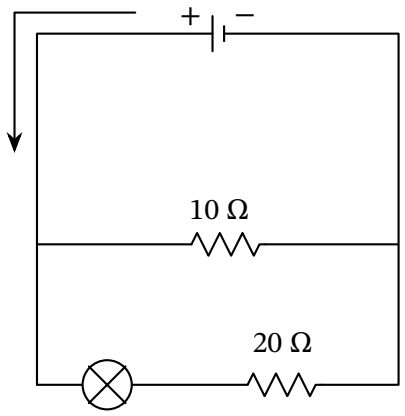
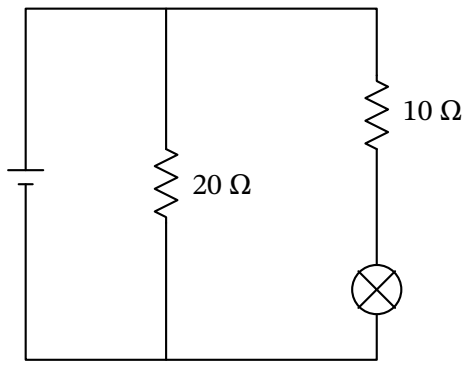
Worksheet: Parallel Circuits

Q1: The diagram shows four circuits with components connected in parallel. Which two circuits are equivalent?

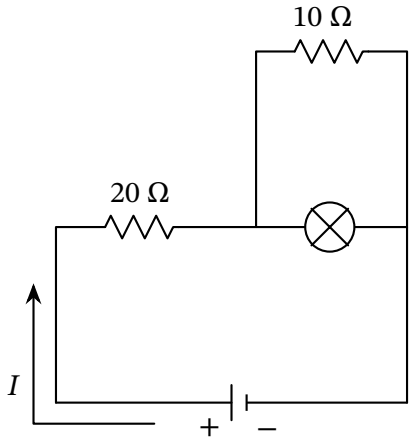
Question Video



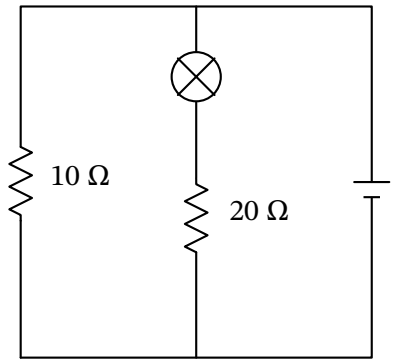
(a)



(b)



(c)



(d)

A (a) and (d)

B (b) and (c)

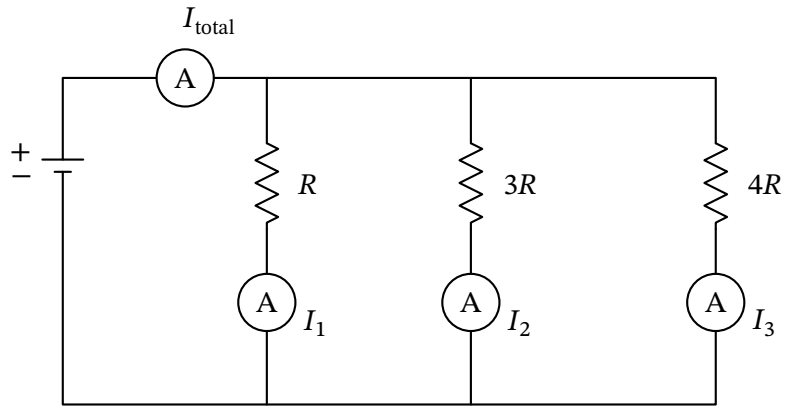
C (b) and (d)

D (a) and (b)

E (c) and (d)

Q2: Elizabeth sets up the circuit shown in the diagram. The current through the first ammeter, I_1, is 5 A. What is the value of I_{total}? Give your answer to 1 decimal place.

Question Video



A 5.0 A

B 15.0 A

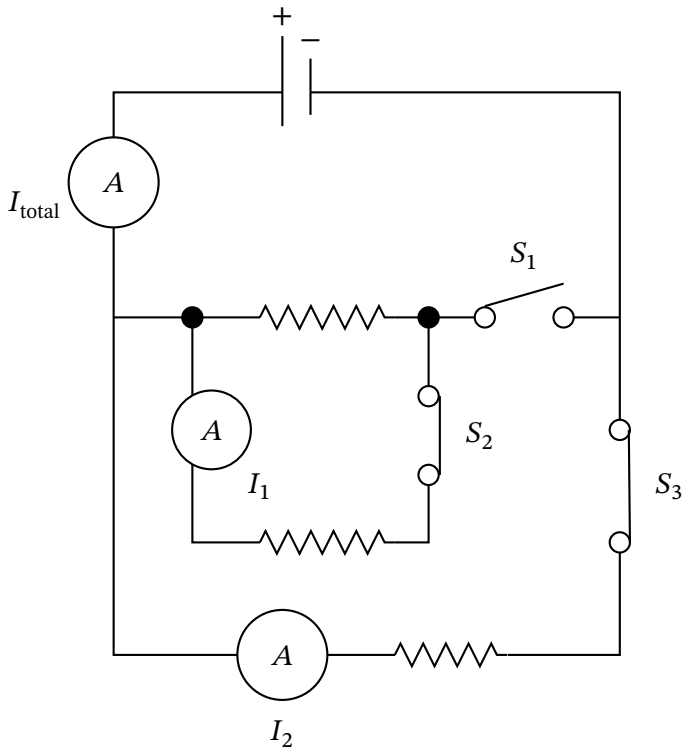
C 40.0 A

D 7.9 A

E 8.5 A

Q3:

Question Video



Isabella sets up the circuit shown in the diagram. Each resistor has a resistance of 10 Ω.

The value of I_2 is initially 3 A. What is the value of I_{total}?

A 9 A

B 3 A

C 5 A

D 7 A

E 6 A

If S_1 is then closed, what happens to the value of I_2?

A It increases.

B It decreases.

C It stays the same.

With S_1 still closed, is the resistance of the circuit lower than, higher than, or the same as it was when S_1 was open?

A Higher

B Lower

C The same

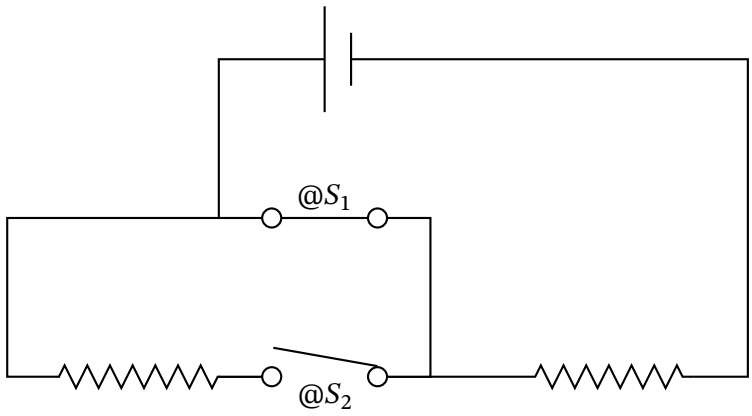
S_1 and S_3 are kept closed, but S_2 is opened. Does the resistance in the circuit increase, decrease, or stay the same?

A It decreases.

B It increases.

C It stays the same.

Q4:



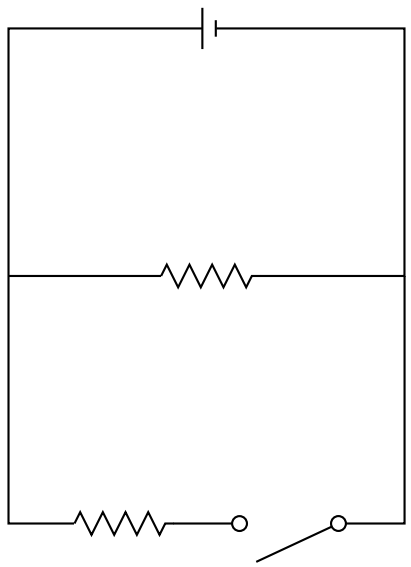
A student sets up the circuit shown in the diagram. Initially, switch 1 is closed and switch 2 is open. If she opens switch 1 and closes switch 2, will the current in the circuit increase or decrease?

A Decrease

B Increase

Q5: A student sets up the circuit shown in the diagram. Initially, the switch is open. When the student closes the switch, will the current flowing through the circuit increase or decrease?

Question Video

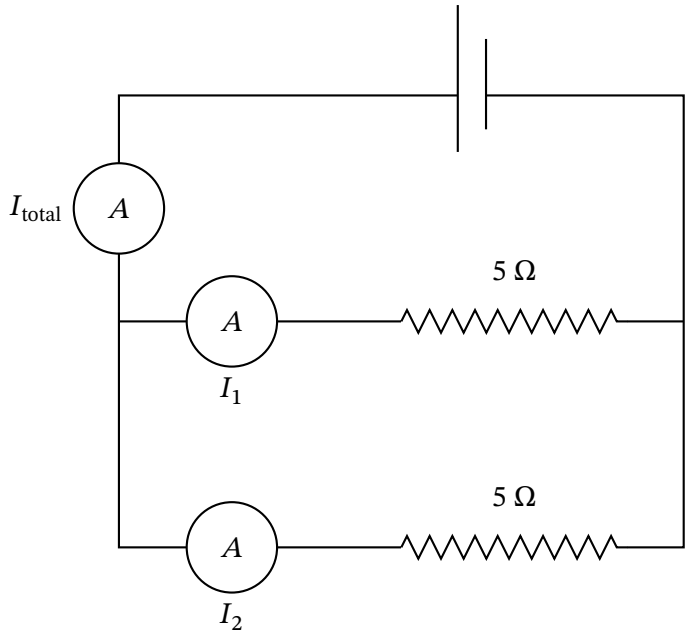


A Decrease

B Increase

Q6: The circuit shown in the diagram consists of two resistors connected in parallel to a cell. The value of I_{total} is equal to 30 A. What is the value of I_2?

Question Video



A 12.5 A

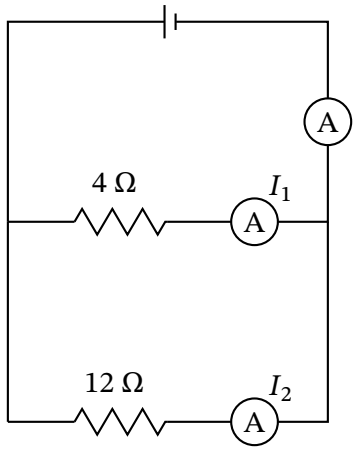
B 7.5 A

C 30 A

D 15 A

E 10 A

Q7: The circuit shown in the diagram consists of two resistors connected in parallel to a cell. The value of the current given by the second ammeter, I_2, is 3 A. What is the value of I_{total}?



A 12 A

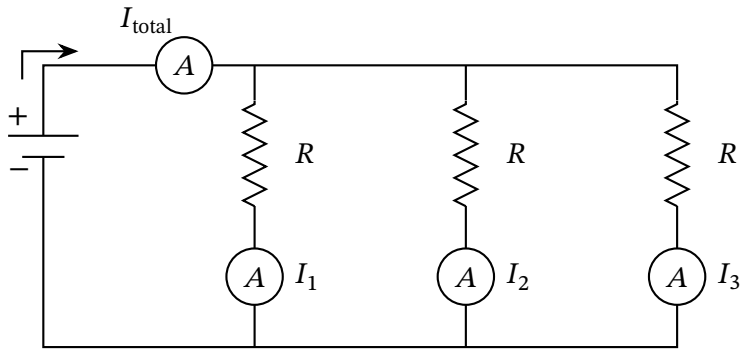
B 6 A

C 10 A

D 9 A

E 8 A

Q8: A student sets up the circuit shown in the diagram. The three resistors are identical. The value of I_{total} is 15 A. What is the value of I_3?



A 20 A

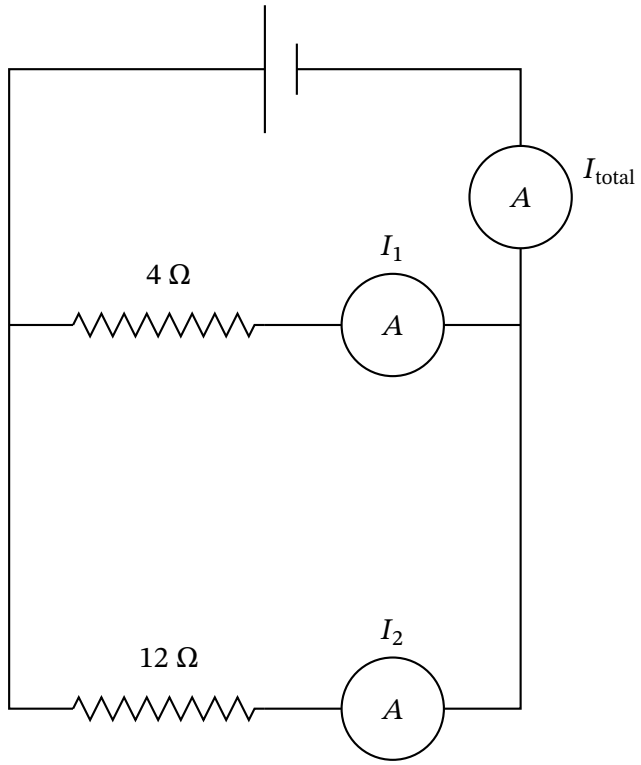
B 5 A

C 15 A

D 30 A

E 10 A

Q9: A student sets up the circuit shown in the diagram. The value of I_{total} is 8 A and the value of I_1 is 6 A.



What is the value of I_2?

A 3 A

B 4 A

C 6 A

D 5 A

E 2 A

What is the potential difference supplied by the cell to the circuit?

A 6 V

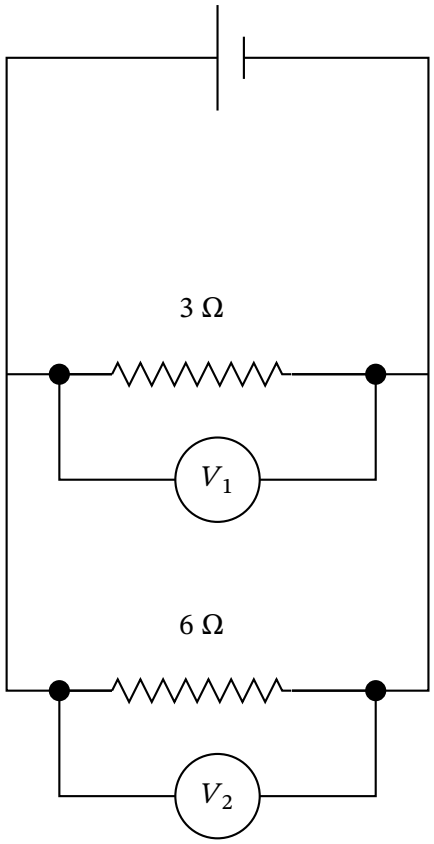
B 8 V

C 12 V

D 4 V

E 24 V

Q10: The diagram shows two resistors connected in parallel to a cell. If the potential difference across the 3 Ω resistor is 18 V, what is the potential difference across the 6 Ω resistor?



A 6 V

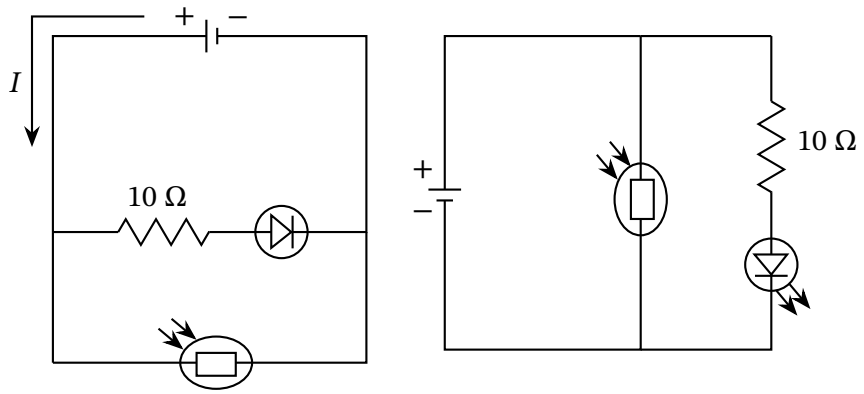
B 3 V

C 18 V

D 9 V

E 36 V

Q11: The diagram shows two circuits. Are the circuits equivalent? If not, why not?



A No, because the cell is connected in a different direction

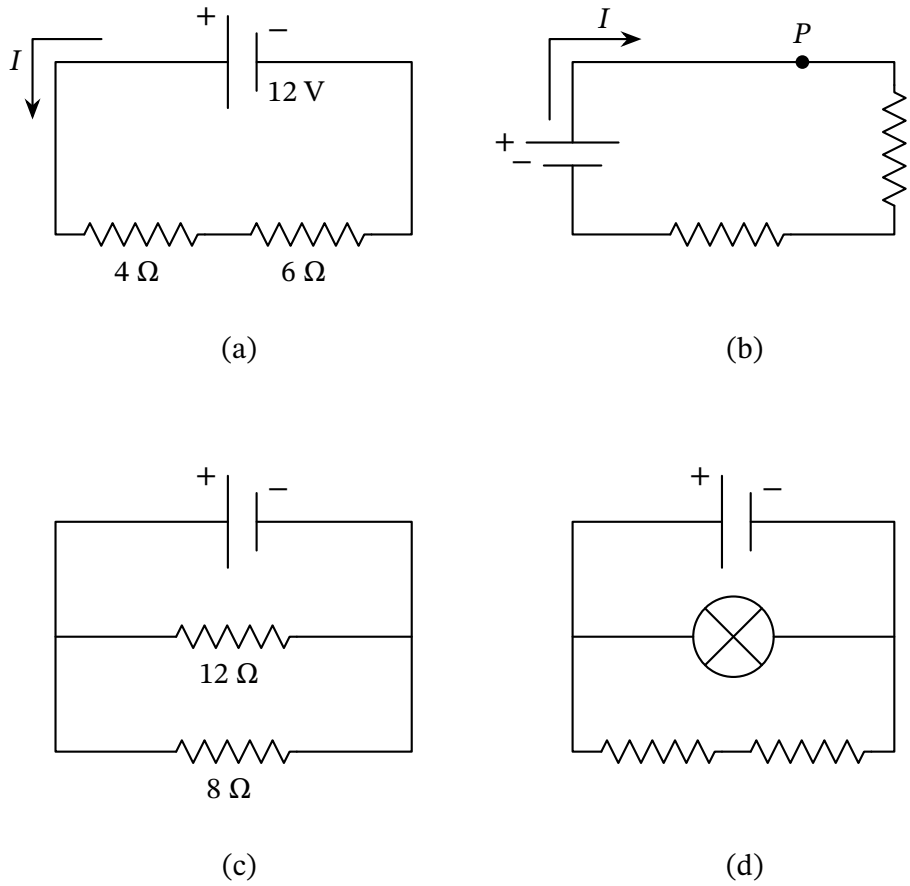
B No, because the branches of the circuit are connected in a different direction

C No, because one shows the current flowing in a certain direction and the other does not

D No, because one contains an ordinary diode and the other contains an LED

E Yes, the circuits are equivalent.

Q12: The diagram shows four circuits. Which circuit contains two resistors in parallel?



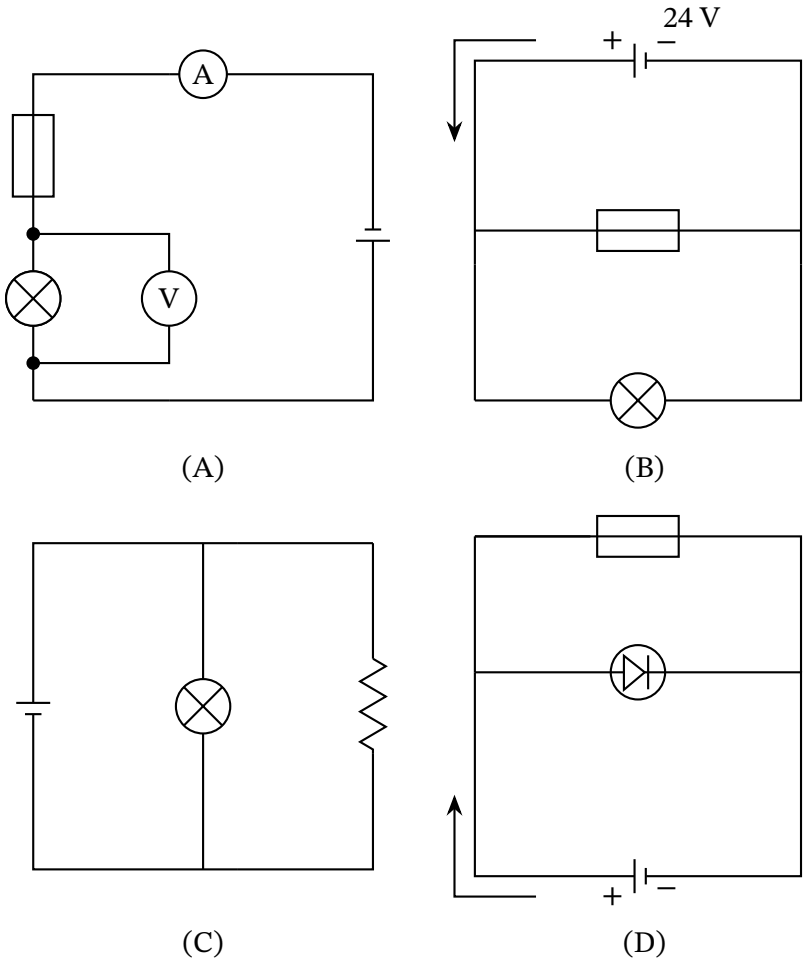
A (b)

B (c)

C (d)

D (a)

Q13: The diagram shows four circuits. Which one shows a fuse and a filament lamp connected to a cell in parallel?



A (C)

B (A)

C (D)

D (B)