1. A circuit contains a 12 V power source, and a 3 Ω, 4 Ω, and 6 Ω, resistor. How should the resistors be arranged for the current through the battery to be 2 A?

   A) All resistors should be in series.

   B) All resistors should be in parallel.

   C) The 3 Ω and 4 Ω resistors should be in parallel, and the 6 Ω resistor in series.

   D) The 3 Ω and 6 Ω resistors should be in parallel, and the 4 Ω resistor in series.

   E) The 4 Ω and 6 Ω resistors should be in parallel, and the 3 Ω resistor in series.
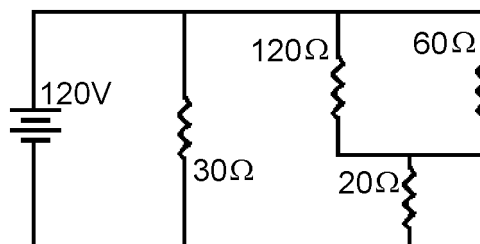
2. Base your answer to the following question on the circuit diagram shown below.
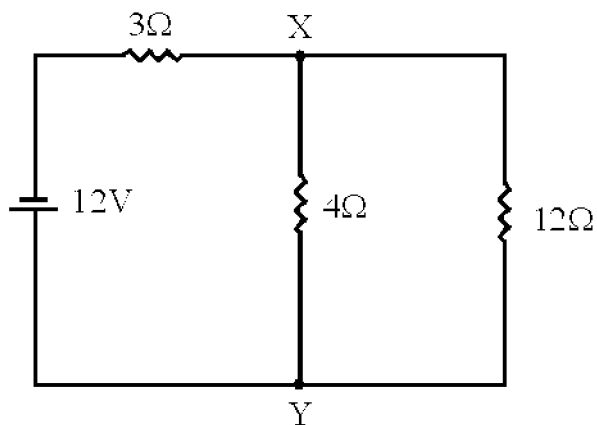
   What is the total resistance of the circuit?

   A) 1.5Ω

   B) 6Ω

   C) 8Ω

   D) 14.4Ω

   E) 19Ω

3. Base your answer to the following question on the circuit shown below.

   The equivalent resistance of this circuit most nearly

   A) 12 Ω

   B) 20 Ω

   C) 24 Ω

   D) 40 Ω

   E) 48 Ω

4. Base your answer to the following question on the diagram below which shows two different resistors, R_1 and R_2, in two different connections to the same source of emf ε that has no internal resistance.

For each question(s) pick your answer from the following list.

  I. It is greater for the parallel connection.
 II. It is greater for the series connection.
 III. It is the same for both connections.
 IV. It is different for each connection, but one must know the values of R_1 and R_2, to know which is greater.
 V. It is different for each connection, but one must know the value of ε to know which is greater.
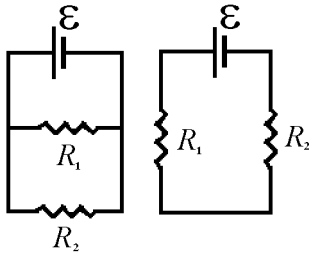
How does the equivalent resistance for these two cases compare?
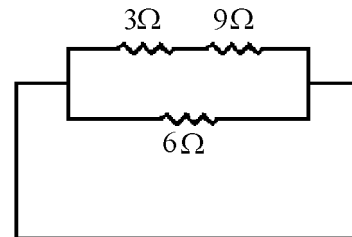
A) I

B) II

C) III

D) IV

E) V

5.
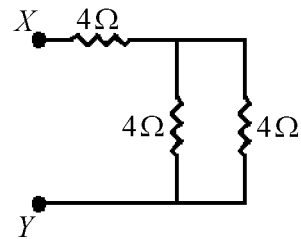
The total equivalent resistance between points X and Y in the circuit shown above is

A) 6 Ω

B) 8 Ω

C) 10 Ω

D) 12 Ω

E) 14 Ω

6.

Determine the equivalent resistance of the above combination of resistors.

A) 2 Ω
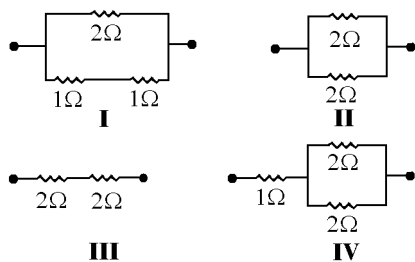
B) 4 Ω

C) 8 W

D) 10 W

E) 13 W

7.
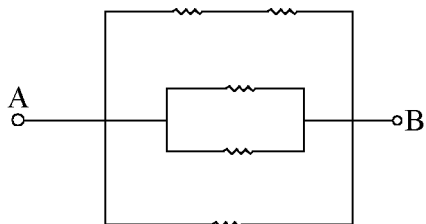
If all the above resistors have a resistance of R, determine the total equivalent resistance between points A and B.

A) $\frac{2}{7}R$

B) $\frac{2}{3}R$

C) $\frac{3}{2}R$

D) $\frac{5}{2}R$

E) $\frac{7}{2}R$

8.

Which two arrangements of resistors shown above have the same resistance between the terminals?

A) I and II

B) I and III

C) I and IV

D) II and III

E) III and IV

9. A circuit element that must be put in series and has a relatively low resistance is most likely

A) an ammeter

B) a voltmeter

C) an ohmmeter

D) either an ohmmeter or a voltmeter

E) either a voltmeter or an ammeter

10. An ammeter does not appreciably affect the current of the circuit it is placed in because

A) it is connected in parallel and has a high resistance

B) it is connected in series and has a high resistance

C) it is connected in parallel and has a low resistance

D) it is connected in series and has a low resistance

E) it is connected in either series or parallel and has no resistance

11. A voltmeter differs from an ammeter in that

A) a voltmeter is connected in parallel and has much greater resistance

B) a voltmeter is connected in series and has much greater resistance

C) a voltmeter is connected in parallel and has much less resistance

D) a voltmeter is connected in series and has much less resistance

E) a voltmeter can be connected in parallel or in series

12. What combination of 4 Ω resistors can be used to create an equivalent resistance of 10 Ω?

A) Two in parallel, in series with one

B) Three in parallel

C) Two in series, in parallel with one

D) Two in parallel, in series with two

E) Two in series, in parallel with two in series

13. A circuit is built using three resistors of resistance R.
Which of the following is a possible equivalent resistance
of the circuit?

A) $R/6$

B) $2R/3$

C) R

D) $2R$

E) $5R/2$

Answer Key
Drift Velocity MC Questions [Mar 28, 2011]

1.   D

2.   B

3.   B

4.   B

5.   A

6.   B

7.   A

8.   A

9.   A

10.   D

11.   A

12.   D

13.   B

Name _____   Class _____   Date _____

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____