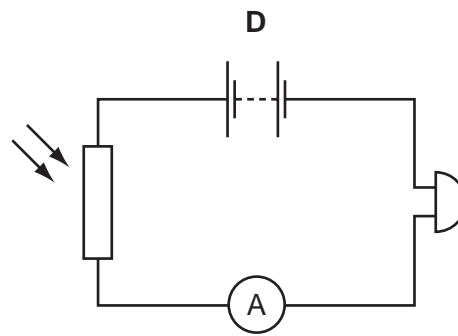
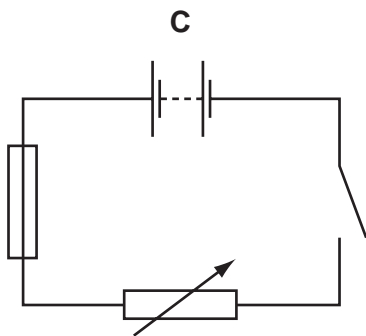
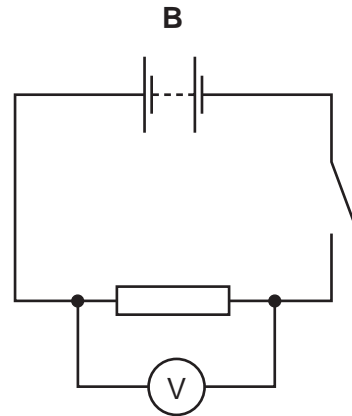
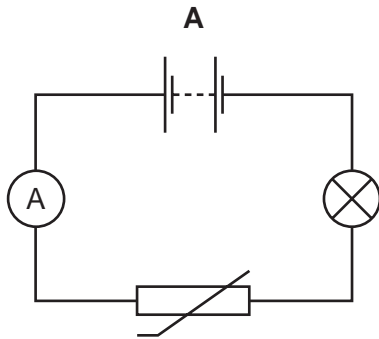
The voltage-current graph for X is as shown.



What is the component X?

- A** a capacitor
- B** a closed switch
- C** an open switch
- D** a resistor of constant resistance

68 Which circuit contains a fuse?

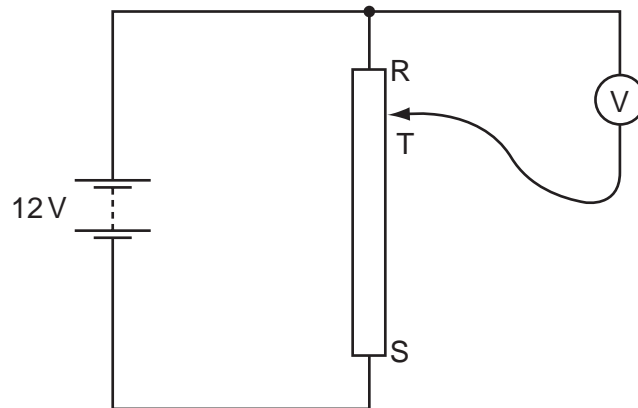


69 A thermistor is used in a circuit to control a piece of equipment automatically.

What might this circuit be used for?

- A** lighting an electric lamp as it becomes darker
- B** ringing an alarm bell if a locked door is opened
- C** switching on a water heater at a pre-determined time
- D** turning on an air conditioner when the temperature rises

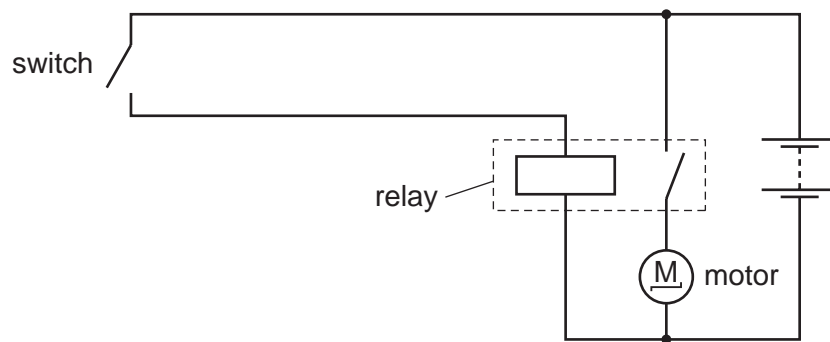
70 A student connects a variable potential divider (potentiometer) circuit.



What happens to the reading on the voltmeter as the sliding terminal T is moved from R to S?

- A It decreases from 12V to 0V.
- B It increases from 0V to 12V.
- C It remains at 0V.
- D It remains at 12V.

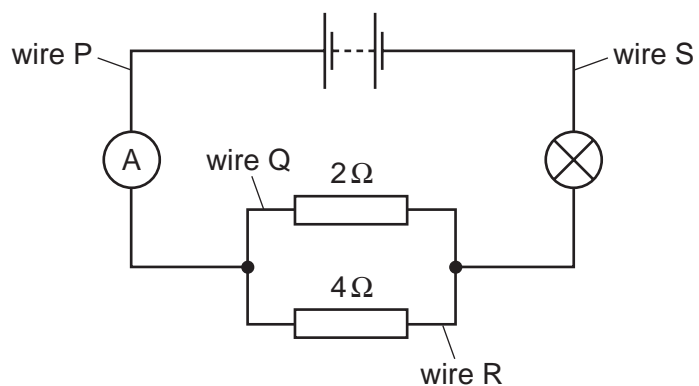
71 A relay is used to operate a large electric motor using a switch some distance from the motor.



What is the purpose of the relay?

- A to allow a large current in the relay coil to control a smaller current in the motor
- B to allow a small current in the relay coil to control a larger current in the motor
- C to allow the current in the relay coil to pass to the motor
- D to disconnect the battery from the motor automatically if too much current flows

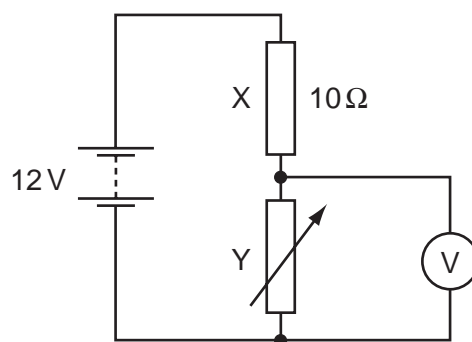
72 The circuit diagram includes two resistors connected in parallel.



Which statement is correct?

- A** The current in wire P is equal to the current in wire Q.
- B** The current in wire Q is equal to the current in wire R.
- C** The current in wire R is equal to the current in wire S.
- D** The current in wire S is equal to the current in wire P.

73 A circuit is connected for use as a potential divider.



The resistance of resistor X is 10Ω .

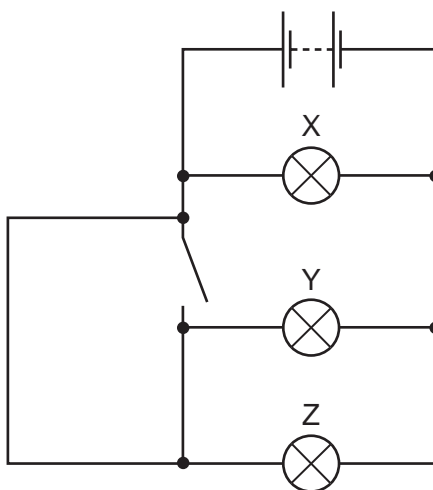
When the resistance of the variable resistor Y is 20Ω , what is the reading on the voltmeter?

- A** 4.0V
- B** 6.0V
- C** 8.0V
- D** 12V

74 Which circuit includes a capacitor and what does the capacitor do in this circuit?

	circuit	what the capacitor does
A	potential divider	stores current
B	potential divider	stores energy
C	time delay	stores current
D	time delay	stores energy

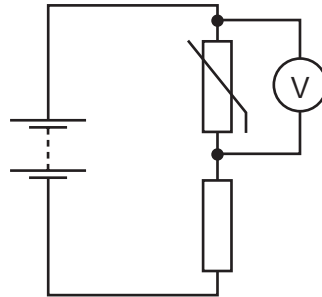
75 A student sets up the circuit shown. The switch is open (off).



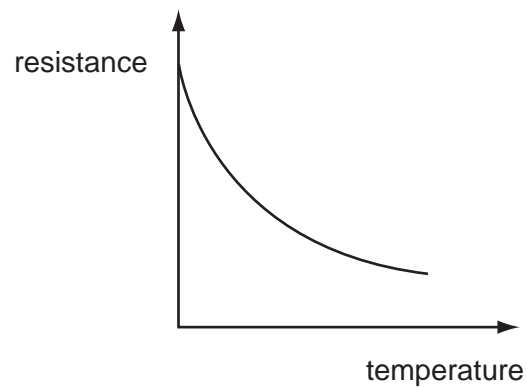
Which lamps are on and which lamps are off?

	lamp X	lamp Y	lamp Z
A	off	off	off
B	on	off	off
C	on	off	on
D	on	on	on

- 76 The diagram shows a thermistor in a potential divider. A voltmeter is connected across the thermistor.



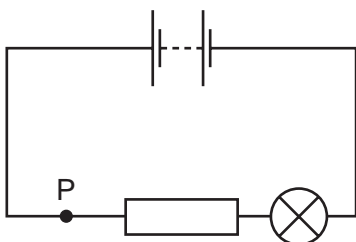
The graph shows how the resistance of the thermistor changes with temperature.



As the thermistor becomes warmer, what happens to its resistance and what happens to the reading on the voltmeter?

	resistance	voltmeter reading
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

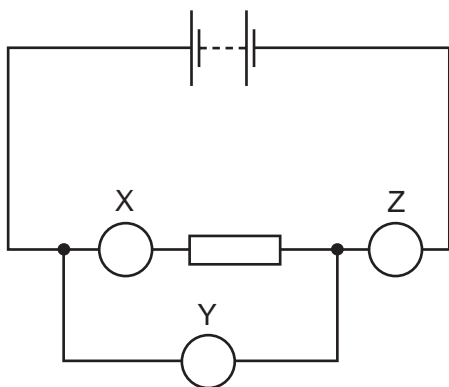
77 The diagram shows a lamp in a circuit.



Which change to the circuit would increase the current in the lamp?

- A** adding another resistor in parallel with the one in the circuit
- B** adding another resistor in series with the one in the circuit
- C** decreasing the electromotive force (e.m.f.) of the battery in the circuit
- D** moving the lamp to point P in the circuit

78 The diagram shows an electric circuit containing three meters, X, Y and Z, all connected correctly.

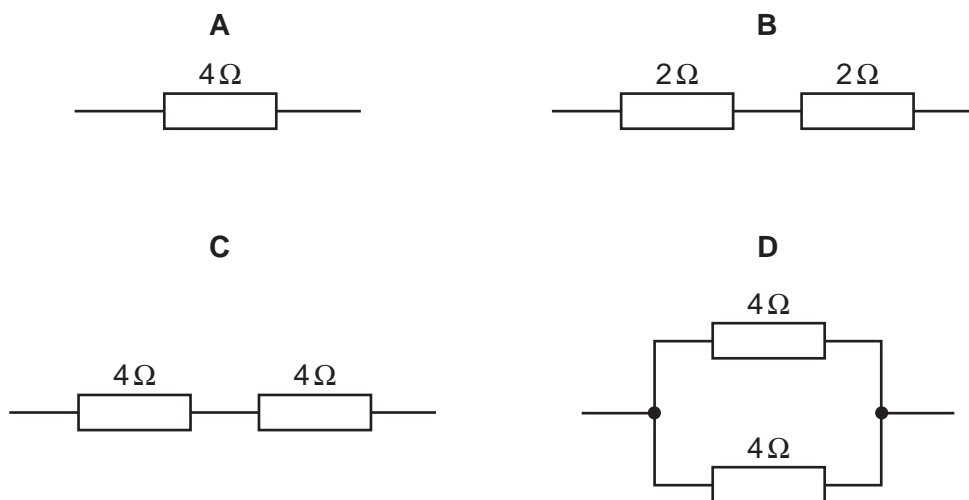


What are meters X, Y and Z?

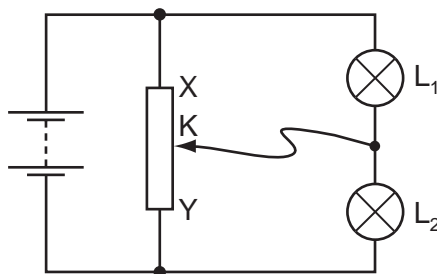
	X	Y	Z
A	ammeter	ammeter	ammeter
B	ammeter	voltmeter	ammeter
C	voltmeter	ammeter	voltmeter
D	voltmeter	voltmeter	voltmeter

79 The diagrams show four arrangements of resistors.

Which arrangement has the **smallest** total resistance?



80 The diagram shows a potential divider circuit with two identical lamps L_1 and L_2 .

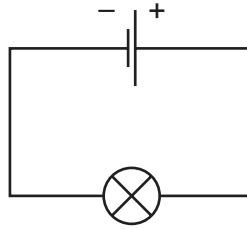


The contact K is halfway between X and Y and the lamps are equally bright.

What will happen to the brightness of the lamps when contact K is moved a short distance towards X?

	lamp L_1	lamp L_2
A	brighter	brighter
B	brighter	dimmer
C	dimmer	brighter
D	dimmer	dimmer

81 A cell is connected to a lamp, as shown.



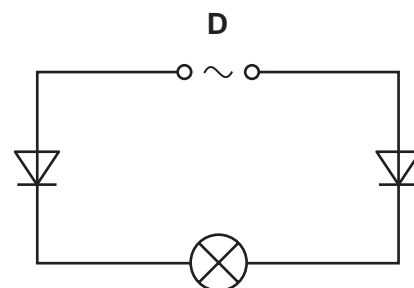
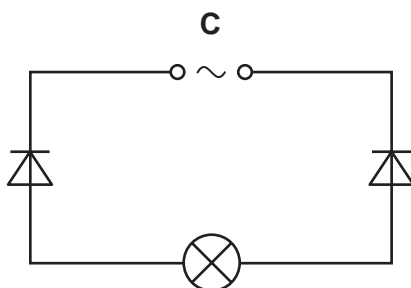
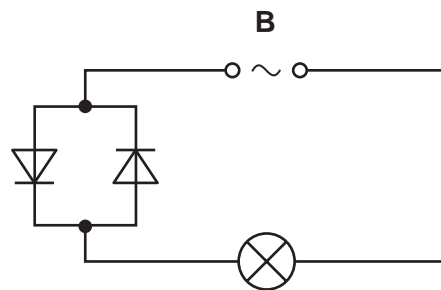
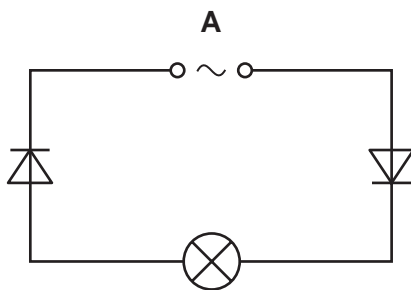
A charge of 4.0 C flows through the lamp in 2.0 s.

What is the direction of the electron flow in the lamp and what is the current in the lamp?

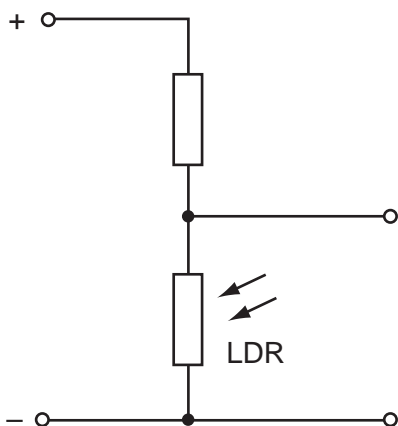
	direction of electron flow in lamp	current / A
A	from left to right	2.0
B	from left to right	8.0
C	from right to left	2.0
D	from right to left	8.0

82 The four circuits shown all include an a.c. power supply, two diodes and a lamp.

In which circuit is there a rectified current in the lamp?



83 The diagram shows part of a circuit used to switch street lamps on and off automatically.



In the evening it gets dark.

Which row shows the effect on the resistance of the light-dependent resistor (LDR) and on the potential difference (p.d.) across it?

	resistance of LDR	p.d. across LDR
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

84 A domestic circuit includes a 30 A fuse. This protects the wiring if there is too much current in the circuit.

In which wire is the 30 A fuse positioned, and what does it do when it operates?

	position	operation
A	live wire	disconnects the circuit
B	live wire	reduces the current to 30 A
C	neutral wire	disconnects the circuit
D	neutral wire	reduces the current to 30 A

85 A wire has a certain electrical resistance.

The diameter and length of the wire may be changed.

Which pair of changes **must** cause the resistance of the wire to increase?

	change of diameter	change of length
A	decrease	decrease
B	decrease	increase
C	increase	decrease
D	increase	increase

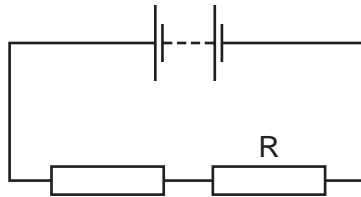
86 P and Q are the circuit symbols for two electrical components.



Which components are represented by P and by Q?

	P	Q
A	thermistor	fuse
B	thermistor	relay
C	variable resistor	fuse
D	variable resistor	relay

87 The diagram shows a battery connected to two resistors.



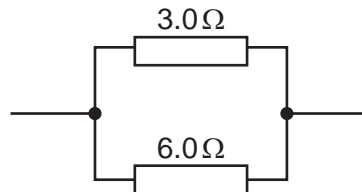
Four students separately measure the electromotive force (e.m.f.) of the battery, the current in the resistors, and the potential difference (p.d.) across resistor R.

Their results are shown in the table below.

Which row shows values with their correct units?

	e.m.	current	p.
A	3.0A	0.3 V	1. A
B	3.0A	0.3 A	1. V
C	3.0V	0.3 V	1. A
D	3.0V	0.3 A	1. V

88 A 3.0Ω resistor and a 6.0Ω resistor are connected in parallel.



What is their combined resistance?

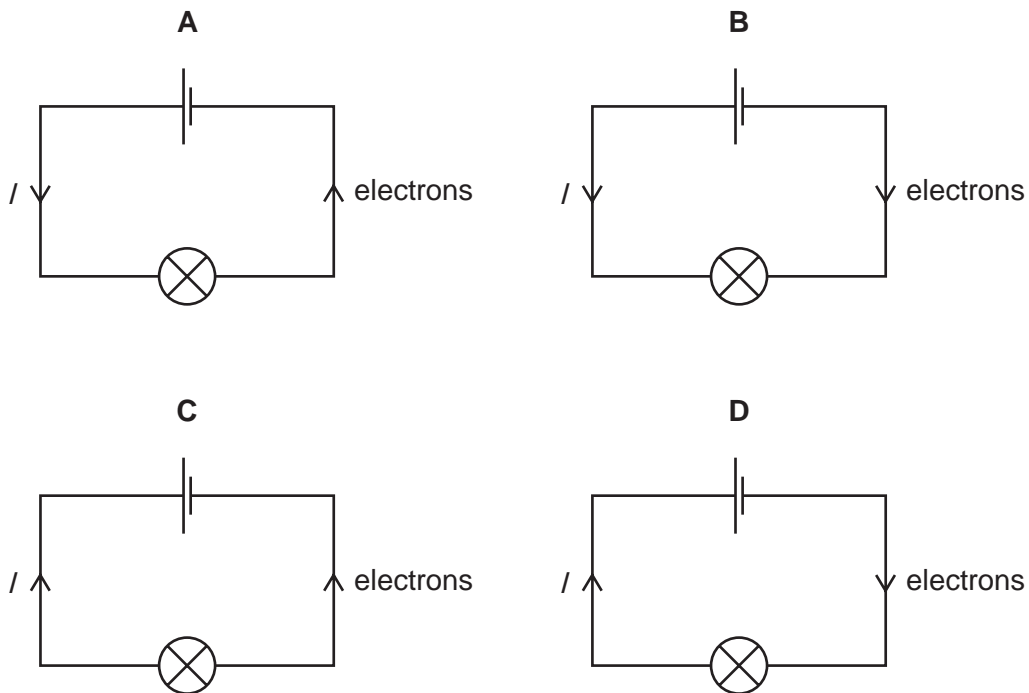
- A** 0.50Ω **B** 2.0Ω **C** 4.5Ω **D** 9.0Ω

89 A domestic circuit includes a 30 A fuse. This protects the wiring if there is too much current in the circuit.

In which wire is the 30 A fuse positioned, and what does it do when it operates?

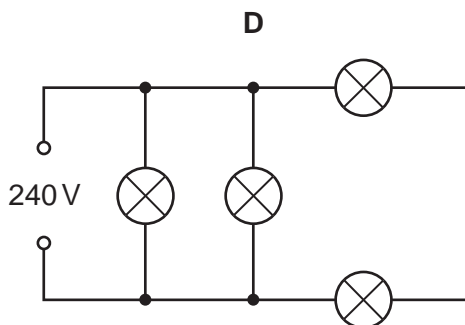
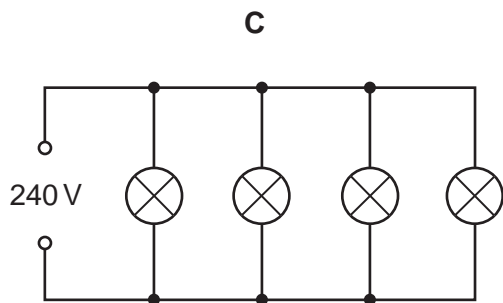
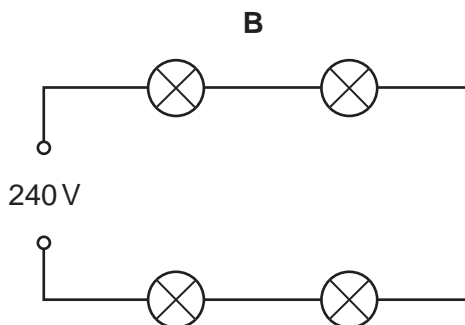
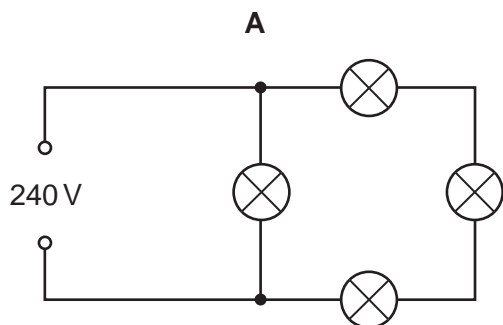
	position	operation
A	live wire	disconnects the circuit
B	live wire	reduces the current to 30 A
C	neutral wire	disconnects the circuit
D	neutral wire	reduces the current to 30 A

90 Which circuit shows the directions of the conventional current I and the flow of electrons?



91 Four lamps are each labelled 240 V.

In which circuit do all four lamps have normal brightness?



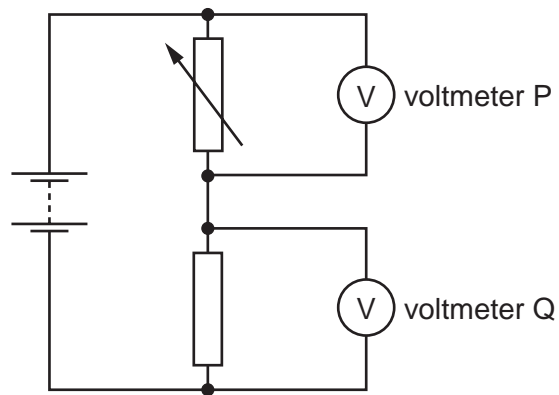
92 A battery charger plugs into a 230V a.c. supply. The charger is used to charge a 6.0V d.c. battery.

The charger contains diodes and a transformer.

What is the purpose of these components?

	diodes	transformer
A	rectify the a.c.	steps down the voltage
B	rectify the a.c.	steps up the voltage
C	step down the voltage	rectifies the a.c.
D	step up the voltage	rectifies the a.c.

93 The diagram shows a potential divider connected to two voltmeters P and Q.

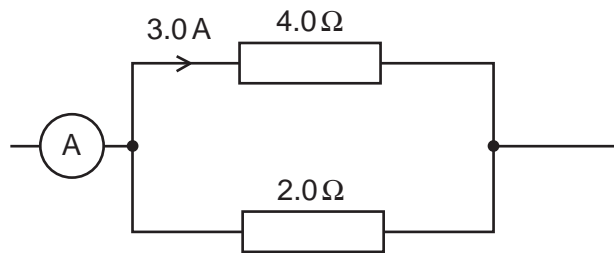


The resistance of the variable resistor is decreased.

Which row shows what happens to the reading on each voltmeter?

	reading on voltmeter P	reading on voltmeter Q
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

94 The diagram shows part of an electrical circuit.

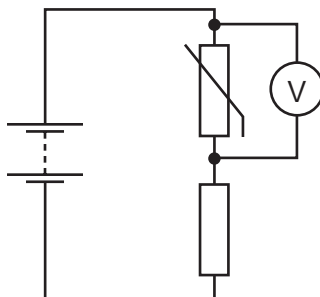


The current in the $4.0\ \Omega$ resistor is $3.0\ \text{A}$.

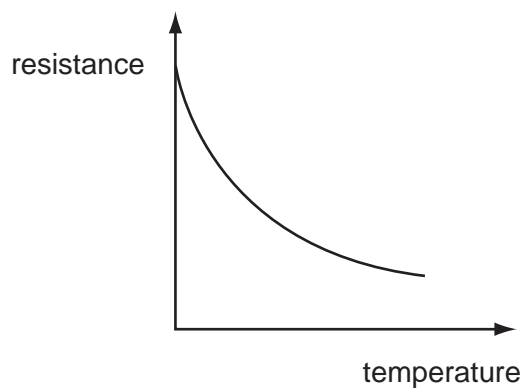
What is the current in the ammeter?

- A** $4.5\ \text{A}$
- B** $6.0\ \text{A}$
- C** $9.0\ \text{A}$
- D** $12.0\ \text{A}$

- 95 The circuit diagram shows a thermistor in a potential divider. A voltmeter is connected across the thermistor.



The graph shows how the resistance of the thermistor changes with temperature.



As the thermistor becomes warmer, what happens to its resistance and what happens to the reading on the voltmeter?

	resistance	voltmeter reading
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases