

slide presentations, poems, songs, etc.

- ESL students should be partnered with students who have strong language skills.
- For enrichment, adjust the depth of presentation expected.

Other Assessment Opportunities

- Assessment Checklist 2, Asking Questions
- Assessment Checklist 5, Investigating an Issue
- Assessment Checklist 6, Developing Models
- Assessment Checklist 7, Scientific Drawing
- Assessment Checklist 8, Science Fair Display
- Assessment Checklist 9, Oral Presentation
- Assessment Checklist 10, Computer Slide Show Presentation
- Assessment Checklist 11, Poster
- Assessment Checklist 21, Project Self-Assessment
- Assessment Rubric 1, Concept Rubric
- Assessment Rubric 4, Scientific Drawing Rubric
- Assessment Rubric 7, Scientific Research Planner Rubric
- Assessment Rubric 8, Research Project Rubric
- Assessment Rubric 9, Collecting Information Rubric
- Assessment Rubric 10, Presentation Rubric
- Assessment Rubric 11, Communication Rubric

UNIT 3 REVIEW ANSWERS, p. 336–339

Visualizing Key Ideas

1. **Note:** You may wish to distribute BLM 3-45, Unit 3 Review Concept Map, for students to record their answers.

Using Key Terms

2. (a) False. If an object is neutral, it has an equal number of positive and negative charges.
(b) False. When an object is charged positively, it has lost electrons.
(c) True
(d) True
(e) True
(f) True
(g) True
(h) False. In a parallel circuit, the potential difference across each resistor is the same.
(i) True

Checking Concepts

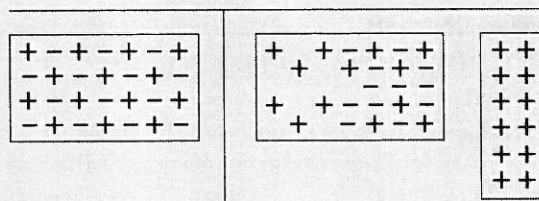
3. (a) An electroscope is used to detect static charge.
(b) An electroscope indicates the presence of a static charge by the separation of the metal leaves.

4. Positive and negative are the names given to oppositely charged objects.
5. (a) The proton and the electron are the parts of the atom that have a charge.
(b) The proton has a positive charge, whereas the electron has a negative charge.
6. An object that is grounded becomes neutral.
7. All charging is done by the transfer of electrons.
8. (a) Any metals are electrical conductors. For example: copper, aluminum, and gold.
(b) Most non-metals are electrical insulators. For example: plastic, wood, and glass.
9. Opposite charges attract. Like charges repel. Neutral objects are attracted to charged objects.
10. Voltage is the amount of electric potential energy per one coulomb of charge.
11. Kinetic energy is energy due to motion, whereas potential energy is stored energy.
12. (a) Voltage
(b) Current
(d) Resistance
13. Static electricity is charge that remains in one location, whereas current electricity is charge that is moving.
14. Conventional current is defined as the flow of positive charge and flows from the positive terminal of a battery to the negative terminal. Electron flow is the movement of negative charge and flows from the negative terminal of a battery to the positive terminal.
15. When a charge passes through a resistor, the electrical energy is transformed into other forms of energy.
16. Voltage is the product of current and resistance, or resistance is the ratio of the voltage to the current.
17. The coloured bands on a resistor indicate the value of the resistance.
18. A series circuit has only one path for electrons to travel. A parallel circuit has more than one path for electrons to travel.
- 19.

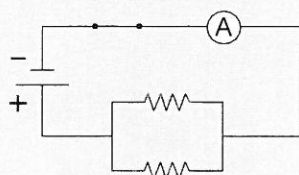
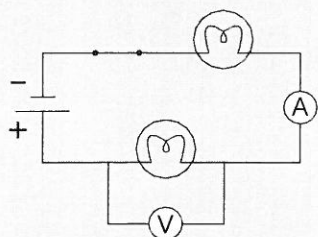
	Series	Parallel
Current in every part of the circuit	same	different
Voltage across different size resistors in the circuit	different	same
Total resistance when a resistor is added	increases	decreases

26. Lightning is created when charge is separated in the clouds. When the bottom of the cloud accumulates enough negative charge, the charge moves to the neutral Earth. This negative charge is attracted to Earth's surface because a positive charge has been induced on the surface. The charge moving between the bottom of the cloud and Earth is what we see as lightning.
27. The charged balloon induces a charge on the surface of the wall. This charge induced on the surface of the wall is opposite the charge on the balloon, therefore the balloon is attracted to the wall's surface. Since both objects are insulators, charge will not transfer between the objects.
28. Place the object against the dome of a neutral electroscope, then touch the other end of the object with the charged rod. If the charge transfers through the object and makes the leaves of the electroscope repel, it is a conductor.
29. Bring the negatively charged acetate near the charged plastic. If the charged plastic repels the acetate rod, then the charged plastic is negatively charged. If the charged plastic attracts the acetate rod, then the charged plastic is positively charged.
30. You could increase the electrostatic force between these two objects by moving them closer together or increasing the charge on either or both of the objects.
31. When something is charged by conduction, the electrons transfer from one object to the other. When something is charged by induction, the electrons relocate within the object but do not transfer between objects.

- 41.



42.



43. 440 V.

44. 20 Ω

45. 6.7 mA

46. R_2 has the largest resistance. The slope on a voltage - current graph is resistance. R_2 has a larger slope than R_1 .

47. Circuit 1: $V_1 = 7.0 \text{ V}$, $A_1 = 3.0 \text{ A}$

Circuit 2: $V_1 = 9.0 \text{ V}$, $A_1 = 3.0 \text{ A}$

48. 0.30 W

49. (a) $2.5 \times 10^6 \text{ J}$, 0.70 kW•h
(b) 5 cents

BLM 3-18, Calculate the Potential Difference

BLM 3-19, Measuring Current

BLM 3-20, Resist Your Thirst

BLM 3-21, Ohm's Law

BLM 3-22, Resistor Colour Code

BLM 3-23, Practising Calculating Resistance

BLM 3-24, Electricity Crossword Puzzle

BLM 3-25, Calculating Resistance

BLM 3-26, Resistors and Ohm's Law

BLM 3-27, Chapter 8 Quiz

BLM 3-28, Series Circuits

BLM 3-29, Parallel Circuits

BLM 3-30, Designing Circuits

BLM 3-31, Drawing Series and Parallel Circuit Diagrams

BLM 3-32, Understanding Circuit Diagrams

BLM 3-33, Calculate Voltage and Current

BLM 3-34, A Series of Lights

BLM 3-35, Parallel Lights

BLM 3-36, Resistors in Series and Parallel

BLM 3-37, Energy Transformations in Resistors

BLM 3-38, Electrical Power and Energy

BLM 3-39, Power Problems

BLM 3-40, The Price of Energy

BLM 3-41, The Cost of Electricity

BLM 3-42, A Current View of Power

BLM 3-43, Chapter 9 Quiz

BLM 3-44, Unit 3 Test

BLM 3-45, Unit 3 Review Concept Map

BLM 3-46, Unit 3 BLM Answers

Pause and Reflect Answer

Students' answers may vary but could include that electrical energy is transformed into other forms of energy by an electric load, and all charging is done by electron transfer.

UNIT 3 BLACKLINE MASTERS

BLM 3-1, Unit 3 Summary

BLM 3-2, Unit 3 Key Terms

BLM 3-3, Charge Transfer Diagrams

BLM 3-4, Charging Insulators and Conductors

BLM 3-5, Obeying the Laws of Static Charge

BLM 3-6, Conduction/Induction Venn Diagram

BLM 3-7, Conduction/Induction Charge Diagrams

BLM 3-8, Forces and Electrical Charges

BLM 3-9, Pop Can Race

BLM 3-10, Investigating Static Electricity

BLM 3-11, Chapter 11 Quiz

BLM 3-12, Fruit Battery

BLM 3-13, Making Light Bulbs Glow

BLM 3-14, Make Your Own Dimmer Switch

BLM 3-15, Drawing Circuit Diagrams

BLM 3-16, Circuit Symbols

BLM 3-17, Calculate the Current

