تم تحميل هذا الملف من موقع المناهج الإماراتية	
	

الملف الخطة الأسبوعية للأسبوع الخامس الحلقة الثانية في مدرسة أبو أيوب الأنصاري
موقع المناهج ⇦ المناهج الإماراتية ⇦ ملفات مدرسية ⇦ المدارس ⇦ الفصل الأول

روابط مواقع التواصل الاجتماعي بحسب ملفات مدرسية			
			
روابط مواد ملفات مدرسية على تلغرام			
التربية الاسلامية	اللغة العربية	اللغة الانجليزية	الرياضيات

المزيد من الملفات بحسب ملفات مدرسية والمادة المدارس في الفصل الأول	
1	توجيهات بدء الدراسة للعام الدراسي الجديد
2	امتحانات منتصف الفصل الأول للصفين الحادي عشر والثاني عشر في مدرسة الشعلة الخاصة
3	امتحانات منتصف الفصل الأول للصفين التاسع والعاشر في مدرسة الشعلة الخاصة
4	امتحانات منتصف الفصل الأول للصفوف الخامس حتى الثامن في مدرسة الشعلة الخاصة
5	امتحانات منتصف الفصل الأول للصفوف الأول حتى الرابع في مدرسة الشعلة الخاصة

Q.5: Potential difference

What is the potential difference between two parallel plates that are (0.12 m) apart with an electric field of (2.5×10^{2} N/C) between the two plates?

ما فرق الجهد بين صفيحتين متوازيتين تفصل بينهما مسافة تساوي (0.12 m) والمجال الكهربائي بينهما يساوي (2.5×10^{2} N/C)؟

30V
12V
21V
2.5×10^{2} V

Q.8: Capacitance

A capacitor has a charge of (48 μC) on one of its plates, when the potential difference between the two plates of the capacitor is equal to (12 V). What is the capacitance of this capacitor?

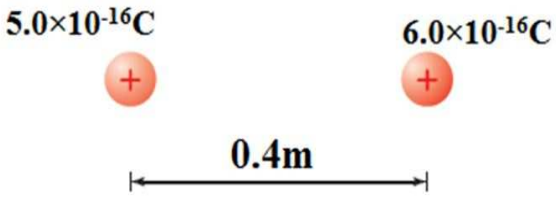
مكثف يحمل على إحدى صفيحتيه شحنة مقدارها (48 μC) عندما يكون فرق الجهد بين صفيحتي المكثف يساوي (12 V). ما سعة هذا المكثف؟

4.0 μF
0.25 μF
1200 μF
36 μF

Q.1: Electric force

What is the electric force between the two charges in the figure?

ما مقدار القوة الكهربائية المتبادلة بين الشحنتين في الشكل؟



1.7×10^{-20} N
7.5×10^{-31} N
5.0×10^{-16} N
6.9×10^{-15} N

Q.2: Electric power

Which of the following is not a valid unit for the measurement of the electric power?

أي مما يلي ليست من وحدات قياس القدرة الكهربائية؟

Watt الواط
Joul/second جول/ثانية
Joul.second ثانية.جول
Ampere.volt أمبير.فولت

Q.4: Charges

How many electrons have been removed from a positively charged electroscope if it has a net charge of (1.6×10^{-13} C)?

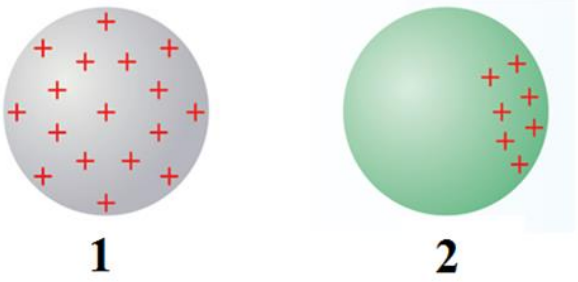
كم عدد الإلكترونات التي تم إزالتها من كشاف كهربائي موجب الشحنة عندما تكون محصلة شحنته (1.6×10^{-13} C)؟

1.0×10^{6}
2.0×10^{3}
1.6×10^{19}
2.6×10^{19}

Q.3: Conductors and insulotors

The free positive charge distribution over the surface of two isolated spheres is shown in the diagram. Which of the following is correct for the two spheres?

يوضح الرسم البياني توزيع الشحنة الموجبة بشكل حر على سطحي كرتين معزولتين. أي مما يلي يعتبر صحيحا للكرتين؟



1	2
Conductor موصلة	Insulator عازلة

1	2
Insulator عازلة	Insulator عازلة
1	2

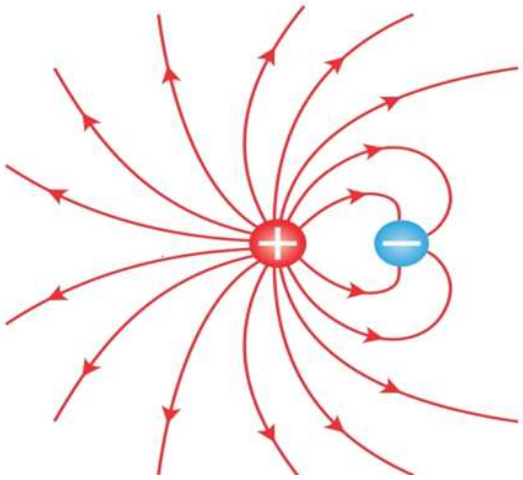
1	2
Conductor موصلة	Conductor موصلة

1	2
Insulator عازلة	Conductor موصلة

Q.6: Electric field lines

Considering the intensity of the electric field lines shown in the figure, if the negative charge is equal to (-12 µC). What is the charge of the positive charge?

استنادا لكثافة خطوط المجال الكهربائي المبين في الشكل. إذا كانت الشحنة السالبة تساوي (-12 µC).
ما مقدار الشحنة الموجبة؟



48 µC
24 µC
12 µC
6.0 µC

Q.7: Current

Which of the following equations is a correct formula for electric charge q, knowing that I and t represent current and time, respectively?

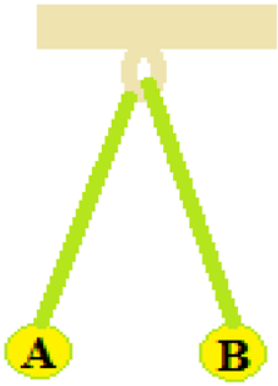
أي من التالي علاقة صحيحة للشحنة الكهربائية q ، اذا كانت I تمثل شدة التيار و t تمثل الزمن؟

$q=It$
$q=I/t$
$q=t/I$
$q= I^2 t$

Q.13: Charges

In the figure, two isolated bodies (A and B) are suspended freely. Which of the following can be correct about the charge type on the two bodies?

يبين الشكل جسمين (A و B) معزولين معلقين بشكل حر، أي مما يلي قد يكون صحيحا بشأن شحنة الجسمين ؟



تجميع منصة أينشتاين الخليج في الفيزياء Mr.Rami

A: Positive موجبة	B: Negative سالبة
A: Negative سالبة	B: Positive موجبة
A: Negative سالبة	B: Negative سالبة
A: Neutral متعادلة	B: Neutral متعادلة

Q.9: Charging

The copper rod in the figure is negatively charged. The rod contains ……. .

يبين الشكل قضيب نحاسي تم شحنه بشحنة سالبة. يحتوي القضيب على ..... .

excess neutrons نيوترونات فائضة
free protons بروتونات حرة
excess electrons إلكترونات فائضة
excess protons بروتونات فائضة

Q.10: Charging

When you charge an object by touching it by another charged object, the process is called charging by …… .

إذا قمت بشحن جسم عن طريق ملامسته لجسم آخر مشحون، فإن عملية الشحن هذه تسمى الشحن عن طريق ..... .

conduction التوصيل
induction الحث
grounding التأريض
electric field المجال الكهربائي

Q.12: Charge

When a body is charged by another body, the charge gained by the first body is …… the charge lost by the other.

عندما يتم شحن جسم بواسطة جسم آخر، فإن الشحنة المكتسبة من قبل الجسم الأول ..... الشحنة التي خسرها الجسم الآخر.

not equal لا تساوي
more than أكبر من
less than أقل من
equal تساوي

Q.14: Work done

Consider two parallel plates with (12 V) potential difference between them. How much work is done on a proton to move it from the negative plate to a positive plate?

صفيحتان متوازيتان فرق الجهد بينهما يساوي (12 V). ما مقدار الشغل المبذول على بروتون لنقله من الصفيحة السالبة إلى الصفيحة الموجبة؟

1.9×10^{-18} J
1.6×10^{-19} J
12 J
120 J

Q.15: Resistor

A light bulb has a resistor of (100 Ω) is connected to a (220 V) power supply. What is the current the light bulb draws?

مصباح كهربائي مقاومته (100 Ω) موصول بمصدر كهربائي (220 V). ما شدة التيار الذي يسحبه المصباح الكهربائي؟

2.2 A
0.5 A
100 A
220 A

L.O-1 Investigate the electrostatic forces exerted by charged objects. State and demonstrate that unlike charges attract and like charges repel

Q16. Force and Charge How are electrostatic force and charge related? Describe the force when the charges are like charges and the force when the charges are opposite.

Ans-Electric force is directly related to each charge. It is repulsive between like charges and attractive between opposite charges.

Q22.Electrostatic Forces Two charged spheres are held a distance r apart, as shown in Figure 15. Compare the force of sphere A on sphere B with the force of sphere B on sphere A.

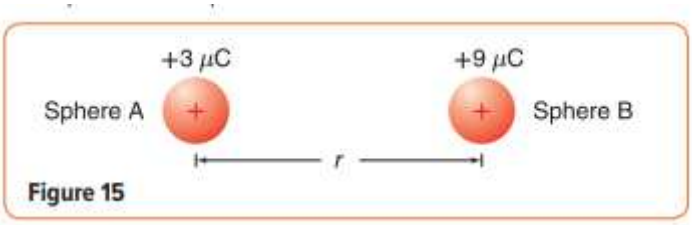


Figure 15

L.O-2 Explain the process of charging an electroscope by conduction.

Q21. Charging an Electroscope How can you charge an electroscope positively using a positively charged rod?
Ans- Touch the positive rod to the electroscope. Negative charges will move to the rod, leaving the electroscope positively charged.

b. Using a negatively charged rod?
Ans-Bring the negative rod near, but not touching the electroscope. Touch (ground) the electroscope with your finger, allowing electrons to be repelled off of the electroscope into your finger. Remove your finger and then remove the rod.

Q49. Using a charged rod and an electroscope, how can you find whether an object is a conductor?
Ans-Use a known insulator to hold one end of the object against the electroscope. Touch the other end with the charged rod. If the electroscope indicates a charge, the object is a conductor.

L.O 3 -Explain the process of charging a neutral metallic sphere with a charged rod by induction.

Q18. **Charging by Induction** In an electroscope being charged by induction, what happens when the charging rod is moved away before the ground is removed from the knob?

Ans-Charge that had been pushed into the ground by the rod would return to the electroscope from the ground, leaving the electroscope neutral.

Q.32. Explain how to charge a conductor negatively if you have only a positively charged rod.

Ans-Bring the conductor close to, but not touching, the rod. Ground the conductor in the presence of the charged rod; then, remove the ground before removing the charged rod. The conductor will have a net negative charge.

L.O 4-State and apply Coulomb's law to charges separated by finite distances.

Q9. A negative charge of -2.0×10^{-4} C and a positive charge of 8.0×10^{-4} C are separated by 0.30 m. What is the force between the two charges?

Q10. A negative charge of -6.0×10^{-6} C exerts an attractive force of 65 N on a second charge that is 0.050 m away. What is the magnitude of the second charge?

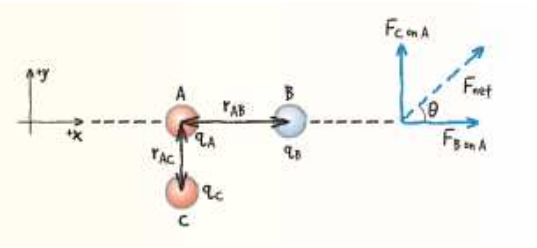
Q35. A positive and a negative charge, each of magnitude 2.5×10^{-5} C, are separated by a distance of 15 cm. Find the force on each of the particles.

Q36. Two identical positive charges exert a repulsive force of 6.4×10^{-9} N when separated by a distance of 3.8×10^{-10} m. Calculate the charge of each.

L.O-4 Use vector addition to calculate the net force on a charge due to other point charges.

EXAMPLE-1 Sphere A, with a charge of +6.0 µC, is located near another charged sphere, B. Sphere B has a charge of −3.0 µC and is located 4.0 cm to the right of A.

a. What is the force of sphere B on sphere A?



b. A third sphere, C, with a +1.5 µC charge, is added. If it is located 3.0 cm directly beneath A, what is the new net force on sphere A?

Q38. A positive charge of 3.0 µC is pulled on by two negative charges. As shown in Figure 16, one negative charge, −2.0 µC, is 0.050 m to the west, and the other, -4.0 µC, is 0.030 m to the east. What net force is exerted on the positive charge?

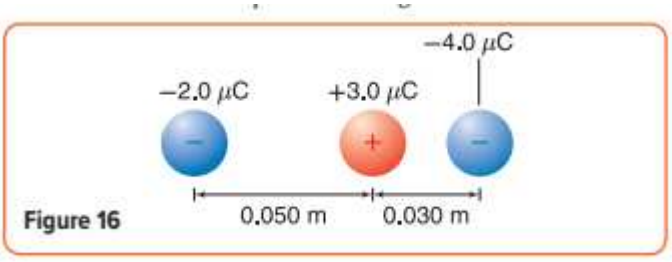


Figure 16

Q40. Three particles are placed in a line. The left particle has a charge of −55 µC, the middle one has a charge of +45 µC, and the right one has a charge of −78 µC. The middle particle is 72 cm from each of the others, as shown in Figure 18.

a. Find the net force on the middle particle.

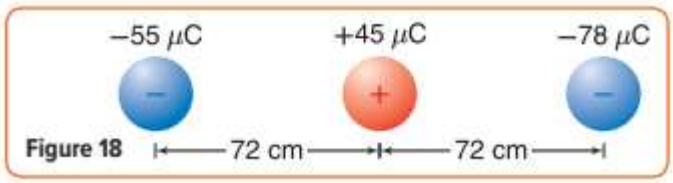


Figure 18

b. Find the net force on the right particle

Q62. Three charged spheres are at the positions shown in Figure 20. Find the net force on sphere B.

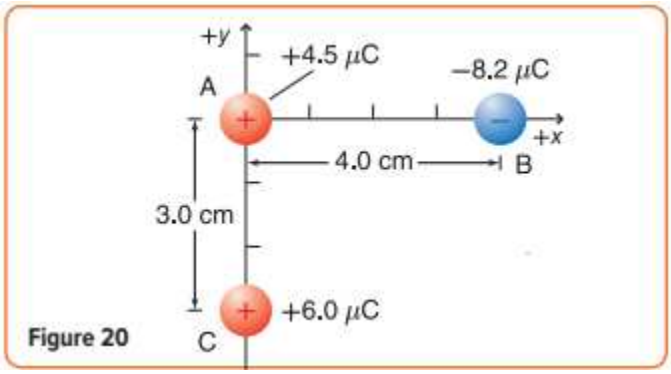


Figure 20

L.O-6 Identify the direction of an electric field as the direction of the force on a positive test charge placed in the field

50. How is the direction of an electric field defined?

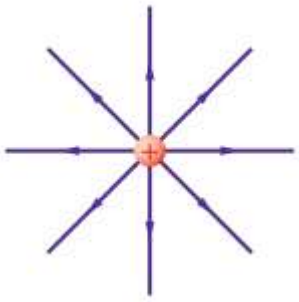
Ans-The direction of an electric field is the direction of the force on a positive charge placed in the field. This would be away from a positive object and toward a negative object.

52. How is the strength of an electric field indicated with electric field lines?

Ans-The closer together the electric field lines are, the stronger the electric field.

54. In Figure 19, where do the electric field lines that leave the positive charge end?

Ans-They end on distant negative charges somewhere beyond the edges of the diagram.



62. Carefully sketch each of the following: a. the electric field produced by a +1.0 µC charge b. the electric field resulting from a +2.0 µC charge (Make the number of field lines proportional to the change in charge.)

L.O-7 Identify the direction of an electric field as the direction of the force on a positive test charge placed in the field(Learning outcome 6 and 7 are same)

L.O8- Calculate the electric field strength at a point close a single point charge

EXAMPLE2 What is the magnitude of the electric field at a point that is 0.30 m to the right of a small sphere with a net charge of -4.0×10^{-6} C?

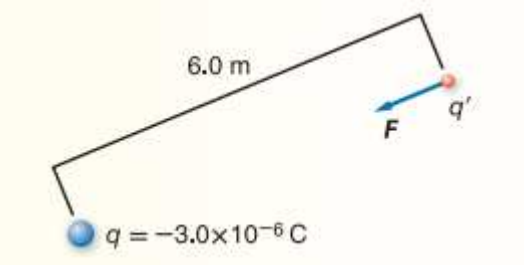
8. What is the magnitude of the electric field at a position that is 1.2 m from a 4.2×10^{-6} C point charge?

10. What is the electric field at a position that is 1.6 m east of a point charge of $+7.2\times10^{-6}$ C?

11. The electric field that is 0.25 m from a small sphere is 450 N/C toward the sphere. What is the net charge on the sphere?

12. How far from a point charge of $+2.4\times10^{-6}$ C must you place a test charge in order to measure a field magnitude of 360 N/C?

14. What is the magnitude of the electric field exerted on the test charge shown in Figure 4?



L.O-9 Demonstrate an understanding that the spacing between the field lines indicates the strength of the electric field in a given region.

50. How is the direction of an electric field defined? (ALREADY DONE IN L.O-8)

51. What are electric field lines?

Ans-An electric field line indicates the direction of the force due to the electric field on a positive test charge. The spacing between the lines indicates the electric field's strength.

52. How is the strength of an electric field indicated with electric field lines? (ALREADY DONE IN L.O-8)

53. Draw some of the electric field lines between each of the following:

a. two like charges of equal magnitude

b. two unlike charges of equal magnitude

c. a positive charge and a negative charge having twice the magnitude of the positive charge

d. two oppositely charged parallel plates

54. In Figure 19, where do the electric field lines that leave the positive charge end?

(ALREADY DONE IN L.O-8)

55. What happens to the strength of an electric field when the magnitude of the test charge is halved?

Ans-Nothing. Because the force on the test charge also would be halved, the ratio F/qand the electric field would remain the same.

L.O-10 Demonstrate an understanding that the work performed in moving a charged particle in an electric field can result in the particle gaining electric potential energy or kinetic energy or both.

26. What work is done on a 3.0 C charge when you move that charge through a 1.5 V electric potential difference?

27. What is the magnitude of the electric field between the two plates shown in Figure 12?

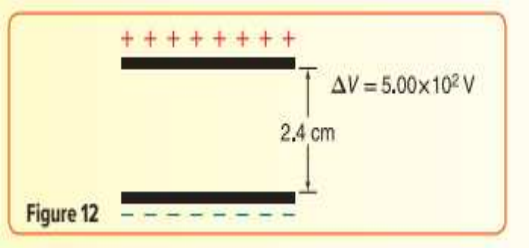


Figure 12

28. An electron in an old television picture tube passes through a potential difference of 18,000 V. How much work is done on the electron as it passes through that potential difference?

29. The electric field in a particle accelerator has a magnitude of 4.5×10^{5} N/C. How much work is done to move a proton 25 cm through that field?

30. CHALLENGE A 12 V car battery has 1.44×10^{6} C of usable charge on one plate when it is fully energized. How much work can this battery do before it needs to be energized again?

L.O-11 Calculate the electric potential difference in a uniform electric field.

21. The electric field intensity between two large, charged parallel metal plates is 6000 N/C. The plates are 0.05 m apart. What is the electric potential difference between them?

22. A voltmeter reads 400 V across two charged, parallel plates that are 0.020 m apart. What is the magnitude of the electric field between them?

23. What electric potential difference is between two metal plates that are 0.200 m apart if the electric field between those plates is 2.50×10^{3} N/C?

24. When you apply a potential difference of 125 V between two parallel plates, the field between them is 4.25×10^{3} N/C. How far apart are the plates?

25. CHALLENGE You apply a potential difference of 275 V between two parallel plates that are 0.35 cm apart. How large is the electric field between the plates?

L.O-12 Describe the charge distribution on a solid conducting sphere, a hollow conducting sphere and an irregular conducting surface

On a conducting sphere, the charge is evenly distributed around the surface.

The charges on the hollow sphere are entirely on the outer surface.

On an irregular conducting surface, the charges are closest together at sharp points.

L.O13-Apply the equation for capacitance to solve numerical problems

35. A 27 µF capacitor has an electric potential difference of 45 V across it. What is the amount the net charge on the positively charged plate of the capacitor?

36. Suppose you connect both a 3.3 µF and a 6.8 µF capacitor across a 24 V electric potential difference. Which capacitor has the greater net charge on its positively charged plate, and what is its magnitude?

37. You later find that the magnitude of net charge on each of the plates for each of the capacitors in the previous problem is 3.5×10^{-4} C. Which capacitor has the larger potential difference across it? What is that potential difference?

38. Suppose that you apply an electric potential difference of 6.0 V across a 2.2 µF capacitor. What does the magnitude of the net charge on one plate need to be to increase the electric potential difference to 15.0 V?

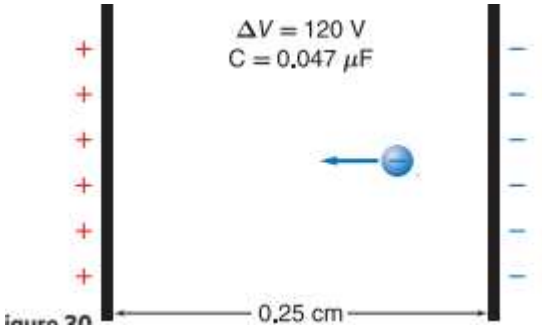
96. How much charge is on a 0.22 µF parallel plate capacitor if the plates are 1.2 cm apart and the electric field between them is 2400 N/C?

Q99. The plates of a 0.047 µF capacitor are 0.25 cm apart and are charged to a potential difference of 120 V.

a. How much charge is on the capacitor?

b. What is the strength of the electric field between the plates of the capacitor?

c. An electron is placed between the plates of the capacitor, as in Figure 30. What force is exerted on that electron?



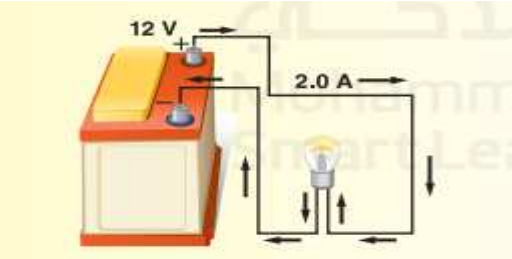
L.O-14 Identify the direction of conventional current as the direction of motion of positive charges or opposite to the flow of electrons

Conventional current is the direction in which a positive test charge moves.

The flow of electrons and the direction of conventional current are in opposite directions.

L.O-15 Apply the relationship between power, current and potential difference to solve numerical problems.

1. A car battery causes a current through a lamp and produces 12 V across it as shown in Figure 4. What is the power used by the lamp?



2. What is the current through a 75 W lightbulb that is connected to a 125 V outlet?

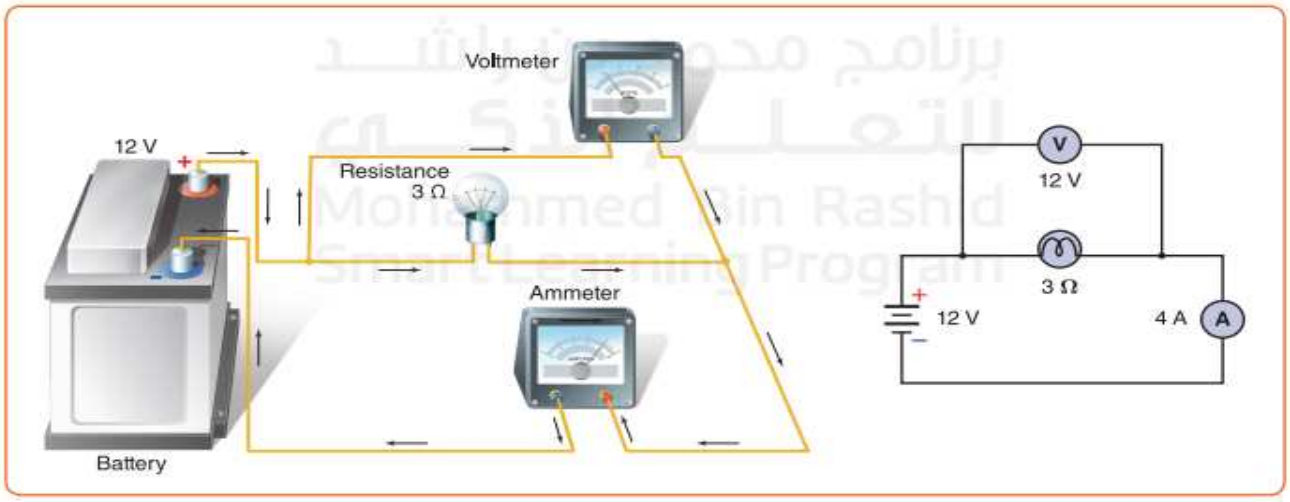
3. The current through a lightbulb connected across the terminals of a 125 V outlet is 0.50 A. At what rate does the bulb transform electrical energy to light? (Assume 100 percent efficiency.)

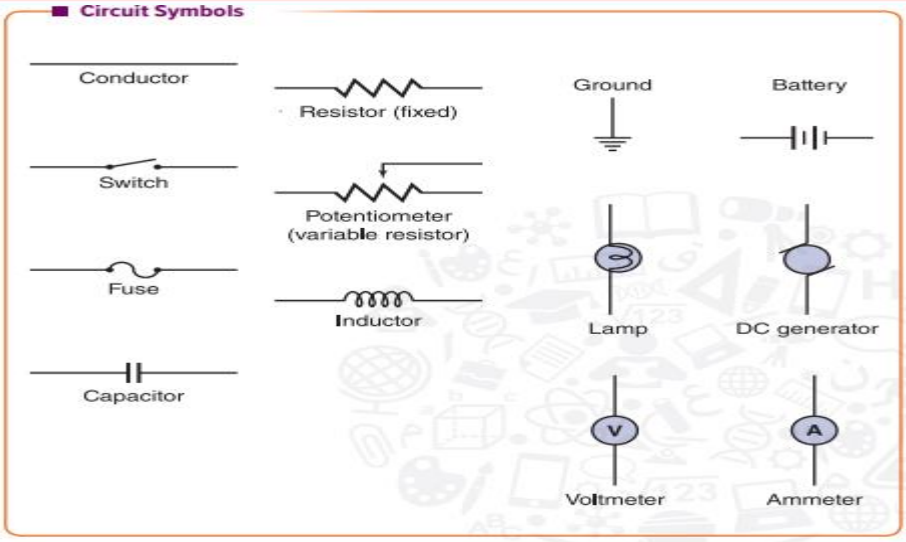
4. The current through the starter motor of a car is 210 A. If the battery maintains 12 V across the motor, how much electrical energy is delivered to the starter in 10.0 s?

5. A 75 V generator supplies 3.0 kW of power. How much current can the generator deliver?

6. A flashlight bulb is rated at 0.90 W. If the lightbulb produces a potential drop of 3.0 V, how much current goes through it?

L.O-16 Draw schematic circuit diagrams with different components along with ammeters and voltmeters correctly connected to measure current and voltage.

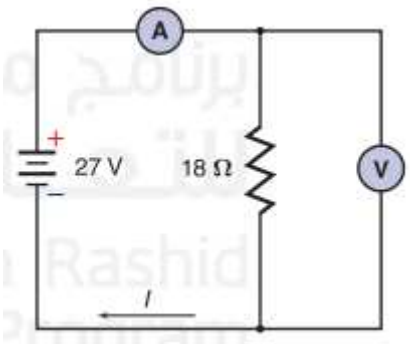




L.O-17 State Ohm's law and apply it to simple circuits

52. Refer to Figure 21 to answer the following questions.

a. What should the ammeter reading be?

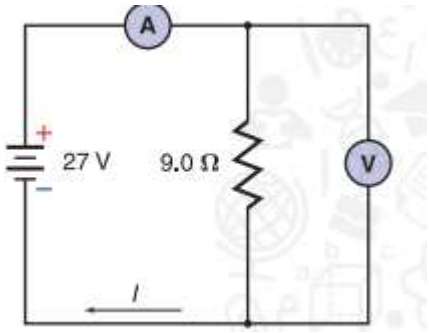


b.What should the voltmeter reading be?

c.How much power is delivered to the resistor?

d. How much energy is delivered to the resistor per hour?

55. Refer to Figure 22 to answer the following questions.



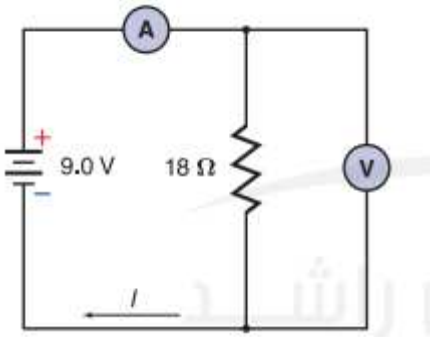
a. What should the ammeter reading be?

b. What should the voltmeter reading be?

c. How much power is delivered to the resistor?

d. How much energy is delivered to the resistor per hour?

56. Refer to Figure 23 to answer the following questions.



a. What should the ammeter reading be?

b. What should the voltmeter reading be?

c. How much power is delivered to the resistor?

d. How much energy is delivered to the resistor per hour?

60. Flashlights A flashlight bulb is connected across a 3.0 V potential difference. The current through the bulb is 1.5 A. a. What is the power rating of the bulb?

b. How much electrical energy does the bulb transform in 11 min?

61. Batteries A resistor of 60.0 V has a current of 0.40 A through it when it is connected to the terminals of a battery. What is the voltage of the battery

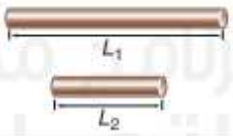
62. What voltage is applied to a 4.0 Ω resistor if the current is 1.5 A?

63. What voltage is placed across a motor with a 15 Ω operating resistance if there is 8.0 A of current?

64. A voltage of 75 V is placed across a 150 Ω resistor. What is the current through the resistor?

L.O-18 Explain the factors (like length, cross-sectional area, temperature and material of the conductor) that affect the resistance of a conductor

Table 1 Changing Resistance

Factor	How Resistance Changes	Example
Length	Resistance increases as length increases.	 $R_{L1}>R_{L2}$
Cross-sectional area	Resistance increases as the cross-sectional area decreases.	 $R_{A1}>R_{A2}$
Temperature	Resistance usually increases as temperature increases.	 $R_{T1}>R_{T2}$
Material	Keeping length, cross-sectional area, and temperature constant, resistance varies with the material used.	silver, copper, gold, aluminum, iron, platinum → *R* increases.

47. Which wire conducts electricity with the least resistance: one with a large cross-sectional diameter or one with a small cross-sectional diameter? Explain.

L.O-19. Differentiate between series and parallel connections

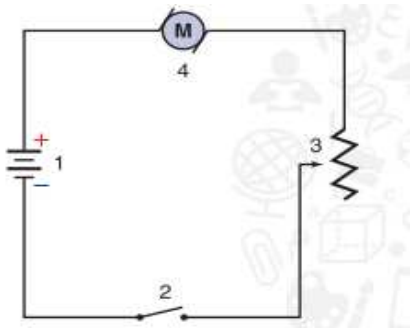
PARALLEL CONNECTION-Any time the current has two or more paths to follow in a circuit,the connection is a parallel connection.

The potential difference across the voltmeter is equal to the potential difference across the circuit element. Always associate the words voltage across with a parallel connection.

SERIES CONNECTION-A connection with only one current path in a circuit is a series connection.

In a series connection, there can be only a single path through the connection. Always associate the words current through with a series connection.

43. How should a voltmeter be connected in Figure to measure the motor's voltage?

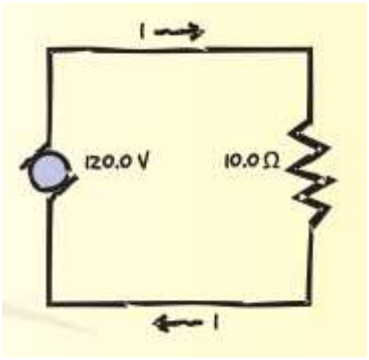


44. How should an ammeter be connected in Figure to measure the motor's current?

L.O-20 Apply the equation of power to solve numerical problems.

EXAMPLE 3 ELECTRIC HEAT A heater has a resistance of 10.0 Ω. It operates on 120.0 V.

a. What is the power of the heater?



b. What thermal energy is supplied by the heater in 10.0 s?

26. A 15 Ω electric heater operates on a 120 V outlet.

a. What is the current through the heater?

b. How much energy is used by the heater in 30.0 s?

c. How much thermal energy is liberated in this time?

27. A 39 Ω resistor is connected across a 45 V battery.

a. What is the current in the circuit?

b.How much energy is used by the resistor in 5.0 min?

28. A 100.0 W lightbulb is 22 percent efficient. This means that 22 percent of the electrical energy is transformed to radiant energy.

a. How many joules does the lightbulb transform into radiant energy each minute it is in operation?

b. How many joules of thermal energy does the lightbulb output each minute?

29. The resistance of an electric stove element at operating temperature is 11 Ω.

a. If 220 V are applied across it, what is the current through the stove element?

b. How much energy does the element transform to thermal energy in 30.0 s?

c. The element is used to heat a kettle containing 1.20 kg of water. Assume 65 percent of the thermal energy is absorbed by the water. What is the water's increase in temperature during the 30.0 s?