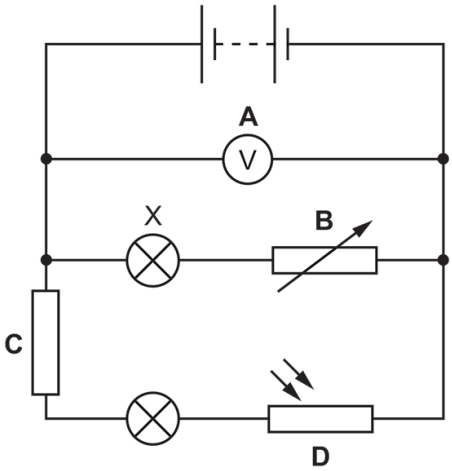
4.3 Electric circuits

01. 0625_m22_qp_22 Q: 30

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



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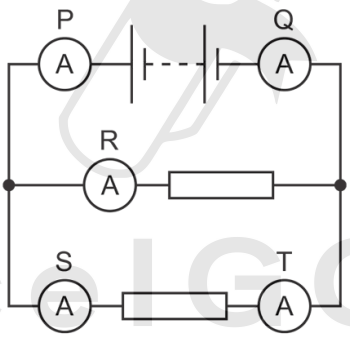
02. 0625_m22_qp_22 Q: 31

A circuit includes a battery, two identical resistors and five ammeters, P, Q, R, S and T.



Which statement about the readings on the ammeters is **not** correct?

A P has a greater reading than Q.

B P has a greater reading than R.

C P has a greater reading than S.

D P has a greater reading than T.

---

03. 0625_m22_qp_22 Q: 32

An electrician sets up a potential divider circuit in a fridge so that when the fridge door is open and light from the room enters the fridge, a warning light turns on.

Which component does the electrician need to use in addition to a variable resistor?

A light-dependent resistor

B relay

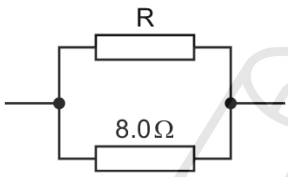
C thermistor

D variable resistor

---

04. 0625_m21_qp_22 Q: 33

A resistor R is connected in parallel with an 8.0 Ω resistor. The resistance of this combination is 4.0 Ω.



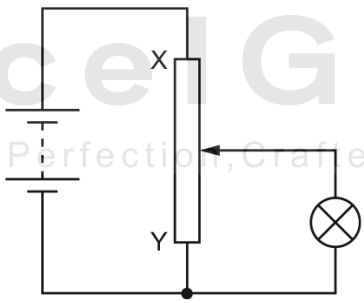
What is the resistance of resistor R?

A 0.50 Ω **B** 2.0 Ω **C** 4.0 Ω **D** 8.0 Ω

---

05. 0625_m21_qp_22 Q: 34

A student designs a circuit to use as a dimmer switch for a lamp.



What happens to the brightness of the lamp and the potential difference (p.d.) across the lamp, when the slider is moved from X to Y?

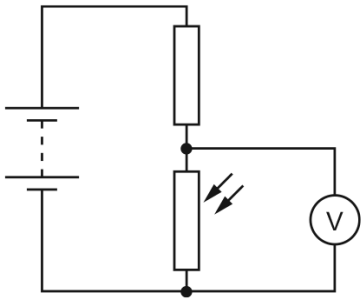
	brightness of lamp	p.d. across the lamp
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

---

06. 0625_s21_qp_21 Q: 32

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

A voltmeter is connected across the LDR.



Which row shows the resistance of the LDR and the potential difference (p.d.) shown on the voltmeter at a specific light level?

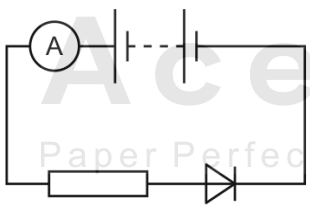
	light level	resistance of LDR	p.d. shown on the voltmeter
A	bright	low	high
B	bright	high	low
C	dim	high	high
D	dim	low	low

---

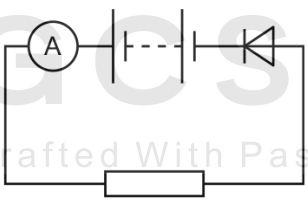
07. 0625_s21_qp_22 Q: 32

Which circuit has a zero reading on the ammeter?

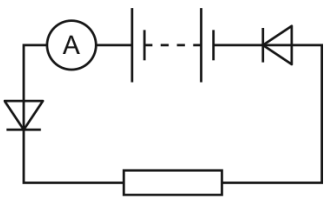
A



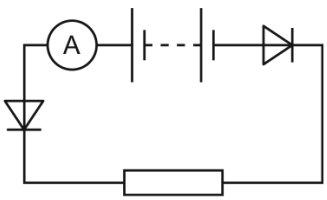
B



C



D



---

08. 0625_s21_qp_22 Q: 33

Two 10 Ω resistors are connected in series and then in parallel.

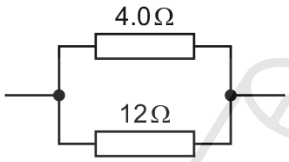
What is the combined resistance in each case?

	resistance in series / Ω	resistance in parallel / Ω
A	10	5
B	10	10
C	20	5
D	20	10

---

09. 0625_s21_qp_23 Q: 32

A 4.0 Ω resistor and a 12 Ω resistor are connected in parallel.



What is the effective resistance of this combination of resistors?

A 0.33 Ω **B** 3.0 Ω **C** 8.0 Ω **D** 16 Ω

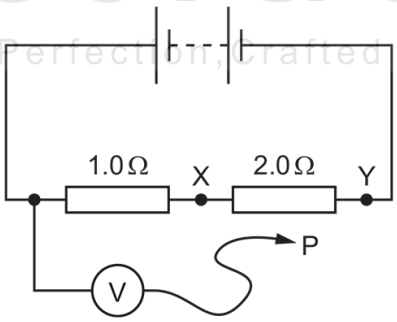
---

10. 0625_w21_qp_21 Q: 28

The diagram shows a circuit containing two resistors of resistance 1.0 Ω and 2.0 Ω.

A voltmeter is connected across the 1.0 Ω resistor by connecting P to X.

The reading on the voltmeter is 6.0 V.



P is moved to point Y in the circuit.

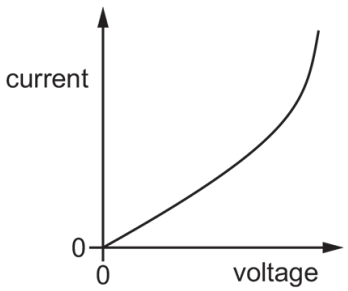
What is the new reading on the voltmeter?

A 3.0 V **B** 6.0 V **C** 12 V **D** 18 V

---

11. 0625_w21_qp_21 Q: 29

The graph shows the current–voltage relationship for a circuit component X.



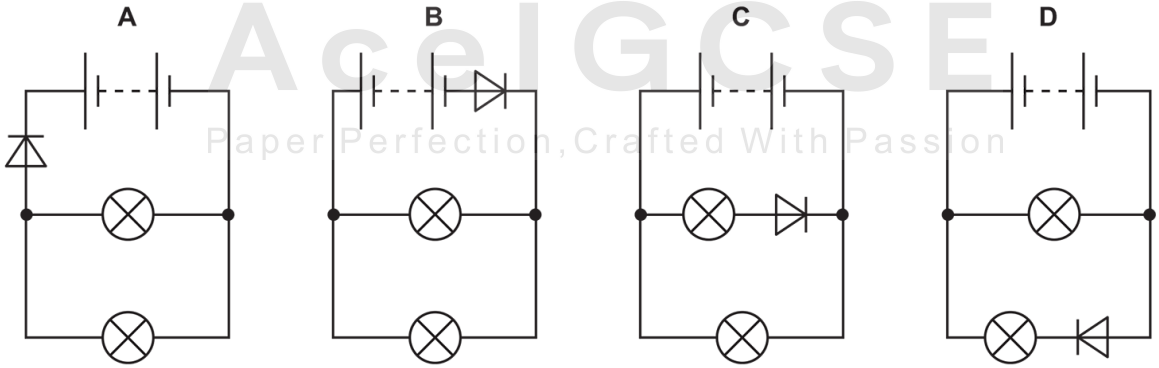
What happens to the resistance of X and what happens to the temperature of X as the voltage increases?

	resistance of X	temperature of X
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

---

12. 0625_w21_qp_21 Q: 31

In which circuit do both lamps light?

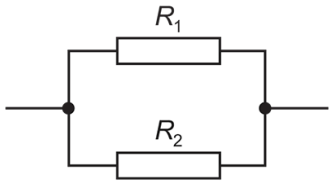


---

13. 0625_w21_qp_21 Q: 32

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

---

14. 0625_w21_qp_22 Q: 31

Several cells are connected in series, as shown.

What is the combined electromotive force (e.m.f.) of the cells?

A the average of the e.m.f.s of the separate cells

B the e.m.f. of one of the cells

C the product of the e.m.f.s of the cells

D the sum of the e.m.f.s of the cells

---

15. 0625_w21_qp_23 Q: 31

Two 3.0 Ω resistors and one 6.0 Ω resistor are connected in series with a cell.

Which statement is correct?

A The current in the cell is equal to the current in the resistors.

B The current in the cell is greater than the current in the resistors.

C The potential difference (p.d.) across each resistor is equal to the p.d. across the cell.

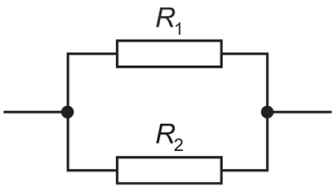
D The potential differences across each resistor are equal.

---

16. 0625_w21_qp_23 Q: 32

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

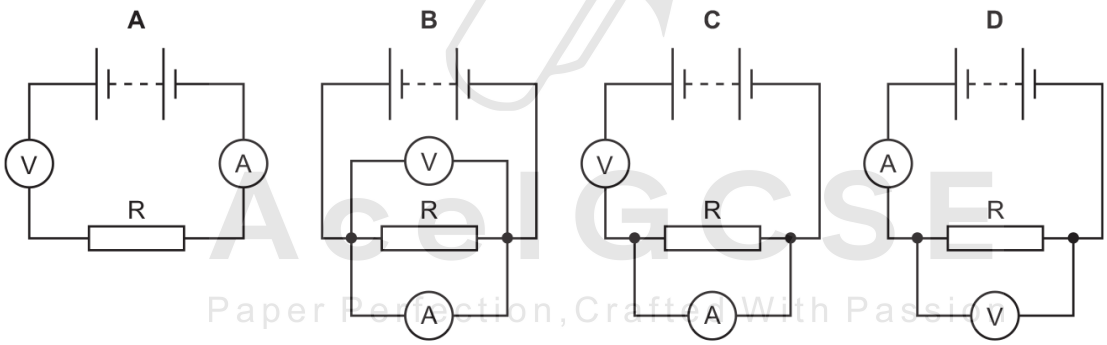
D the average of R_1 and R_2

---

17. 0625_m20_qp_22 Q: 32

A student is to determine the resistance of resistor R. She uses a circuit including a voltmeter and an ammeter.

Which circuit should be used?



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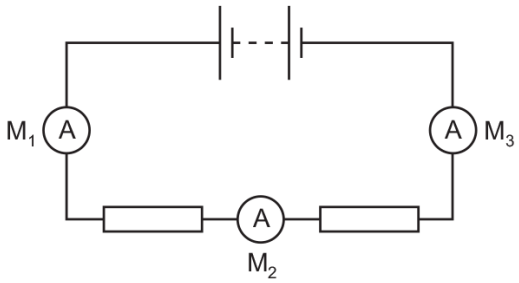
18. 0625_m20_qp_22 Q: 33

The diagram shows a battery connected to two resistors. Three ammeters M_1, M_2 and M_3 are connected in the circuit.



Ammeter M_1 reads 1.0 A.

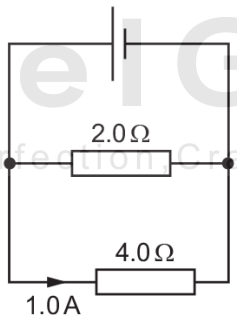
What are the readings on M_2 and on M_3?

	reading on M_2 / A	reading on M_3 / A
A	0.0	0.0
B	0.5	0.5
C	0.5	1.0
D	1.0	1.0

---

19. 0625_m20_qp_22 Q: 34

A cell is connected to a parallel combination of a 2.0 Ω resistor and a 4.0 Ω resistor. The current in the 4.0 Ω resistor is 1.0 A.



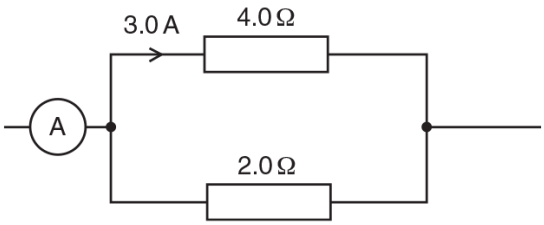
What is the current in the cell?

A 1.0 A **B** 1.5 A **C** 2.0 A **D** 3.0 A

---

20. 0625_p20_qp_20 Q: 32

The diagram shows part of an electrical circuit.



The current in the 4.0 Ω resistor is 3.0 A.

What is the current in the ammeter?

A 4.5 A

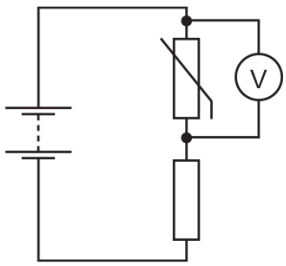
B 6.0 A

C 9.0 A

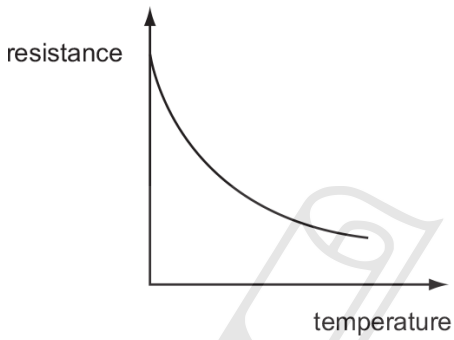
D 12.0 A

21. 0625_p20_qp_20 Q: 33

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.

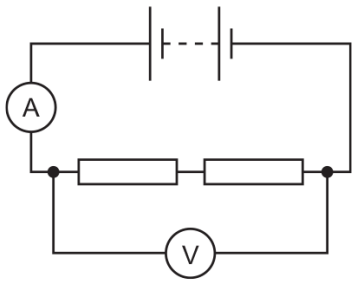


As the thermistor becomes warmer, what happens to its resistance and what happens to the reading on the voltmeter?

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

22. 0625_s20_qp_21 Q: 28

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



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

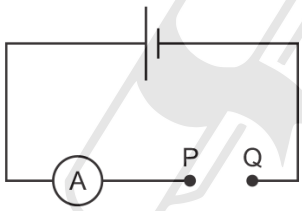
What is the resistance of each resistor?

A 0.275 Ω **B** 0.55 Ω **C** 4.4 Ω **D** 8.8 Ω

---

23. 0625_s20_qp_21 Q: 30

The diagram shows an incomplete circuit. The temperature and light levels around the circuit remain unchanged.



Four electrical components are connected in turn across PQ. The cell is reversed and the four electrical components are connected again in turn across PQ.

For which component is there a significant change in the magnitude of the current?

A diode

B light-dependent resistor

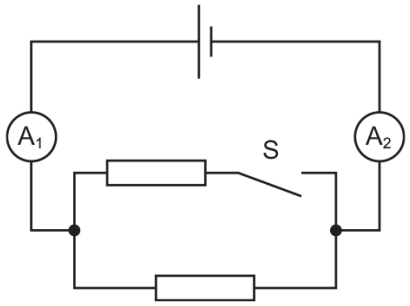
C resistor

D thermistor

---

24. 0625_s20_qp_21 Q: 31

In the circuit shown, A_1 and A_2 are ammeters.



Switch S is closed.

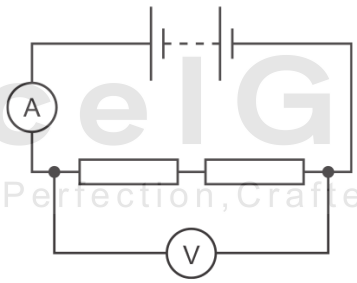
Which row is correct?

	the resistance of the whole circuit	reading of A_1	reading of A_2
A	decreases	stays the same	increases
B	decreases	increases	increases
C	increases	stays the same	stays the same
D	increases	decreases	decreases

---

25. 0625_s20_qp_22 Q: 29

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



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

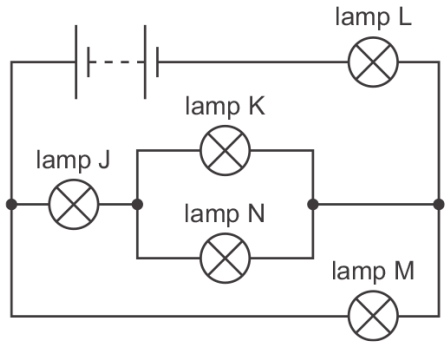
What is the resistance of each resistor?

A 0.275 Ω **B** 0.55 Ω **C** 4.4 Ω **D** 8.8 Ω

---

26. 0625_s20_qp_22 Q: 31

The circuit shown contains five lamps J, K, L, M and N. All the lamps are glowing.



One lamp is removed and two other lamps go out.

Which lamp is removed?

A lamp J

B lamp K

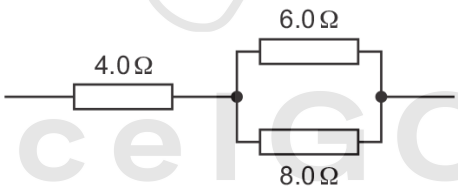
C lamp L

D lamp M

---

27. 0625_s20_qp_22 Q: 32

What is the effective resistance of the following combination of resistors?

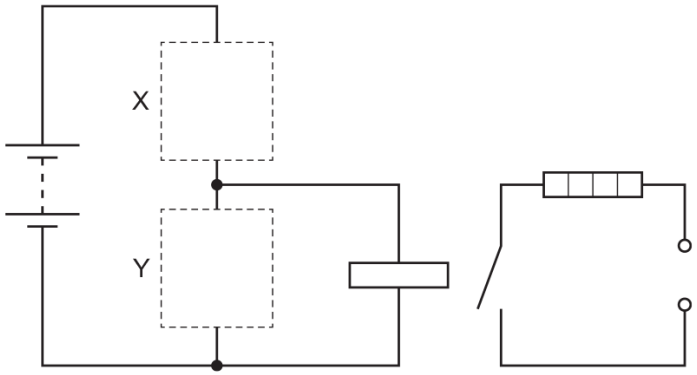


A 1.8 Ω **B** 7.4 Ω **C** 11 Ω **D** 18 Ω

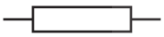
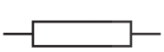
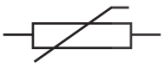
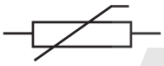
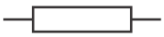
---

28. 0625_s20_qp_22 Q: 34

The diagram shows a circuit used to switch on a heater when the temperature drops below a certain value.



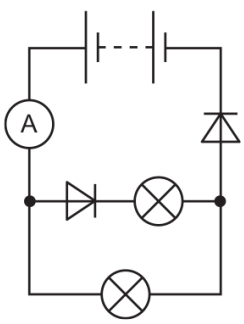
Which row shows the components that should be connected at X and at Y?

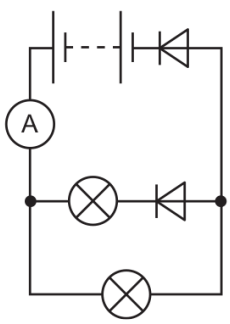
	X	Y
A		
B		
C		
D		

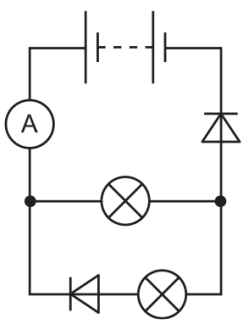
29. 0625_s20_qp_23 Q: 31

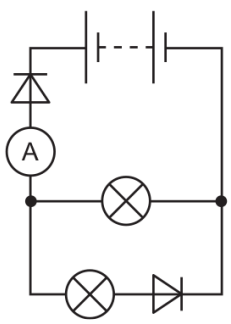
The lamps, the diodes and the batteries in the circuits are identical.

In which circuit does the ammeter give the greatest reading?

A 

B 

C 

D 

30. 0625_s20_qp_23 Q: 32

Two resistors are connected in series with a power supply.

Which statement about the circuit is correct?

A The current from the supply is greater than the current in each resistor.

B The current from the supply is equal to the current in each resistor.

C The current from the supply is less than the current in each resistor.

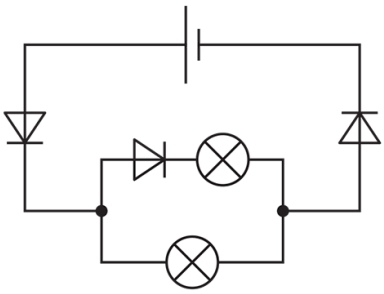
D The current from the supply is the sum of the currents in each resistor.

---

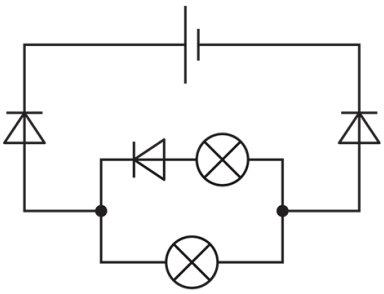
31. 0625_w20_qp_21 Q: 32

In which circuit is there just a single lamp lit?

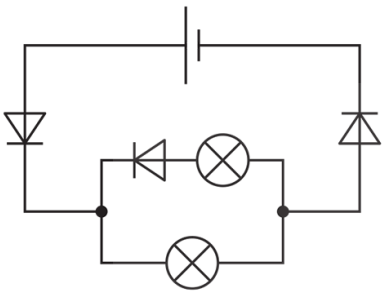
A



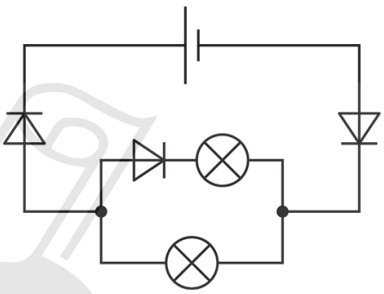
B



C

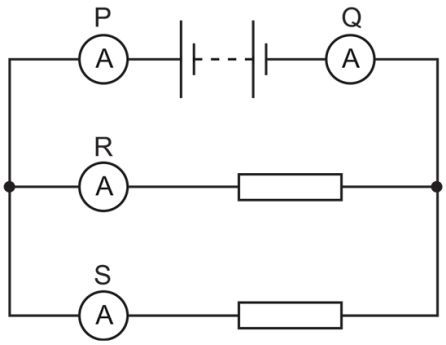


D



32. 0625_w20_qp_21 Q: 33

A student uses four ammeters P, Q, R and S to measure the current in different parts of the circuit shown.



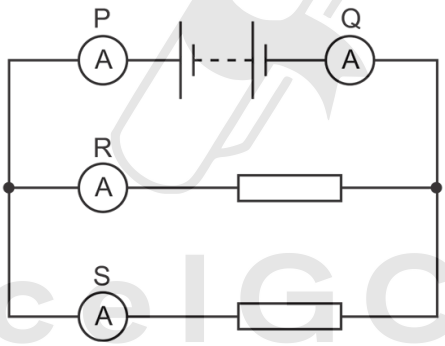
Which two ammeters read the largest current?

A P and Q **B** P and R **C** R and Q **D** R and S

---

33. 0625_w20_qp_22 Q: 32

A student uses four ammeters P, Q, R and S to measure the current in different parts of the circuit shown.



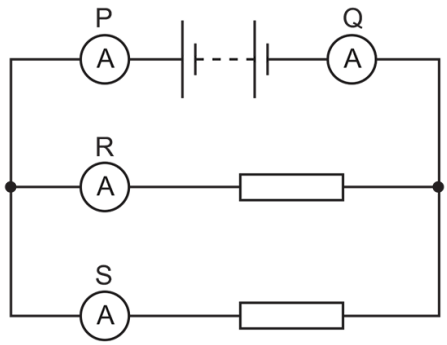
Which two ammeters read the largest current?

A P and Q **B** P and R **C** R and Q **D** R and S

---

34. 0625_w20_qp_23 Q: 31

A student uses four ammeters P, Q, R and S to measure the current in different parts of the circuit shown.



Which two ammeters read the largest current?

A P and Q **B** P and R **C** R and Q **D** R and S

---

35. 0625_w20_qp_23 Q: 32

Three statements about a relay are given.

1 A relay has a coil that becomes a temporary magnet when in operation.

2 A large current in a relay coil is used to switch off a smaller current.

3 A small current in a relay coil is used to switch on a larger current.

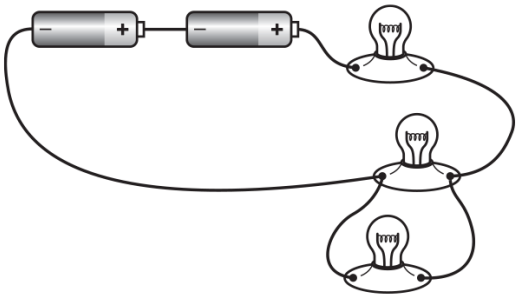
Which statements are correct?

A 1 and 2 only **B** 2 and 3 only **C** 1 and 3 only **D** 1, 2 and 3

---

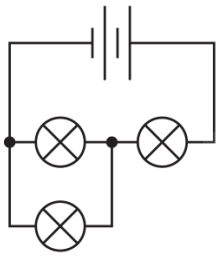
36. 0625_m19_qp_22 Q: 31

A student sets up a circuit containing a battery of two cells and three lamps, as shown.

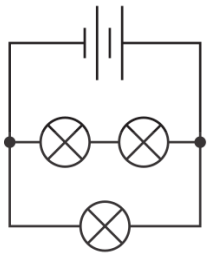


What is the circuit diagram for this arrangement?

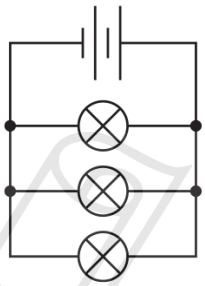
A



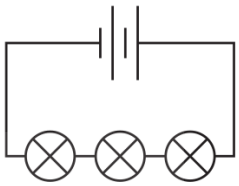
B



C



D

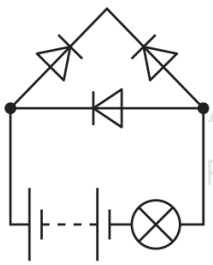


---

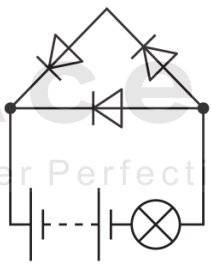
37. 0625_m19_qp_22 Q: 32

In which circuit does the lamp light?

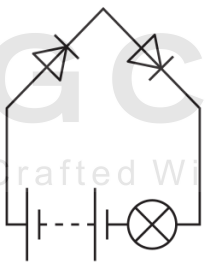
A



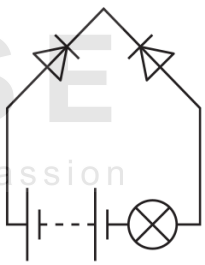
B



C



D

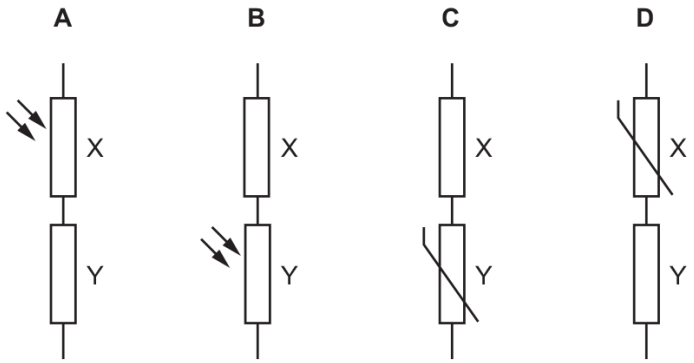


---

38. 0625_m19_qp_22 Q: 33

Each potential divider is placed in a circuit with a power supply.

Which potential divider makes the potential difference across component Y increase when the light intensity increases?

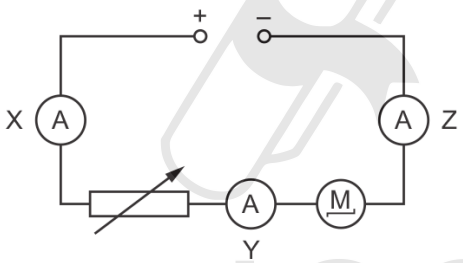


---

39. 0625_s19_qp_21 Q: 30

The diagram shows a circuit containing a d.c. power supply, a motor and a variable resistor.

Three ammeters X, Y and Z show the current in different parts of the circuit.



The reading on X is 4.0 A.

Which statement is correct?

A The readings on Y and Z are both less than 4.0 A.

B The readings on Y and Z are both equal to 4.0 A.

C The readings on Y and Z are both greater than 4.0 A.

D The reading on Z is zero.

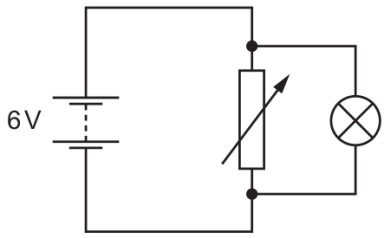
---

40. 0625_s19_qp_21 Q: 31

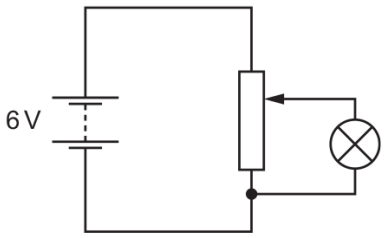
A lamp is to be connected in a circuit so that the potential difference (p.d.) across it can be varied from 0 to 6 V.

Which circuit would be most suitable?

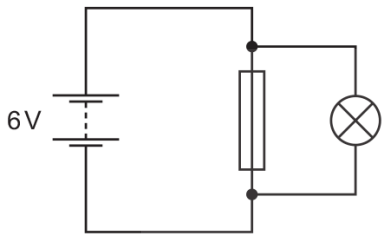
A



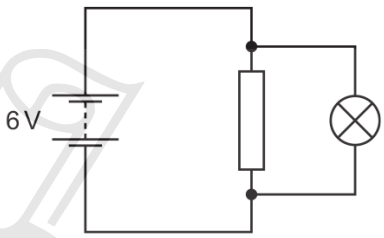
B



C

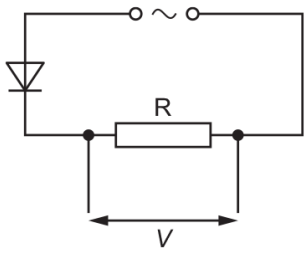


D

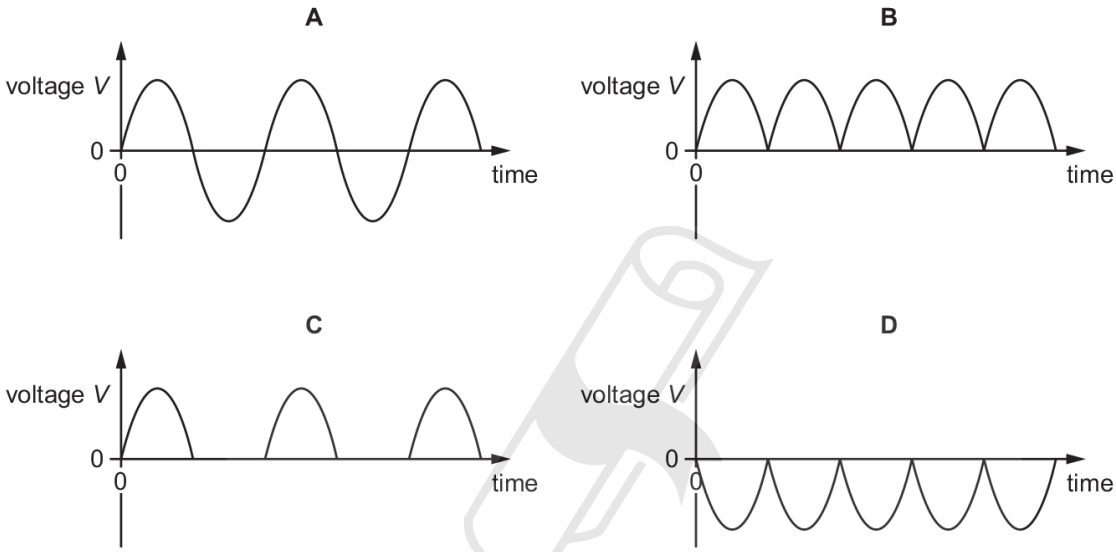


41. 0625_s19_qp_21 Q: 34

An alternating current (a.c.) power supply is connected in series with a resistor R and a diode.

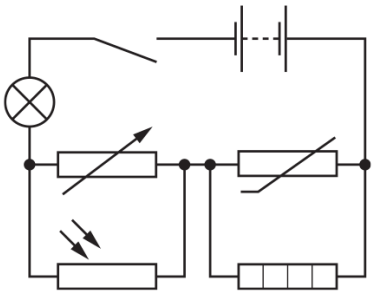


Which graph shows how the voltage *V* across the resistor R varies with time?



42. 0625_s19_qp_22 Q: 30

The diagram shows a circuit.



What is connected in parallel with the thermistor?

A heater

B lamp

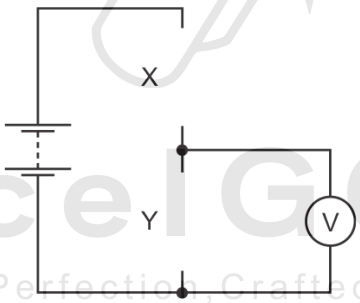
C light-dependent resistor

D variable resistor

---

43. 0625_s19_qp_22 Q: 32

Components X and Y can be inserted to complete the circuit below. The completed circuit is a potential divider in which the potential difference across component Y increases when the temperature increases.



Which row shows the components X and Y?

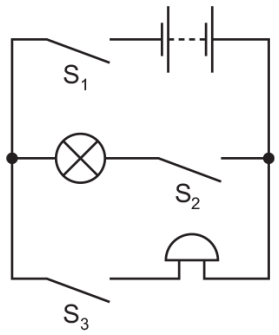
	X	Y
A	light-dependent resistor	resistor
B	resistor	light-dependent resistor
C	resistor	thermistor
D	thermistor	resistor

---

44. 0625_s19_qp_23 Q: 30

The diagram shows a circuit including a lamp, an electric bell and three switches S_1, S_2 and S_3.

The lamp and bell are not faulty.



The bell is ringing but the lamp is not lit.

Which switches are closed?

A S_1 only

B S_1 and S_2 only

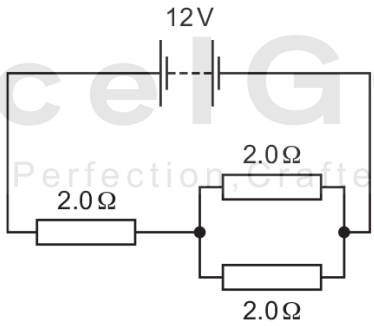
C S_1 and S_3 only

D S_1, S_2 and S_3

---

45. 0625_s19_qp_23 Q: 32

A 12 V battery is connected to a combination of 2.0 Ω resistors as shown.



What is the current in the battery?

A 1.5 A **B** 2.0 A **C** 4.0 A **D** 6.0 A

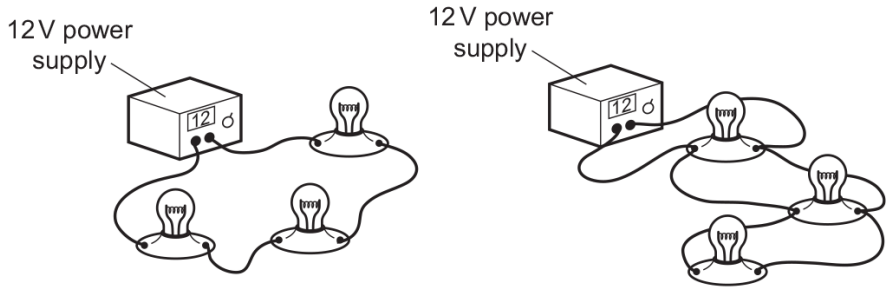
---

46. 0625_s19_qp_23 Q: 33

A student is designing a lighting circuit for a dolls' house. He sets up two different circuits.

Each circuit contains a 12 V power supply and three identical lamps.

Each lamp is designed to operate at normal brightness when connected individually to a 12 V supply.



circuit 1 circuit 2

Which statement is correct?

A In circuit 1, each of the lamps is at normal brightness.

B In circuit 1, if one lamp fails, the other lamps remain lit.

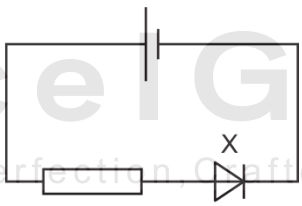
C In circuit 2, if one lamp fails, the other lamps remain lit.

D In circuit 2, the current from the power supply is less than in circuit 1.

---

47. 0625_w19_qp_21 Q: 29

The circuit diagram shows a cell connected in series to a resistor and a component X.



What is component X?

A bell

B diode

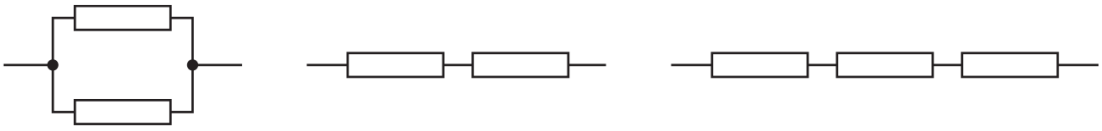
C heater

D thermistor

---

48. 0625_w19_qp_21 Q: 30

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



X Y Z

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

A X → Y → Z

B Y → X → Z

C Z → X → Y

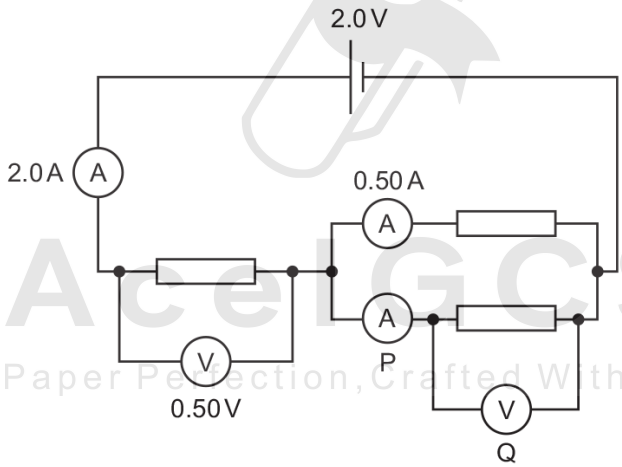
D Z → Y → X

---

49. 0625_w19_qp_21 Q: 31

A circuit contains a cell of electromotive force (e.m.f.) 2.0 V, three resistors, three ammeters and two voltmeters. One ammeter is labelled P and one voltmeter is labelled Q.

The readings on the other two ammeters and on the other voltmeter are shown.



What is the reading on ammeter P and what is the reading on voltmeter Q?

	reading on P / A	reading on Q / V
A	1.5	1.5
B	1.5	2.5
C	2.5	1.5
D	2.5	2.5

---

50. 0625_w19_qp_22 Q: 31

Resistors of 1.0 Ω, 2.0 Ω and 3.0 Ω are connected in parallel with a cell.

Which statement is correct?

A The current in each resistor is different but the potential difference (p.d.) across each resistor is the same.

B The current in each resistor is the same but the potential difference across each resistor is different.

C The potential difference across the 3.0 Ω is greater than the potential difference across the 1.0 Ω resistor.

D The sum of the potential differences across each resistor is equal to the electromotive force (e.m.f.) of the cell.

---

51. 0625_w19_qp_22 Q: 32

The diagram shows a circuit component.

What is it used for?

A to allow current in one direction only

B to change the direction of the current

C to emit light when there is a current

D to increase the size of the current

---

52. 0625_w19_qp_23 Q: 31

Diagram 1 shows a circuit containing an a.c. power supply, an unknown component X and a fixed resistor.

The graph in diagram 2 shows how the potential difference (p.d.) across the resistor varies with time.

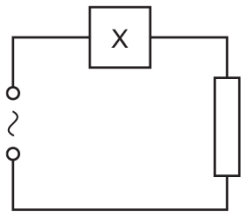


diagram 1

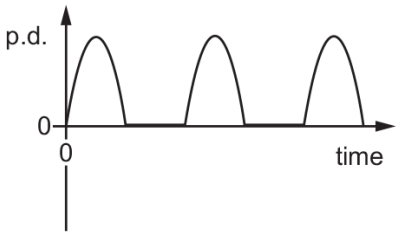


diagram 2

What is component X?

A thermistor

B relay coil

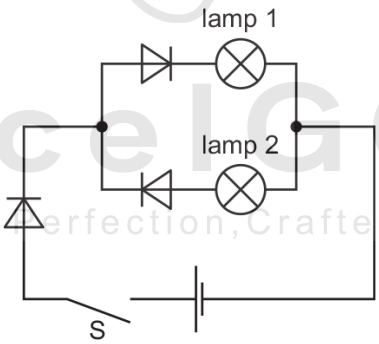
C diode

D light-dependent resistor

---

53. 0625_m18_qp_22 Q: 33

The diagram shows a circuit.



Switch S is closed.

Which lamps light?

A lamp 1 only

B lamp 2 only

C lamp 1 and lamp 2

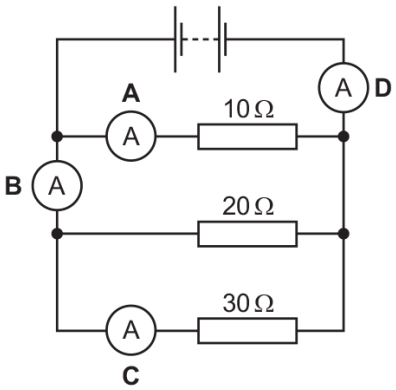
D neither lamp 1 nor lamp 2

---

54. 0625_m18_qp_22 Q: 34

A circuit contains four ammeters and three resistors with different values.

Which ammeter shows the largest reading?



---

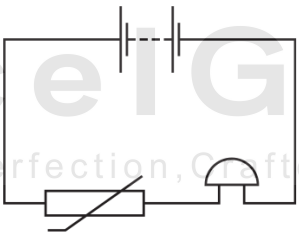
55. 0625_s18_qp_21 Q: 30

Which electrical symbol represents a diode?

---

56. 0625_s18_qp_21 Q: 31

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

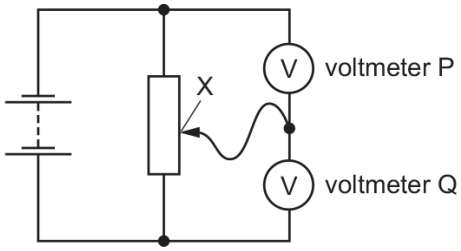
C to light a lamp in the dark

D to sound a bell when the temperature rises

---

57. 0625_s18_qp_21 Q: 32

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



The sliding connection at point X is moved towards the top of the diagram.

What happens to the reading on P and to the reading on Q?

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

---

58. 0625_s18_qp_22 Q: 30

A diode is used as a rectifier.

What is the purpose of a rectifier?

A to allow current to pass in either direction

B to change alternating current into direct current

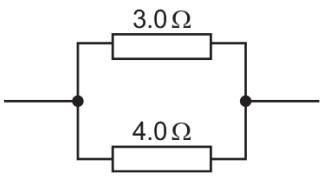
C to switch off the circuit in case of a large current

D to provide an efficient source of light

---

59. 0625_s18_qp_23 Q: 30

A 3.0 Ω resistor is connected in parallel with a 4.0 Ω resistor.



What is the resistance of this combination?

A 0.14 Ω **B** 0.58 Ω **C** 1.7 Ω **D** 7.0 Ω

---

60. 0625_w18_qp_21 Q: 29

The resistance of a component in a circuit is found using an ammeter and a voltmeter.

How are the ammeter and the voltmeter connected?

A the voltmeter and ammeter in parallel with the component

B the voltmeter and ammeter in series with the component

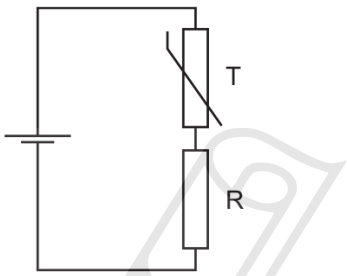
C the voltmeter in parallel with the component and the ammeter in series with the component

D the voltmeter in series with the component and the ammeter in parallel with the component

---

61. 0625_w18_qp_21 Q: 31

The circuit diagram shows a fixed resistor R and a thermistor T used in a potential divider circuit.



V_R and V_T are the potential differences across R and T respectively.

What happens to V_R and to V_T as the temperature of the thermistor decreases?

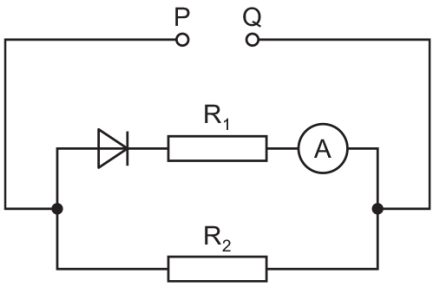
	V_R	V_T
A	decreases	increases
B	increases	decreases
C	stays the same	decreases
D	stays the same	increases

---

62. 0625_w18_qp_21 Q: 32

The circuit diagram shows a power supply connected to some circuit components.

In the diagram, P and Q are the terminals of the d.c. power supply.



Under which circumstances does the ammeter show a reading other than zero?

A when P is positive or negative

B the ammeter always shows a zero reading

C only when P is negative

D only when P is positive

---

63. 0625_w18_qp_22 Q: 30

A student investigates the resistance of a lamp.

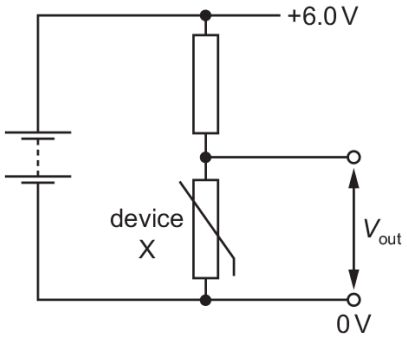
Which row states how the meters must be connected?

	ammeter	voltmeter
A	in parallel with the lamp	in parallel with the lamp
B	in parallel with the lamp	in series with the lamp
C	in series with the lamp	in parallel with the lamp
D	in series with the lamp	in series with the lamp

---

64. 0625_w18_qp_22 Q: 31

The circuit shown is used to change the voltage V_{out} as the temperature of device X changes.



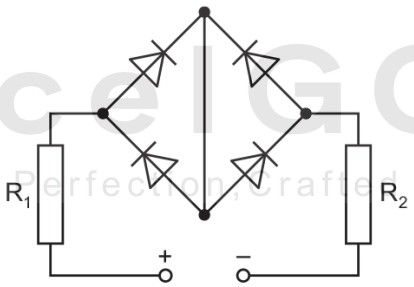
Which row is correct?

	name of this type of circuit	name of device X
A	potential divider	fuse
B	potential divider	thermistor
C	variable resistor	fuse
D	variable resistor	thermistor

---

65. 0625_w18_qp_22 Q: 32

The circuit diagram shows a d.c. power supply connected to two resistors R_1 and R_2 and four diodes.



Which statement is correct?

A There is a current in R_1 and a current in R_2.

B There is a current in R_1 but no current in R_2.

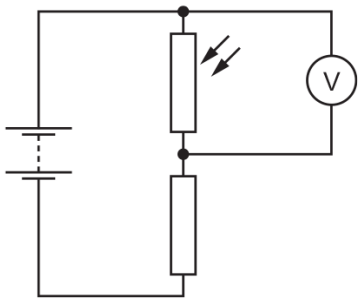
C There is no current in R_1 but a current in R_2.

D There is no current in R_1 and no current in R_2.

---

66. 0625_w18_qp_23 Q: 30

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



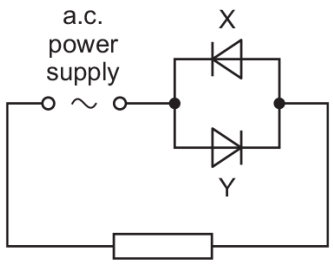
The brightness of the light falling on the LDR is increased.

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

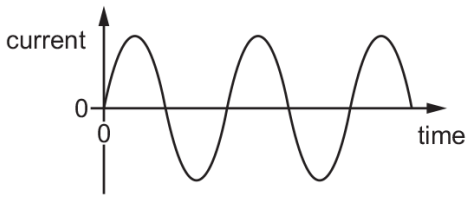
	resistance of LDR	reading on voltmeter
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

67. 0625_w18_qp_23 Q: 34

The circuit diagram shows an a.c. power supply connected to two diodes and a resistor.

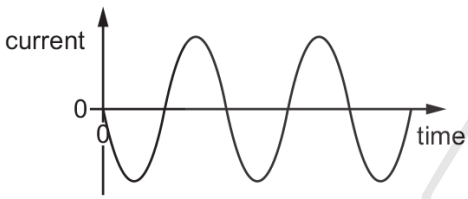


The graph shows the current from the supply.

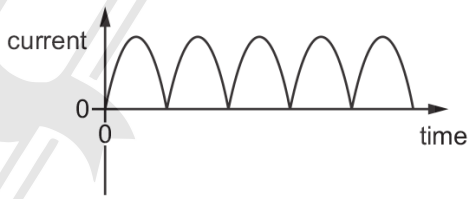


Which graph shows the current in diode X?

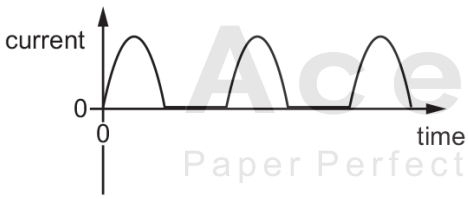
A



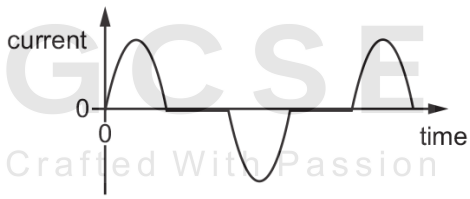
B



C



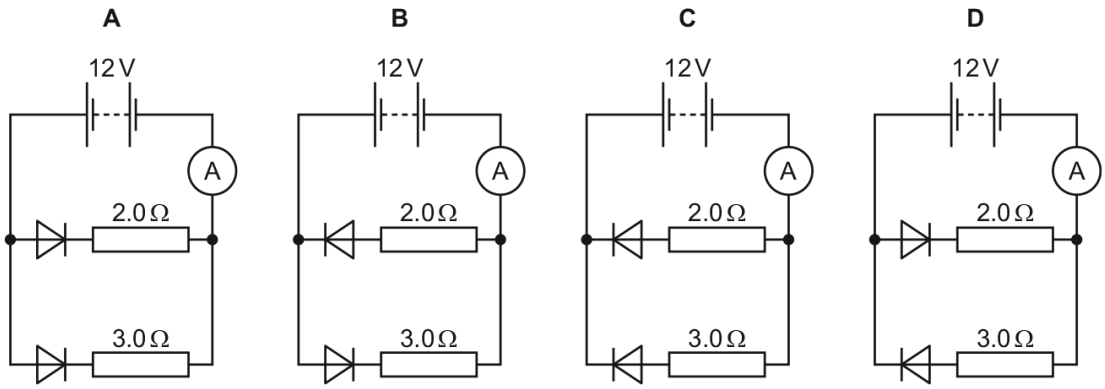
D



68. 0625_m17_qp_22 Q: 30

Four circuits are set up.

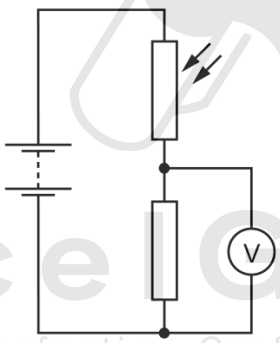
In which circuit does the ammeter show the greatest reading?



---

69. 0625_m17_qp_22 Q: 31

The diagram shows an electric circuit.



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

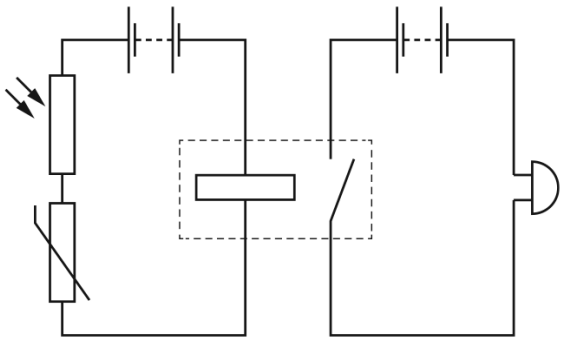
What happens to the resistance of the LDR, the current in the fixed resistor and the reading on the voltmeter?

	resistance of LDR	current in fixed resistor	reading on voltmeter
A	decreases	increases	decreases
B	decreases	increases	increases
C	increases	decreases	decreases
D	increases	decreases	increases

---

70. 0625_m17_qp_22 Q: 32

The diagram shows two linked circuits to control when a bell is switched on.



The conditions are altered and only one pair of conditions causes the bell to ring.

Which pair causes the bell to ring?

A bright light and high temperature

B bright light and low temperature

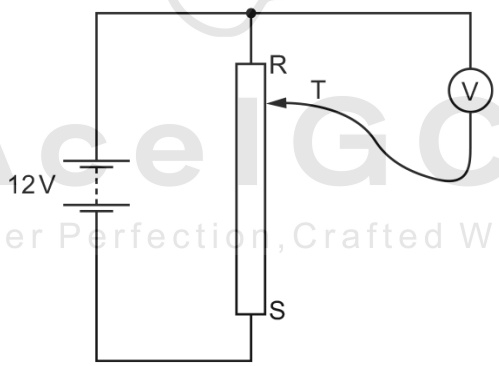
C dim light and high temperature

D dim light and low temperature

---

71. 0625_s17_qp_21 Q: 31

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 12 V to 0 V.

B It increases from 0 V to 12 V.

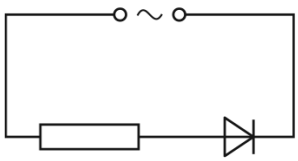
C It remains at 0 V.

D It remains at 12 V.

---

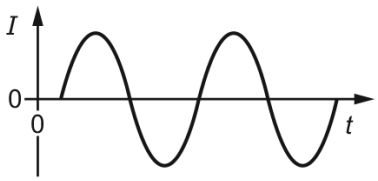
72. 0625_s17_qp_21 Q: 32

The circuit diagram shows a circuit with an a.c. supply, a diode and a resistor.

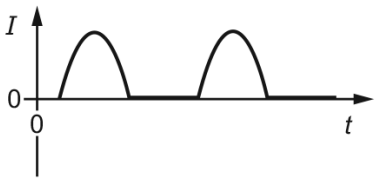


Which diagram shows how the current I in the resistor varies with time t?

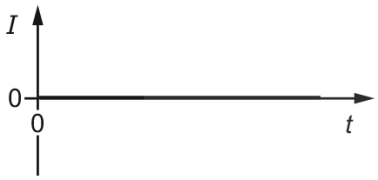
A



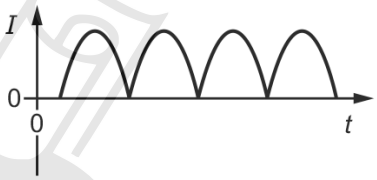
B



C

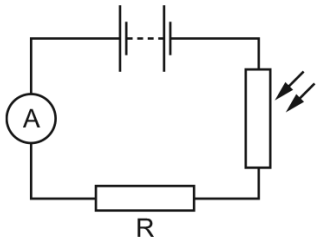


D



73. 0625_s17_qp_21 Q: 33

A light-dependent resistor (LDR) and a resistor R are connected in a series circuit. Light falls on the LDR.



The brightness of the light falling on the LDR decreases.

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

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

---

74. 0625_s17_qp_21 Q: 36

What is the purpose of a relay?

A to change a large voltage into a small voltage

B to change a small voltage into a large voltage

C to use a large current to switch on a small current

D to use a small current to switch on a large current

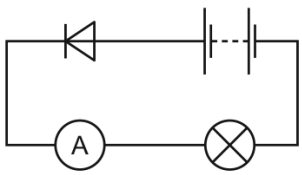
---

75. 0625_s17_qp_22 Q: 31

Four circuits each contain a 6 V battery, a diode, an ammeter and a lamp. None of the components is faulty.

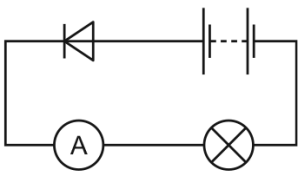
Which circuit shows a possible ammeter reading?

A



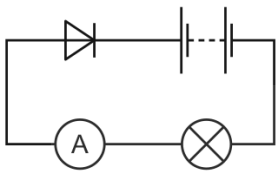
reading = 1.0 A

B



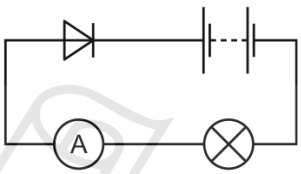
reading = 0 A

C



reading = 1.0 A

D

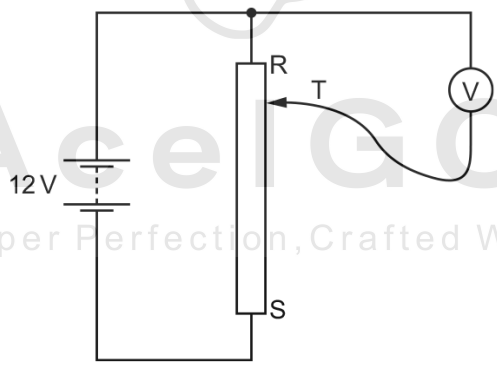


reading = –1.0 A

---

76. 0625_s17_qp_23 Q: 32

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 12 V to 0 V.

B It increases from 0 V to 12 V.

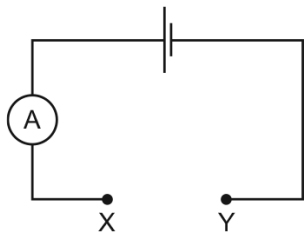
C It remains at 0 V.

D It remains at 12 V.

---

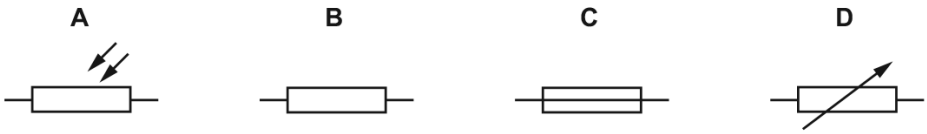
77. 0625_s17_qp_23 Q: 33

The diagram shows a circuit used to make a light detector.



One component is connected between X and Y.

Which component causes the ammeter reading to increase when the light gets brighter?



---

78. 0625_s17_qp_23 Q: 36

What is the purpose of a relay?

A to change a large voltage into a small voltage

B to change a small voltage into a large voltage

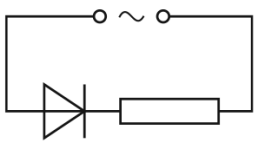
C to use a large current to switch on a small current

D to use a small current to switch on a large current

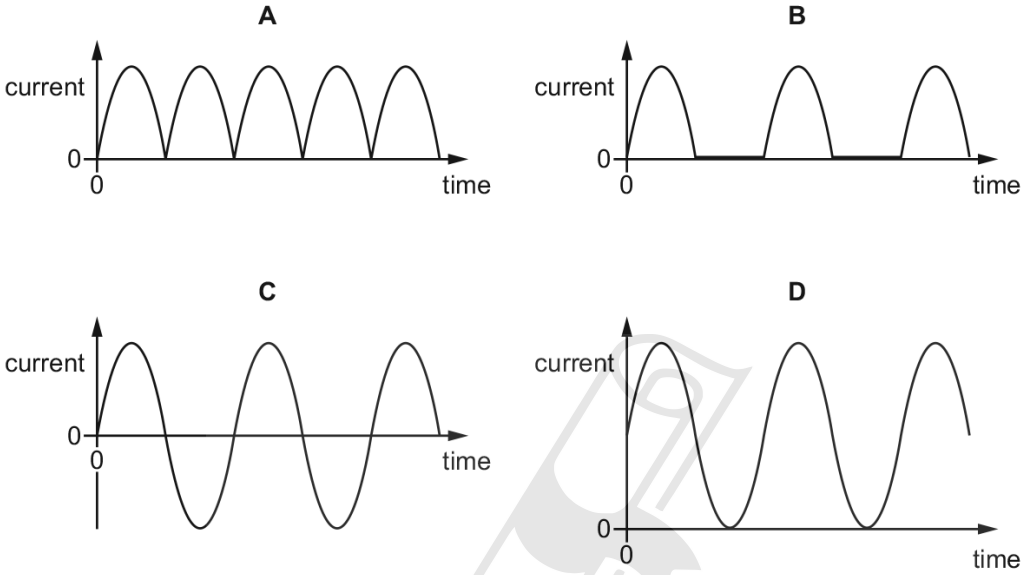
---

79. 0625_w17_qp_21 Q: 33

A student connects the circuit shown.

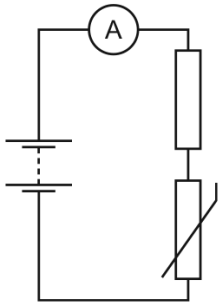


Which graph shows the variation with time of the current in the resistor?



80. 0625_w17_qp_21 Q: 34

The diagram shows a circuit with a fixed resistor connected in series with a thermistor and an ammeter.



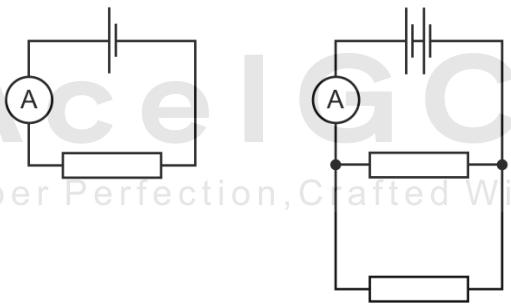
Which row shows how temperature change affects the resistance of the thermistor and the current in the circuit?

	temperature	resistance of thermistor	current in circuit
A	decreases	decreases	increases
B	decreases	increases	decreases
C	increases	decreases	decreases
D	increases	increases	increases

---

81. 0625_w17_qp_23 Q: 33

Identical cells and identical resistors are used to make the circuits shown.



circuit 1 circuit 2

In circuit 1, the ammeter reads 2.0 A.

What is the ammeter reading in circuit 2?

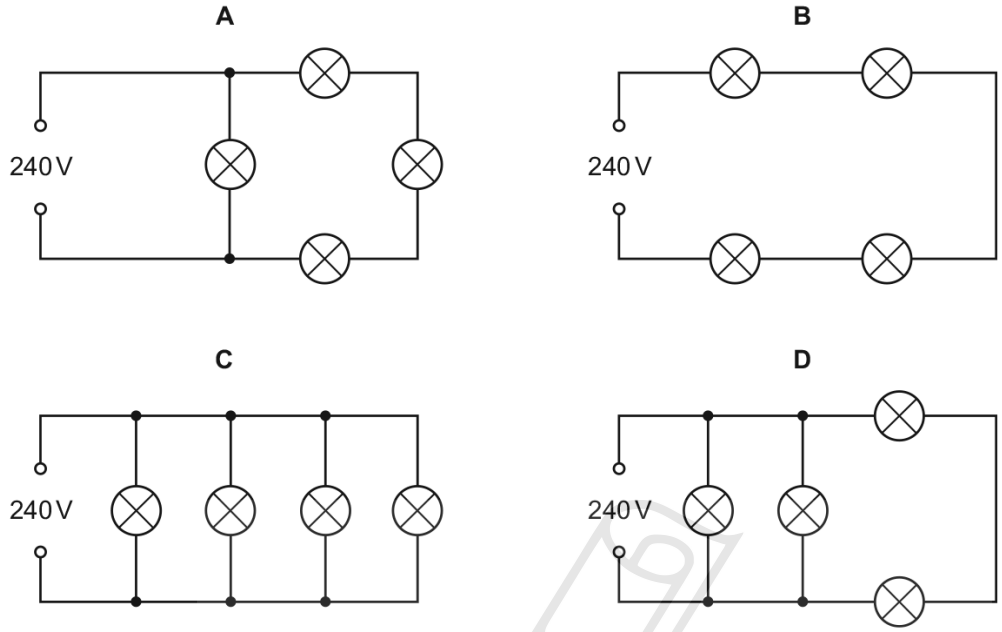
A 1.0 A **B** 2.0 A **C** 4.0 A **D** 8.0 A

---

82. 0625_m16_qp_22 Q: 31

Four lamps are each labelled 240 V.

In which circuit do all four lamps have normal brightness?



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83. 0625_m16_qp_22 Q: 32

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

The charger contains diodes and a transformer.

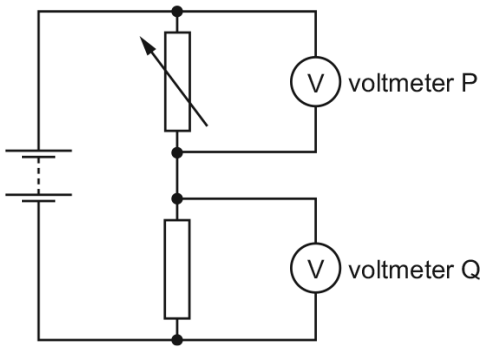
What is the purpose of these components?

	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.

---

84. 0625_m16_qp_22 Q: 33

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



The resistance of the variable resistor is decreased.

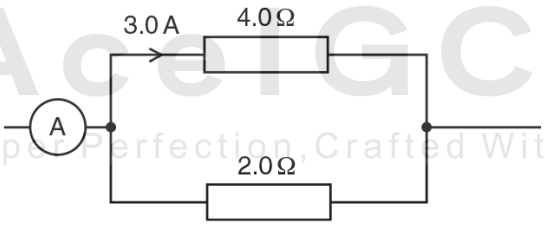
Which row shows what happens to the reading on each voltmeter?

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

---

85. 0625_p16_qp_20 Q: 32

The diagram shows part of an electrical circuit.



The current in the 4.0 Ω resistor is 3.0 A.

What is the current in the ammeter?

A 4.5 A

B 6.0 A

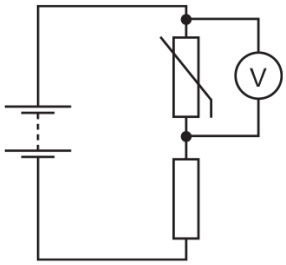
C 9.0 A

D 12.0 A

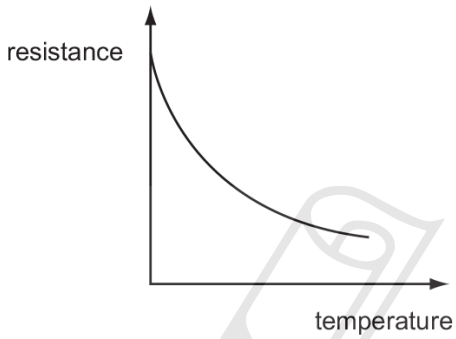
---

86. 0625_p16_qp_20 Q:33

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.



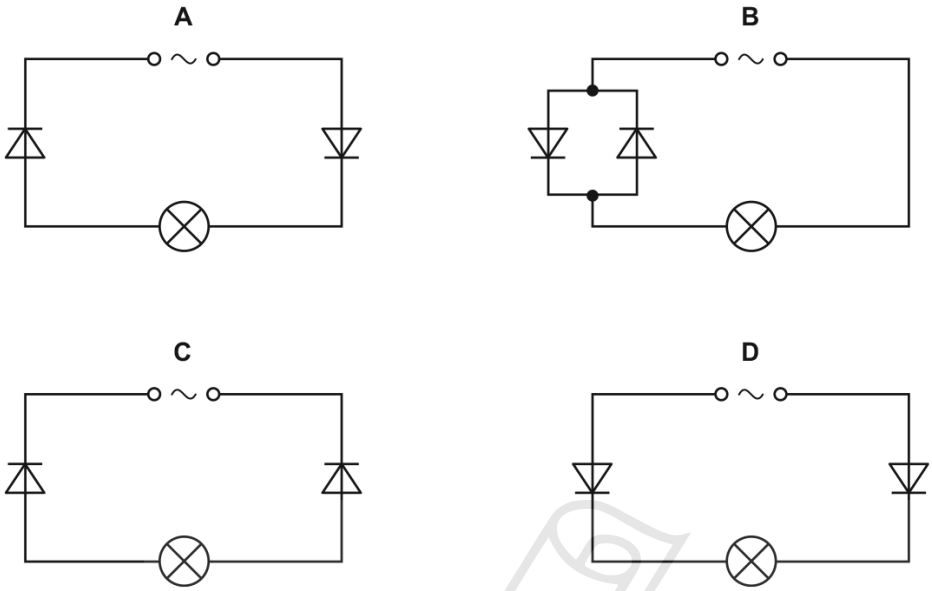
As the thermistor becomes warmer, what happens to its resistance and what happens to the reading on the voltmeter?

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

87. 0625_s16_qp_21 Q:30

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?



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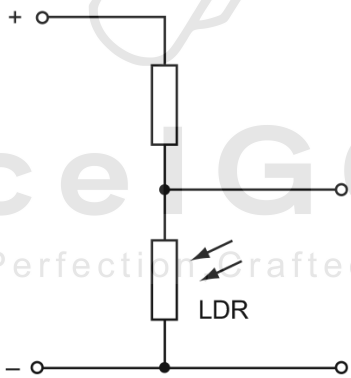
88. 0625_s16_qp_21 Q:32

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

---

89. 0625_s16_qp_21 Q:33

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. 0625_s16_qp_22 Q:30

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

P Q

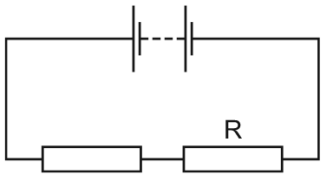
Which components are represented by P and by Q?

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

---

91. 0625_s16_qp_23 Q:29

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.

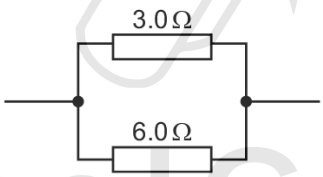
Which row shows values with their correct units?

	e.m.f.	current	p.d.
A	3.0 A	0.30 V	1.5 A
B	3.0 A	0.30 A	1.5 V
C	3.0 V	0.30 V	1.5 A
D	3.0 V	0.30 A	1.5 V

---

92. 0625_s16_qp_23 Q:30

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



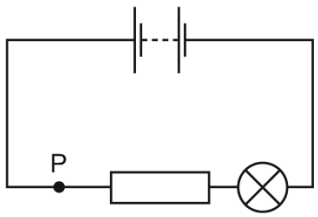
What is their combined resistance?

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

---

93. 0625_w16_qp_21 Q:30

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

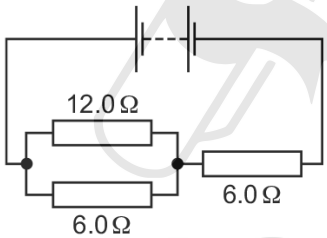
D moving the lamp to point P in the circuit

---

94. 0625_w16_qp_21 Q:31

A 12.0 Ω resistor and a 6.0 Ω resistor are connected in parallel.

Another 6.0 Ω resistor is then connected in series with the parallel combination.



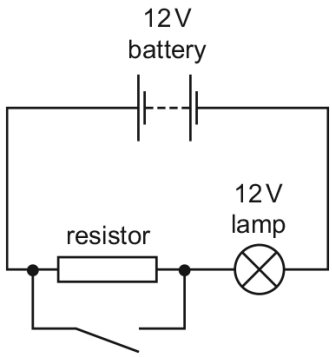
What is the combined resistance of all three resistors?

A 8.0 Ω **B** 10 Ω **C** 15 Ω **D** 24 Ω

---

95. 0625_w16_qp_21 Q: 33

The diagram shows a circuit containing a battery, a resistor with high resistance, a switch and a lamp.



Initially the switch is open.

What happens to the lamp when the switch is closed?

A It glows more brightly.

B It glows less brightly.

C It goes out.

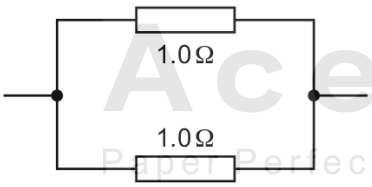
D Its brightness does not change.

---

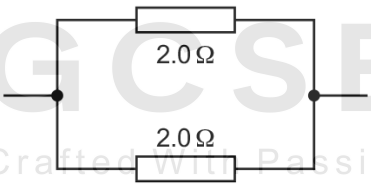
96. 0625_w16_qp_22 Q: 32

Which combination of resistors in parallel has an effective resistance of 0.50 Ω?

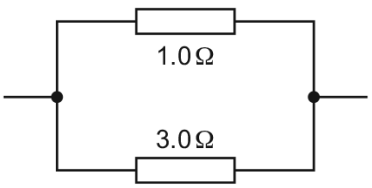
A



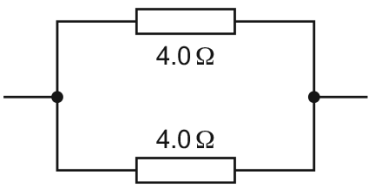
B



C



D



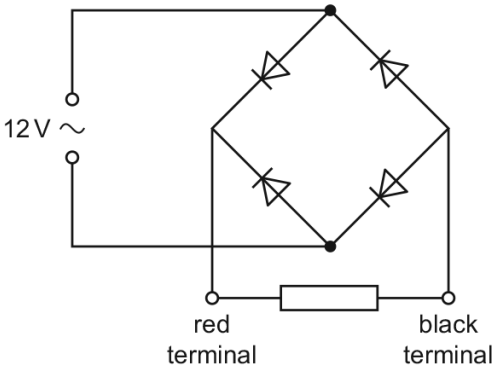
---

97. 0625_w16_qp_23 Q: 32

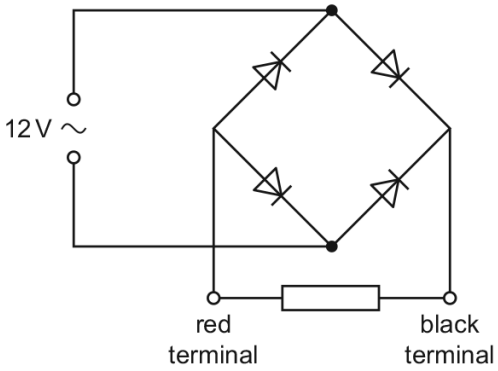
The four circuits shown each contain four diodes.

In which circuit is the direction of the current in the resistor always from the red terminal to the black terminal?

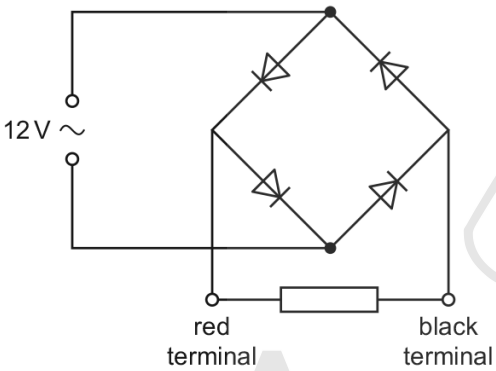
A



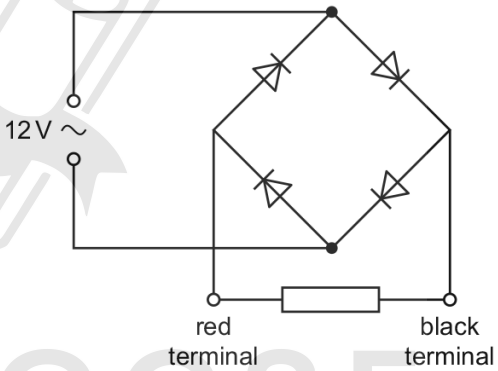
B



C

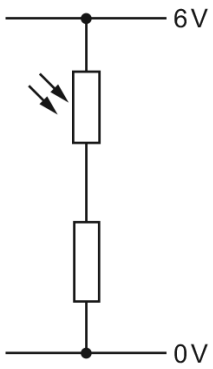


D



98. 0625_w16_qp_23 Q: 33

The diagram shows a potential divider.



When brighter light falls on the light-dependent resistor (LDR), its resistance changes.

What happens to the resistance of the LDR and what happens to the current in it?

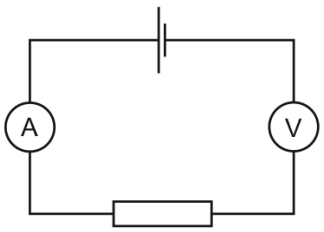
	resistance of LDR	current in LDR
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

99. 0625_m15_qp_12 Q: 28

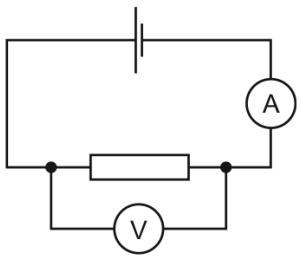
A student wishes to determine the resistance of a resistor. She uses an ammeter and a voltmeter in a circuit.

In which circuit are the ammeter and voltmeter connected correctly?

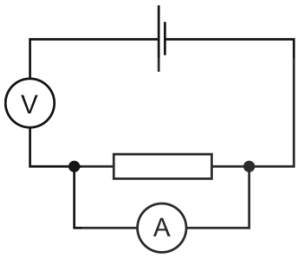
A



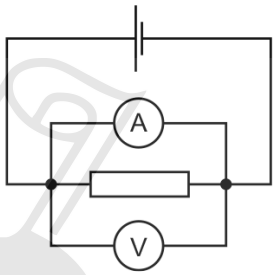
B



C



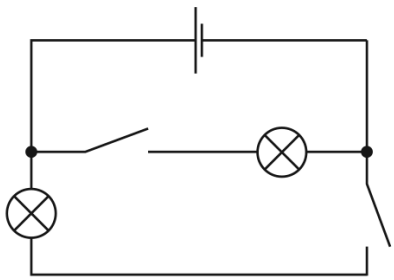
D



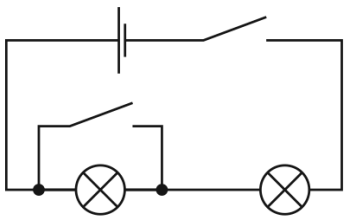
100. 0625_m15_qp_12 Q: 30

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

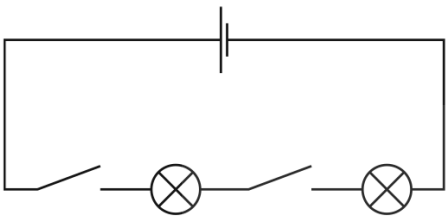
A



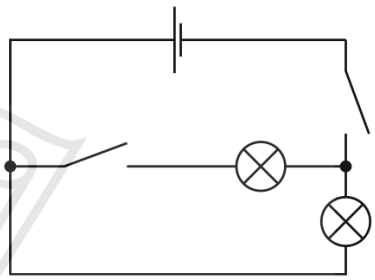
B



C



D

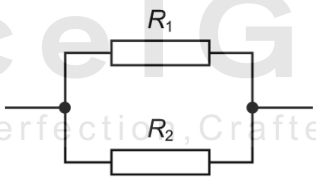


---

101. 0625_m15_qp_12 Q: 31

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

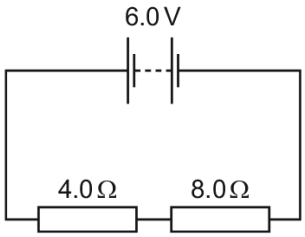
C equal to R_2

D the average of R_1 and R_2

---

102. 0625_s15_qp_11 Q: 29

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



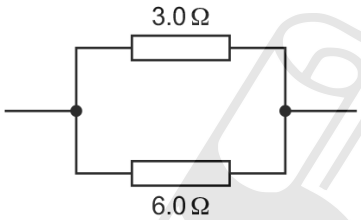
What is the current in the battery?

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

---

103. 0625_s15_qp_11 Q: 31

The diagram shows a 3.0Ω resistor and a 6.0Ω resistor connected in parallel.



What is the total resistance of this arrangement?

A less than 3.0Ω

B 3.0Ω

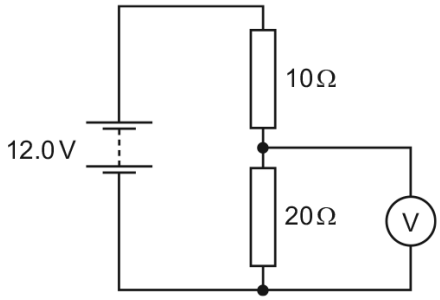
C 4.5Ω

D more than 6.0Ω

---

104. 0625_s15_qp_11 Q: 32

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



What is the reading on the voltmeter?

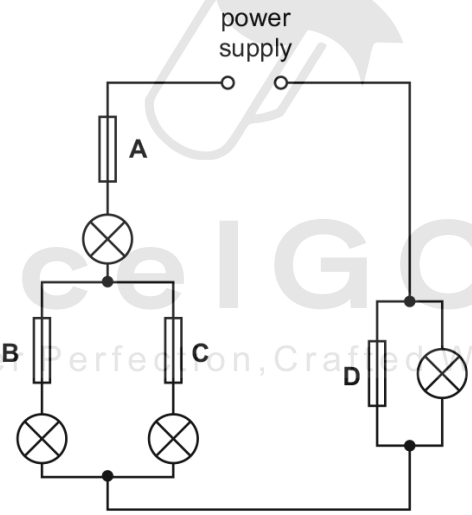
A 4.0V **B** 6.0V **C** 8.0V **D** 12.0V

---

105. 0625_s15_qp_11 Q: 33

In the circuit shown, only one of the fuses has blown, but none of the lamps is lit.

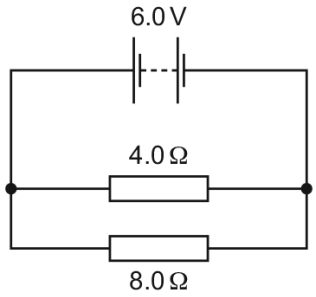
Which fuse has blown?



---

106. 0625_s15_qp_12 Q: 28

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



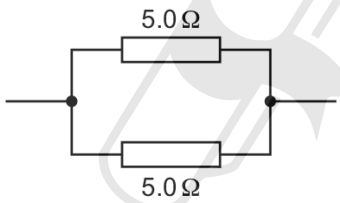
What is the potential difference (p.d.) across the 4.0Ω resistor?

A 0.5V **B** 2.0V **C** 4.0V **D** 6.0V

---

107. 0625_s15_qp_12 Q: 31

Two 5.0Ω resistors are connected as shown in the diagram.



What is the total resistance of this combination?

A less than 5.0Ω

B 5.0Ω

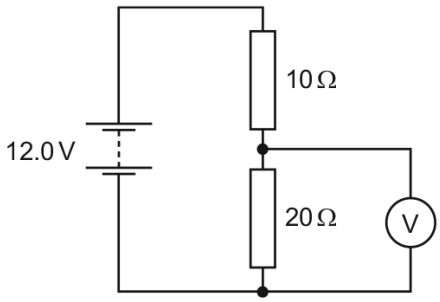
C more than 5.0Ω but less than 10.0Ω

D 10.0Ω

---

108. 0625_s15_qp_12 Q: 32

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



What is the reading on the voltmeter?

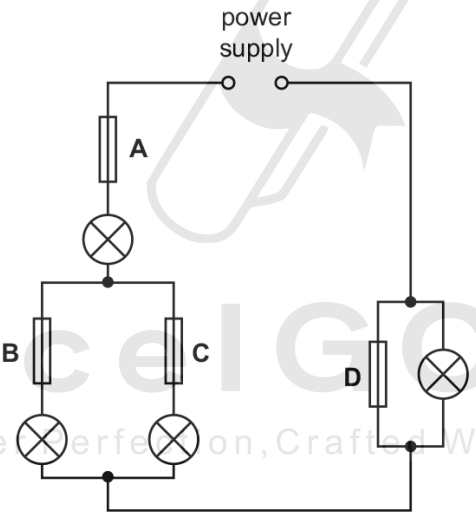
A 4.0 V **B** 6.0 V **C** 8.0 V **D** 12.0 V

---

109. 0625_s15_qp_12 Q: 33

In the circuit shown, only one of the fuses has blown, but none of the lamps is lit.

Which fuse has blown?



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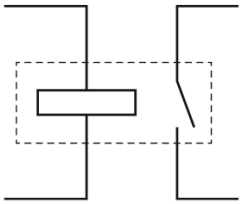
110. 0625_s15_qp_13 Q: 31

Which component is represented by this circuit symbol?



A a bell

B a fuse

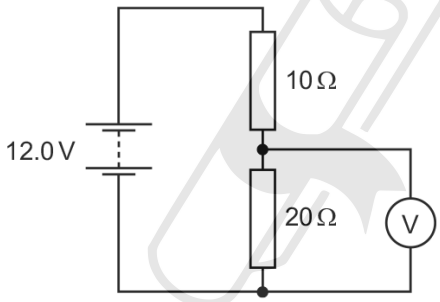
C a relay

D a transformer

---

111. 0625_s15_qp_13 Q: 32

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



What is the reading on the voltmeter?

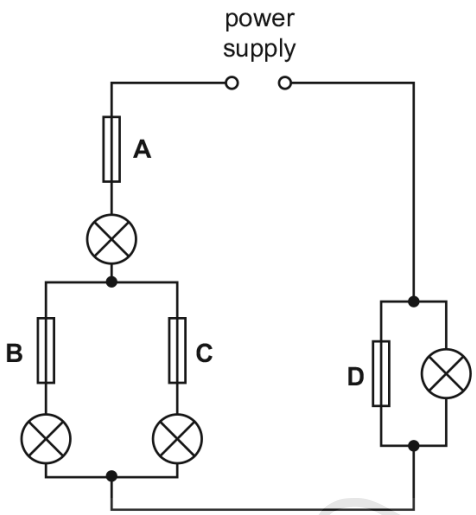
A 4.0 V **B** 6.0 V **C** 8.0 V **D** 12.0 V

---

112. 0625_s15_qp_13 Q: 33

In the circuit shown, only one of the fuses has blown, but none of the lamps is lit.

Which fuse has blown?



---

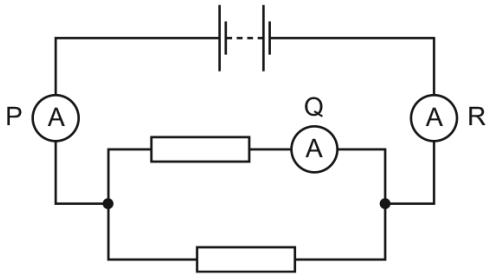
113. 0625_w15_qp_11 Q: 30

What is the circuit symbol for a variable resistor?

---

114. 0625_w15_qp_11 Q: 31

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.

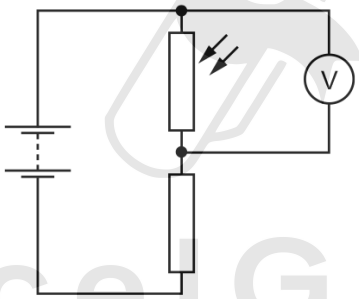
C The reading on Q is greater than the reading on P.

D The reading on Q is greater than the reading on R.

---

115. 0625_w15_qp_11 Q: 32

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?

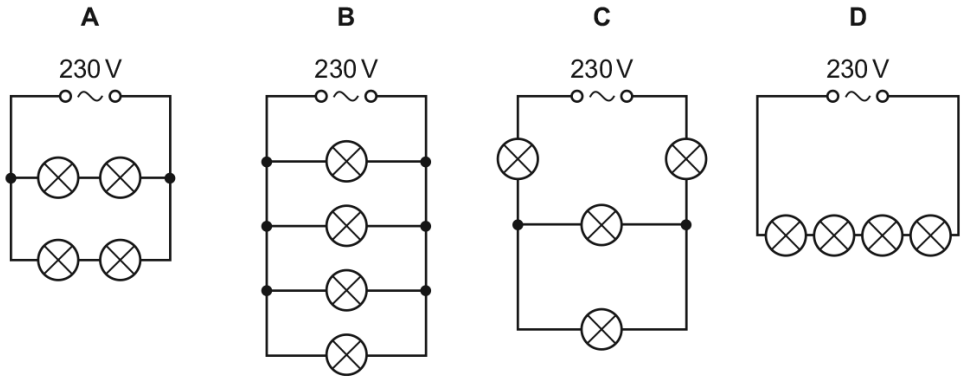
	resistance of LDR	reading on voltmeter
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

---

116. 0625_w15_qp_11 Q: 33

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

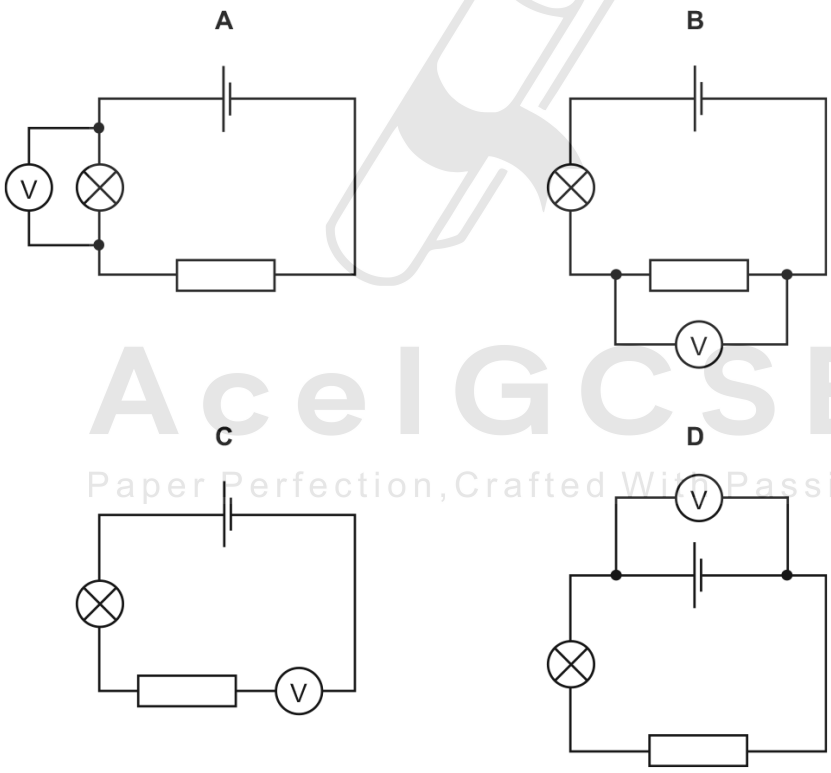
In which circuit are the lamps connected so that they operate at normal brightness?



---

117. 0625_w15_qp_12 Q: 28

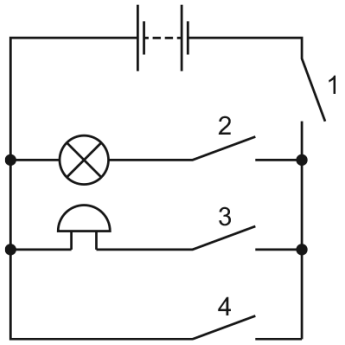
Which circuit shows a voltmeter measuring the p.d. across a resistor?



---

18. 0625_w15_qp_12 Q: 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

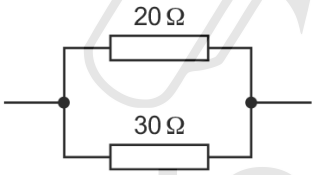
C 1, 2 and 3 only

D 1, 2, 3 and 4

---

119. 0625_w15_qp_12 Q: 31

Two resistors are connected in parallel.



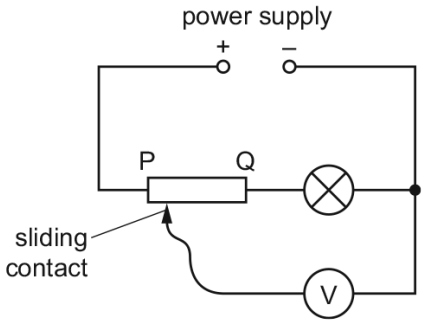
Which value could be the resistance of the combination?

A 12Ω **B** 20Ω **C** 25Ω **D** 50Ω

---

120. 0625_w15_qp_12 Q: 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?

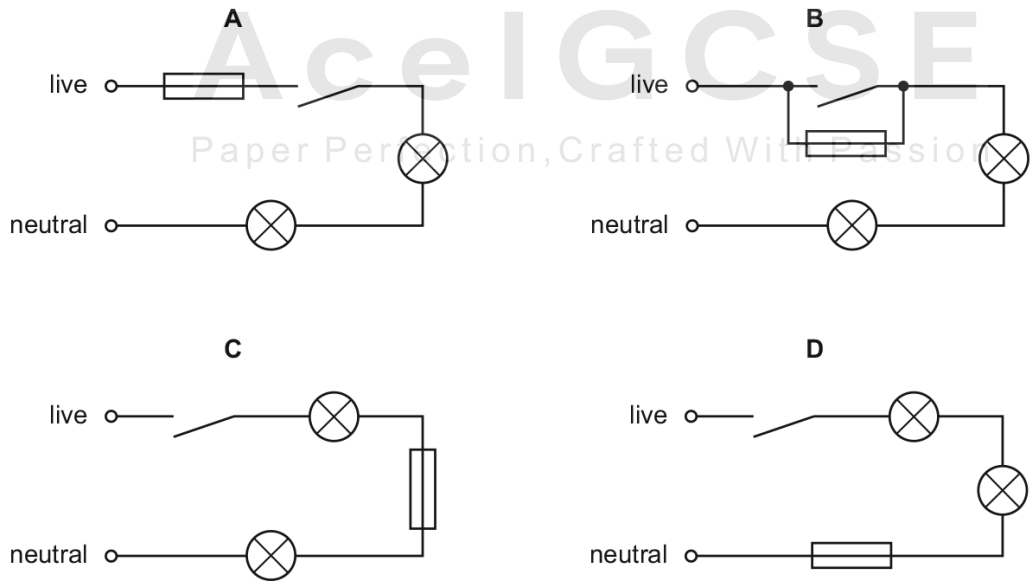
	brightness of lamp	voltmeter reading
A	becomes brighter	decreases
B	becomes brighter	increases
C	does not change	decreases
D	does not change	increases

---

121. 0625_w15_qp_12 Q: 34

A fuse is used to protect an electric circuit.

Which diagram shows where the fuse should be connected?



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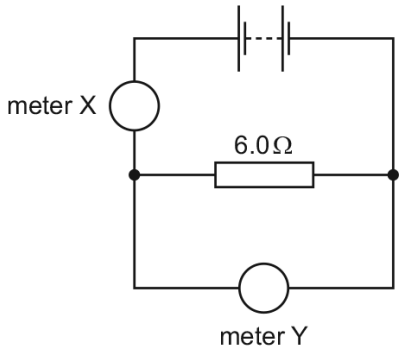
122. 0625_w15_qp_13 Q: 29

The circuit shown contains a battery, a 6.0 Ω resistor and two meters X and Y.

One meter records current and one meter records potential difference.



Which row shows possible values for the readings on the meters?

	meter X	meter Y
A	2.0 A	12 V
B	2.0 V	12 A
C	12 A	2.0 V
D	12 V	2.0 A

---

123. 0625_w15_qp_13 Q: 30

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

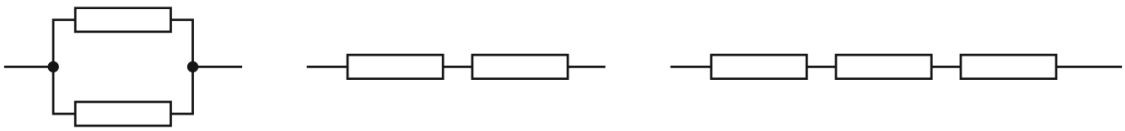
C a resistor and a transformer

D a thermistor and a variable resistor

---

124. 0625_w15_qp_13 Q: 31

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 → Y → Z

B Y → X → Z

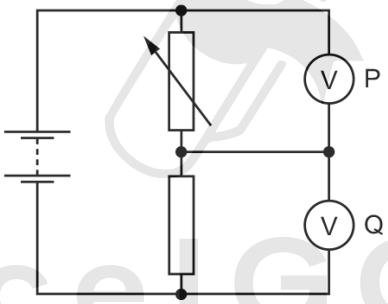
C Z → X → Y

D Z → Y → X

---

125. 0625_w15_qp_13 Q: 32

The diagram shows a potential divider circuit.



The resistance of the variable resistor is increased.

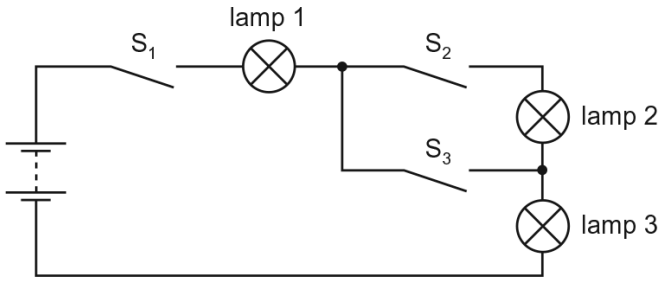
Which row shows what happens to the readings on voltmeter P and on voltmeter Q?

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

---

126. 0625_s14_qp_11 Q: 30

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

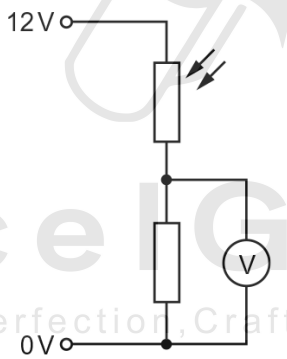
C S_1 and S_3

D S_2 and S_3

---

127. 0625_s14_qp_11 Q: 31

The diagram shows part of an electric circuit.



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

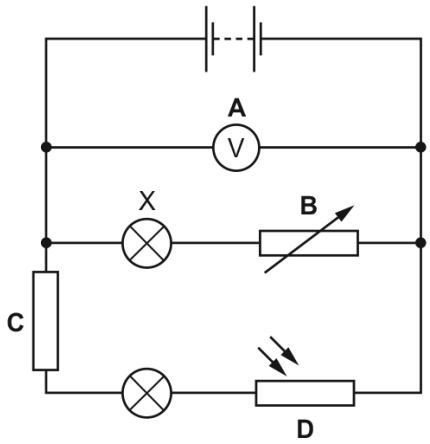
What happens to the resistance of the LDR and what happens to the reading on the voltmeter?

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

---

128. 0625_s14_qp_11 Q: 32

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

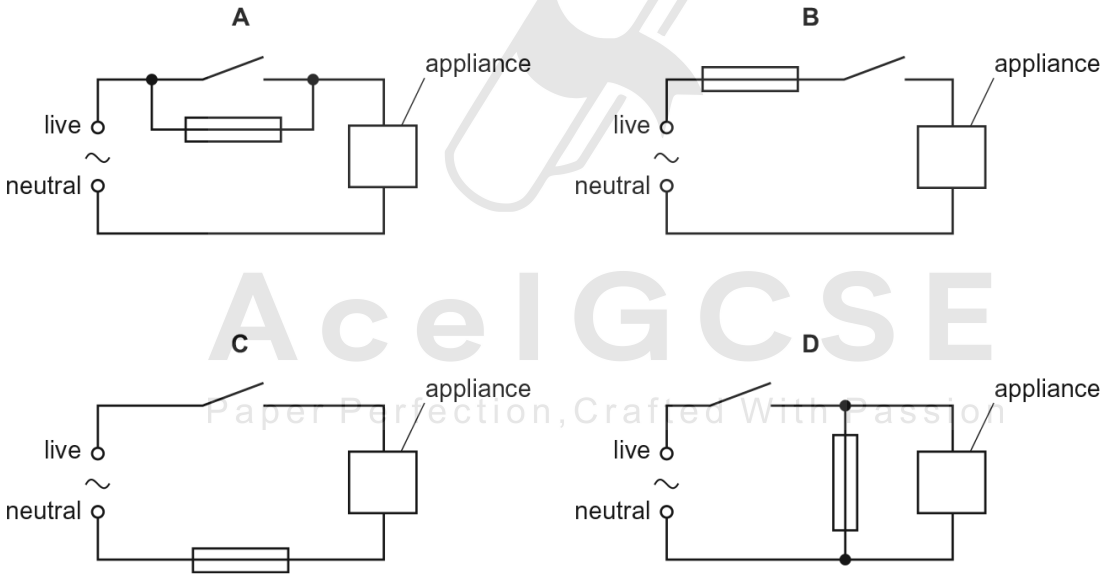


---

129. 0625_s14_qp_11 Q: 33

An appliance is connected to a mains supply. Its circuit also contains a switch and a fuse.

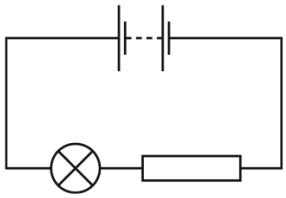
Which circuit shows the fuse in the correct position?



---

130. 0625_s14_qp_12 Q: 30

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

---

131. 0625_s14_qp_12 Q: 31

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.

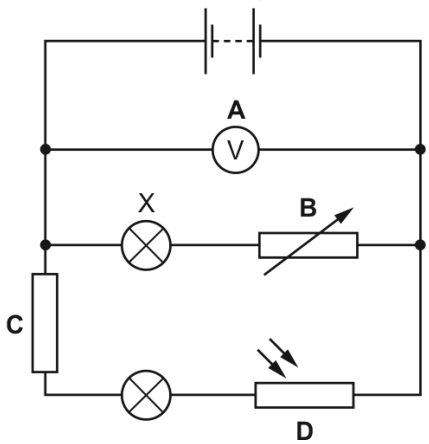
C They share the supply voltage equally between them.

D They still operate if one lamp is removed.

---

132. 0625_s14_qp_12 Q: 33

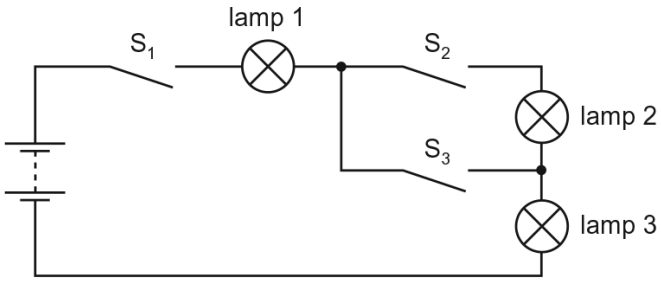
Which labelled component in the circuit shown controls the brightness of lamp X?



---

133. 0625_s14_qp_13 Q: 26

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

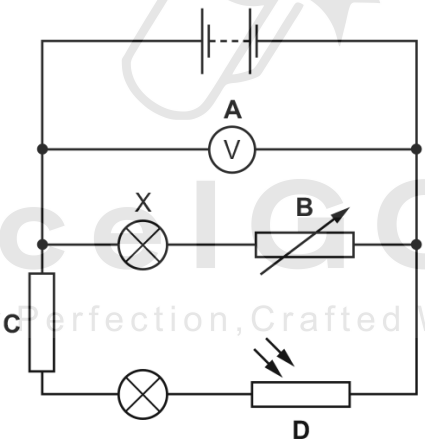
C S_1 and S_3

D S_2 and S_3

---

134. 0625_s14_qp_13 Q: 27

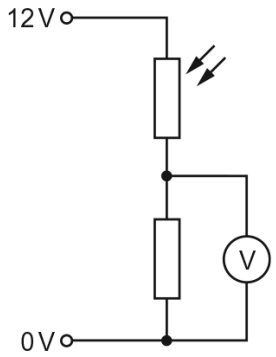
Which labelled component in the circuit shown controls the brightness of lamp X?



---

135. 0625_s14_qp_13 Q: 28

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?

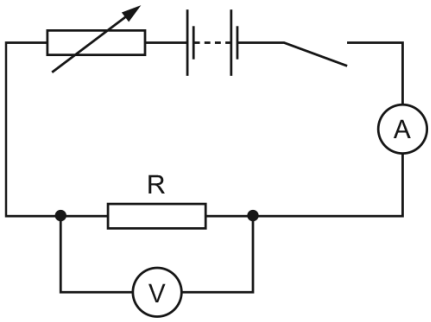
	resistance of LDR	reading on voltmeter
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

136. 0625_w14_qp_11 Q: 29

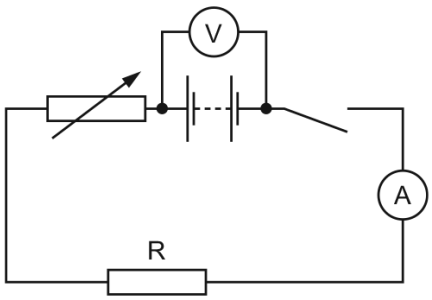
A student carries out an experiment to investigate the resistance of a resistor R. She takes a series of readings of potential difference (p.d.) and current, and plots a graph of her results.

Which circuit should she use?

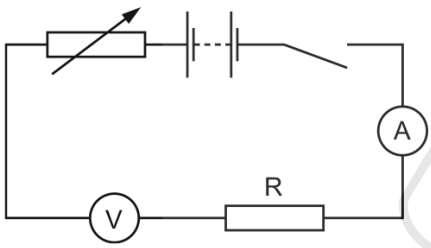
A



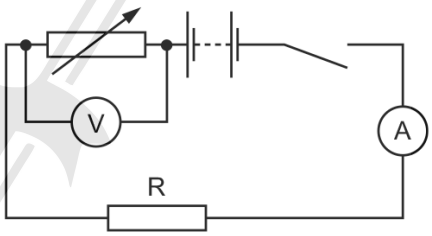
B



C

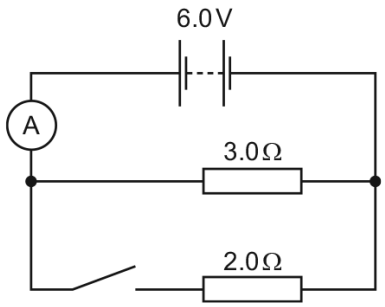


D



137. 0625_w14_qp_11 Q: 30

The diagram shows a circuit with a 3.0Ω resistor and a 2.0Ω resistor connected in parallel.



The switch is open, and the ammeter reads 2.0A.

The switch is now closed and the ammeter reads the total current in both resistors.

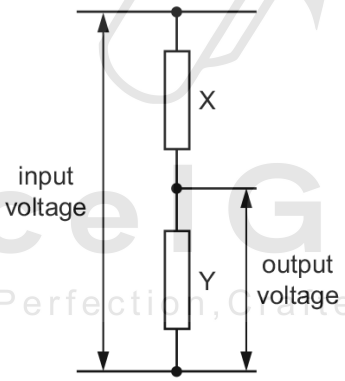
What is the ammeter reading with the switch closed?

A 1.2A **B** 3.0A **C** 4.0A **D** 5.0A

---

138. 0625_w14_qp_11 Q: 32

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.



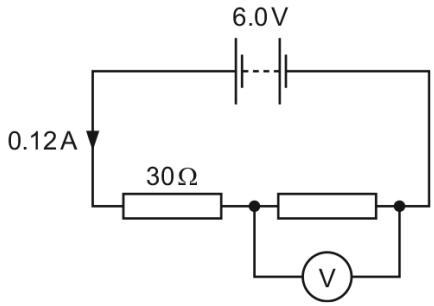
Which pair of values could he use for the two resistors X and Y?

	X/kΩ	Y/kΩ
A	1.0	9.0
B	1.0	10.0
C	9.0	1.0
D	10.0	1.0

---

139. 0625_w14_qp_13 Q: 29

A 30Ω resistor is connected in series with another resistor and a 6.0V battery. The current in the circuit is 0.12A. A voltmeter is connected across the other resistor.



What is the reading on the voltmeter?

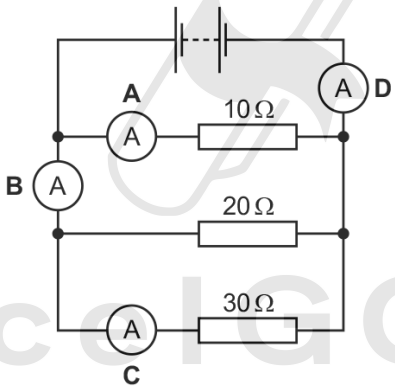
A 2.4V **B** 3.6V **C** 6.0V **D** 9.6V

---

140. 0625_w14_qp_13 Q: 30

A circuit contains four ammeters **A**, **B**, **C** and **D**, and three resistors with different values.

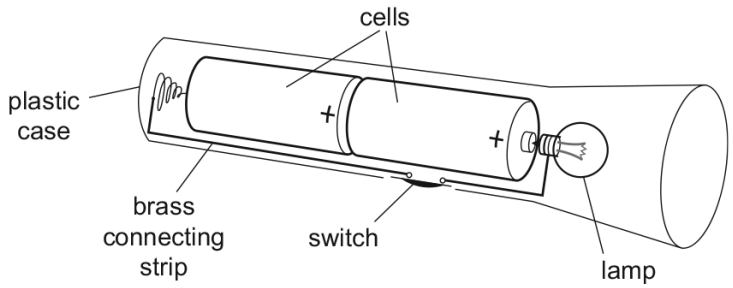
Which ammeter shows the largest reading?



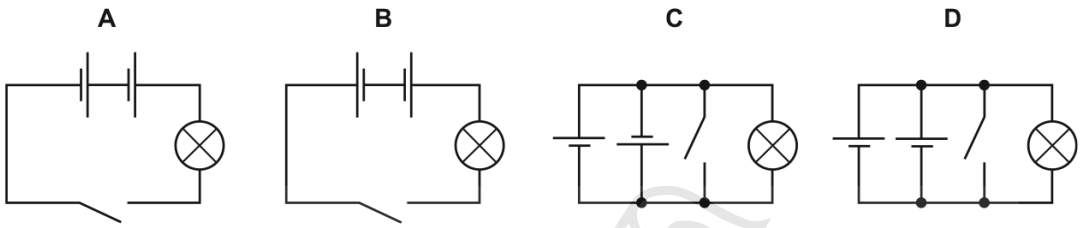
---

141. 0625_w14_qp_13 Q: 31

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



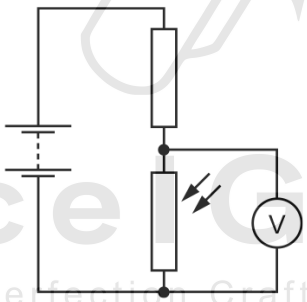
Which is the circuit diagram for the torch?



---

142. 0625_w14_qp_13 Q: 32

The diagram shows a circuit with a fixed resistor connected in series with a light-dependent resistor (LDR). A voltmeter is connected across the LDR.



A bright lamp shines light onto the LDR. The lamp is then switched off and this causes the voltmeter reading to change.

Which row shows the change in the resistance of the LDR and the change in the voltmeter reading when the lamp is switched off?

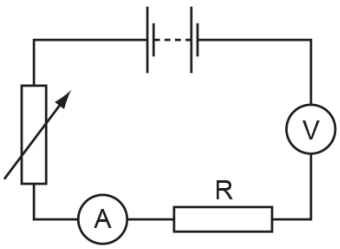
	resistance of LDR	voltmeter reading
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

---

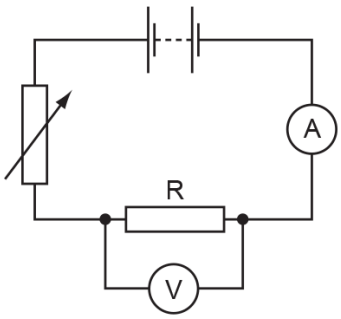
143. 0625_s13_qp_11 Q: 29

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

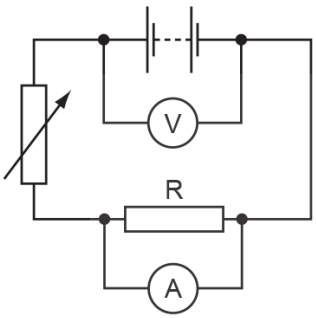
A



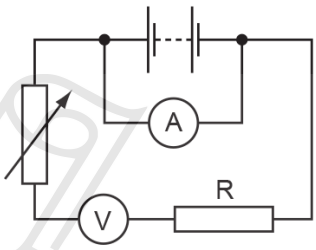
B



C



D



---

144. 0625_s13_qp_11 Q: 31

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

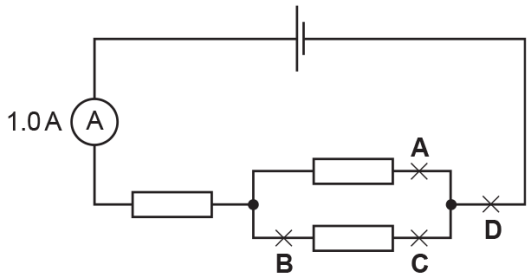
---

145. 0625_s13_qp_11 Q: 32

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?



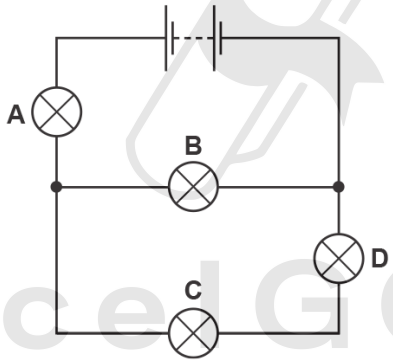
---

146. 0625_s13_qp_11 Q: 33

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

One lamp fails and all the lamps go out.

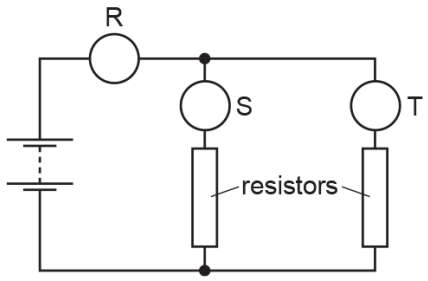
Which lamp failed?



---

147. 0625_s13_qp_12 Q: 30

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

---

148. 0625_s13_qp_12 Q: 31

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.

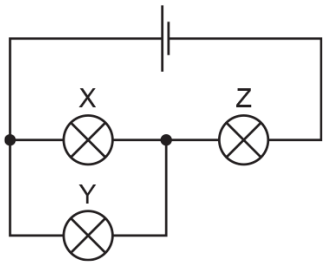
C radioactivity.

D temperature.

---

149. 0625_s13_qp_12 Q: 33

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.

---

150. 0625_w13_qp_11 Q: 29

A student wishes to measure first the electromotive force (e.m.f.) of a battery, and then the potential difference (p.d.) across a resistor.

She has the resistor, the battery and some connecting wires.

What else does she need?

A a force meter (newton meter) and a voltmeter

B an ammeter and a voltmeter

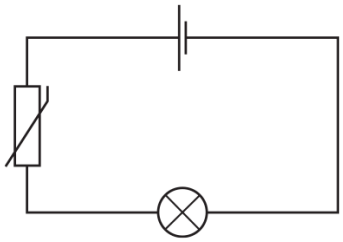
C an ammeter only

D a voltmeter only

---

151. 0625_w13_qp_11 Q: 31

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.

---

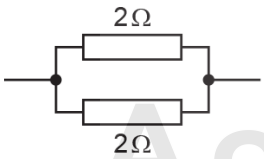
152. 0625_w13_qp_11 Q: 32

A student connects various resistors in parallel pairs.

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

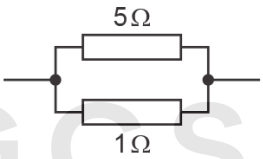
Which statement is correct?

A



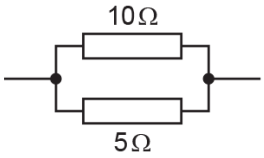
The total resistance is 4Ω.

B



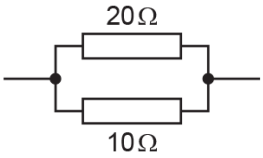
The total resistance is between 1Ω and 5Ω.

C



The total resistance is less than 5Ω.

D

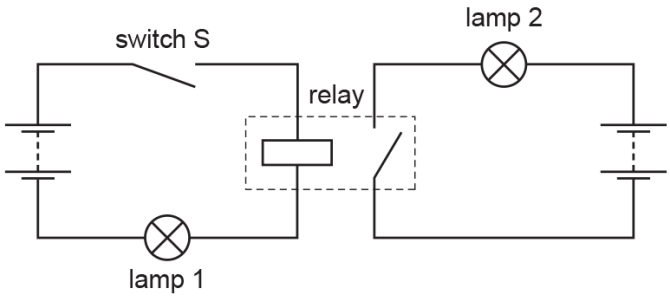


The total resistance is more than 20Ω.

---

153. 0625_w13_qp_11 Q: 33

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



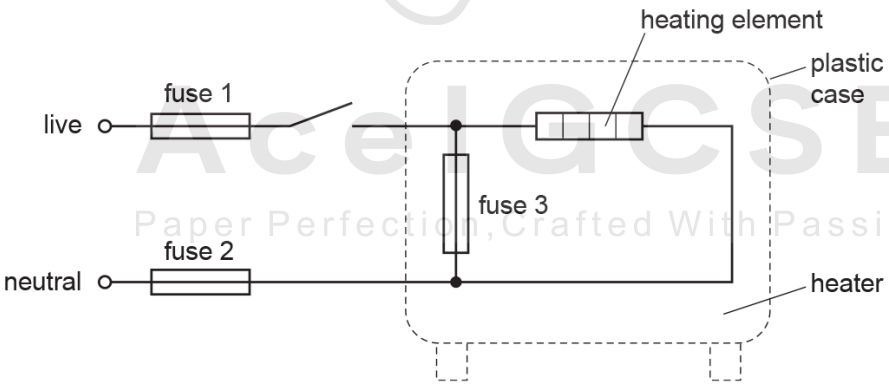
When switch S is closed, the relay operates. What is the state of the lamps?

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

---

154. 0625_w13_qp_11 Q: 34

The diagram shows the connections to an electric heater. Three fuses have been added to the circuit.



Which of the fuses are correctly placed?

A fuse 1, fuse 2 and fuse 3

B fuse 1 and fuse 2 only

C fuse 1 only

D fuse 2 only

---

155. 0625_w13_qp_13 Q: 31

The diagram shows an electrical component.

What is it?

A a capacitor

B a light-dependent resistor

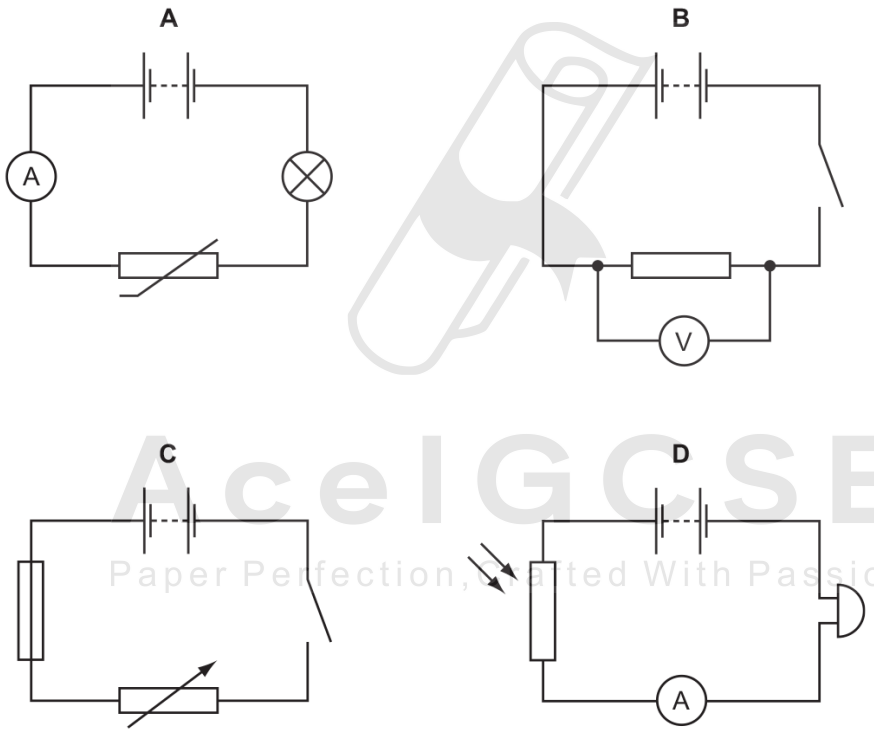
C a thermistor

D a variable resistor

---

156. 0625_s12_qp_11 Q: 31

Which circuit contains a fuse?



---

157. 0625_s12_qp_11 Q: 32

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

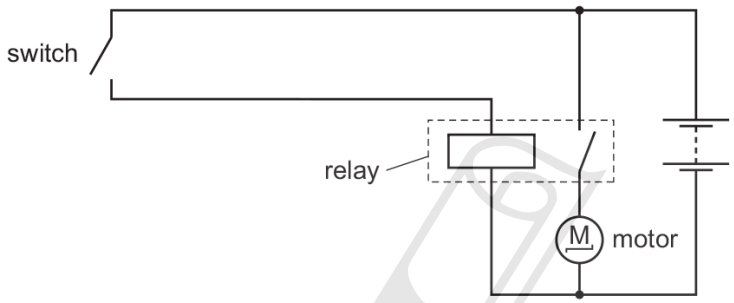
C switching on a water heater at a pre-determined time

D turning on an air conditioner when the temperature rises

---

158. 0625_s12_qp_12 Q: 31

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

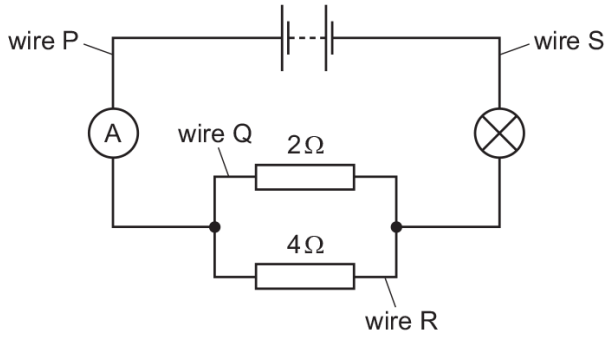
C to allow the current in the relay coil to pass to the motor

D to disconnect the battery from the motor automatically if too much current flows

---

159. 0625_s12_qp_12 Q: 32

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.

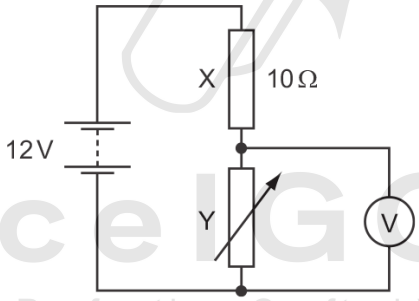
C The current in wire R is equal to the current in wire S.

D The current in wire S is equal to the current in wire P.

---

160. 0625_s12_qp_12 Q: 33

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?

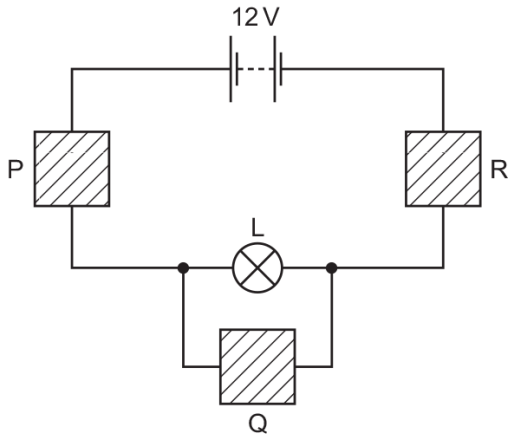
A 4.0V **B** 6.0V **C** 8.0V **D** 12V

---

161. 0625_w12_qp_11 Q: 30

The diagram shows a circuit used to find the resistance of lamp L.

Blocks P, Q and R represent the different components used.



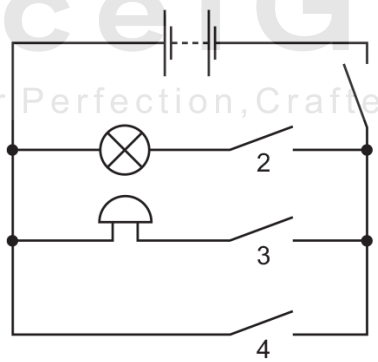
Which is a correct possible choice of components to use for P, Q and R?

	P	Q	R
A	ammeter	variable resistor	voltmeter
B	variable resistor	voltmeter	ammeter
C	voltmeter	ammeter	variable resistor
D	voltmeter	variable resistor	ammeter

---

162. 0625_w12_qp_11 Q: 31

A student connects the circuit shown.



Which switches must be closed for the bell to ring without lighting the lamp?

A 1 and 2 only

B 1 and 3 only

C 1, 3 and 4 only

D 2, 3 and 4 only

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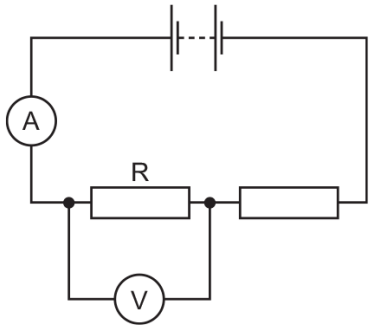
163. 0625_w12_qp_13 Q: 30

The circuit shows a 24 V battery connected to two resistors in series.



The reading on the ammeter is 2.0 A and the reading on the voltmeter is 8.0 V.

What is the resistance of resistor R?

A 0.25 Ω **B** 4.0 Ω **C** 10 Ω **D** 16 Ω

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164. 0625_w12_qp_13 Q: 31

A relay allows a small current in one circuit to control a different circuit.

Which type of force is produced by the small current to activate the relay?

A electrical

B frictional

C gravitational

D magnetic

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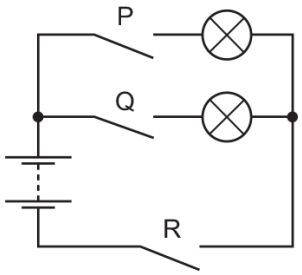
165. 0625_w12_qp_13 Q: 32

The diagram shows a circuit containing two identical lamps.



Which switches must be closed to light both of the lamps?

A P and Q only

B P and R only

C Q and R only

D P, Q and R

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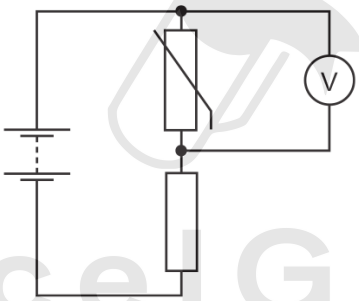
166. 0625_w12_qp_13 Q: 33

The diagram shows a potential divider circuit.



The temperature of the thermistor increases.

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

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

SN	Paper	Q. No.	Answer
01	0625_m22_qp_22	30	B
02	0625_m22_qp_22	31	A
03	0625_m22_qp_22	32	A
04	0625_m21_qp_22	33	D
05	0625_m21_qp_22	34	A
06	0625_s21_qp_21	32	C
07	0625_s21_qp_22	32	D
08	0625_s21_qp_22	33	C
09	0625_s21_qp_23	32	B
10	0625_w21_qp_21	28	D
11	0625_w21_qp_21	29	B
12	0625_w21_qp_21	31	C
13	0625_w21_qp_21	32	A
14	0625_w21_qp_22	31	D
15	0625_w21_qp_23	31	A
16	0625_w21_qp_23	32	A
17	0625_m20_qp_22	32	D
18	0625_m20_qp_22	33	D
19	0625_m20_qp_22	34	D
20	0625_p20_qp_20	32	C
21	0625_p20_qp_20	33	A
22	0625_s20_qp_21	28	C
23	0625_s20_qp_21	30	A
24	0625_s20_qp_21	31	B
25	0625_s20_qp_22	29	C
26	0625_s20_qp_22	31	A
27	0625_s20_qp_22	32	B
28	0625_s20_qp_22	34	B
29	0625_s20_qp_23	31	A
30	0625_s20_qp_23	32	B
31	0625_w20_qp_21	32	C
32	0625_w20_qp_21	33	A
33	0625_w20_qp_22	32	A
34	0625_w20_qp_23	31	A
35	0625_w20_qp_23	32	C
36	0625_m19_qp_22	31	A
37	0625_m19_qp_22	32	C
38	0625_m19_qp_22	33	A
39	0625_s19_qp_21	30	B
40	0625_s19_qp_21	31	A
41	0625_s19_qp_21	34	A
42	0625_s19_qp_22	30	A
43	0625_s19_qp_22	32	D
44	0625_s19_qp_23	30	C
45	0625_s19_qp_23	32	C
46	0625_s19_qp_23	33	C
47	0625_w19_qp_21	29	B
48	0625_w19_qp_21	30	D
49	0625_w19_qp_21	31	A
50	0625_w19_qp_22	31	A
51	0625_w19_qp_22	32	A
52	0625_w19_qp_23	31	C
53	0625_m18_qp_22	33	A
54	0625_m18_qp_22	34	D
55	0625_s18_qp_21	30	B
56	0625_s18_qp_21	31	D
57	0625_s18_qp_21	32	B
58	0625_s18_qp_22	30	B
59	0625_s18_qp_23	30	C
60	0625_w18_qp_21	29	C
61	0625_w18_qp_21	31	A
62	0625_w18_qp_21	32	D
63	0625_w18_qp_22	30	C
64	0625_w18_qp_22	31	B
65	0625_w18_qp_22	32	A
66	0625_w18_qp_23	30	A
67	0625_w18_qp_23	34	C
68	0625_m17_qp_22	30	A
69	0625_m17_qp_22	31	B
70	0625_m17_qp_22	32	A
71	0625_s17_qp_21	31	B
72	0625_s17_qp_21	32	B
73	0625_s17_qp_21	33	C
74	0625_s17_qp_21	36	D
75	0625_s17_qp_22	31	A
76	0625_s17_qp_23	32	B
77	0625_s17_qp_23	33	A
78	0625_s17_qp_23	36	D
79	0625_w17_qp_21	33	B
80	0625_w17_qp_21	34	B
81	0625_w17_qp_23	33	D
82	0625_m16_qp_22	31	C
83	0625_m16_qp_22	32	A
84	0625_m16_qp_22	33	B
85	0625_p16_qp_20	32	C
86	0625_p16_qp_20	33	A
87	0625_s16_qp_21	30	A
88	0625_s16_qp_21	32	D
89	0625_s16_qp_21	33	A
90	0625_s16_qp_22	30	A
91	0625_s16_qp_23	29	D
92	0625_s16_qp_23	30	B
93	0625_w16_qp_21	30	A
94	0625_w16_qp_21	31	B
95	0625_w16_qp_21	33	A
96	0625_w16_qp_22	32	A
97	0625_w16_qp_23	32	A
98	0625_w16_qp_23	33	B

SN	Paper	Q. No.	Answer
99	0625_m15_qp_12	28	B
100	0625_m15_qp_12	30	A
101	0625_m15_qp_12	31	A
102	0625_s15_qp_11	29	A
103	0625_s15_qp_11	31	A
104	0625_s15_qp_11	32	C
105	0625_s15_qp_11	33	A
106	0625_s15_qp_12	28	D
107	0625_s15_qp_12	31	A
108	0625_s15_qp_12	32	C
109	0625_s15_qp_12	33	A
110	0625_s15_qp_13	31	C
111	0625_s15_qp_13	32	C
112	0625_s15_qp_13	33	A
113	0625_w15_qp_11	30	B
114	0625_w15_qp_11	31	B
115	0625_w15_qp_11	32	A
116	0625_w15_qp_11	33	B
117	0625_w15_qp_12	28	B
118	0625_w15_qp_12	30	C
119	0625_w15_qp_12	31	A
120	0625_w15_qp_12	32	C
121	0625_w15_qp_12	34	A
122	0625_w15_qp_13	29	A
123	0625_w15_qp_13	30	B
124	0625_w15_qp_13	31	D
125	0625_w15_qp_13	32	C
126	0625_s14_qp_11	30	C
127	0625_s14_qp_11	31	B
128	0625_s14_qp_11	32	B
129	0625_s14_qp_11	33	B
130	0625_s14_qp_12	30	B
131	0625_s14_qp_12	31	C
132	0625_s14_qp_12	33	B
133	0625_s14_qp_13	26	C
134	0625_s14_qp_13	27	B
135	0625_s14_qp_13	28	B
136	0625_w14_qp_11	29	A
137	0625_w14_qp_11	30	D
138	0625_w14_qp_11	32	C
139	0625_w14_qp_13	29	A
140	0625_w14_qp_13	30	D
141	0625_w14_qp_13	31	A
142	0625_w14_qp_13	32	D
143	0625_s13_qp_11	29	B
144	0625_s13_qp_11	31	D
145	0625_s13_qp_11	32	D
146	0625_s13_qp_11	33	A
147	0625_s13_qp_12	30	A
148	0625_s13_qp_12	31	D
149	0625_s13_qp_12	33	B
150	0625_w13_qp_11	29	D
151	0625_w13_qp_11	31	C
152	0625_w13_qp_11	32	C
153	0625_w13_qp_11	33	A
154	0625_w13_qp_11	34	C
155	0625_w13_qp_13	31	B
156	0625_s12_qp_11	31	C
157	0625_s12_qp_11	32	D
158	0625_s12_qp_12	31	B
159	0625_s12_qp_12	32	D
160	0625_s12_qp_12	33	C
161	0625_w12_qp_11	30	B
162	0625_w12_qp_11	31	B
163	0625_w12_qp_13	30	B
164	0625_w12_qp_13	31	D
165	0625_w12_qp_13	32	D
166	0625_w12_qp_13	33	A