SNC1D
UNIT 3: CHARACTERISTICS OF ELECTRICITY
CHAPTER 11: ELECTRIC CIRCUITS

11.1: CELLS & BATTERIES

See Page 437

DEFINITIONS:

1. ***electric circuit:***

2. ***voltaic cell:***

3. ***battery:***

4. ***electrode:***

   What must electrodes be made of?

5. ***electrolyte:***

See Figure 11.3B on page 438:

Describe, in detail, how a cell works by means of the chemical reactions that take place –

TYPES OF CELLS See Page 439

Batteries and cells are classified by the electrolyte they contain: either ***dry*** or ***wet***.

① DRY CELLS

Definition:

The first invented dry cell used _____ electrodes and the electrolyte was made from _____.

More expensive dry cells were invented in 1959, called _____. They are more expensive than the original cells because _____.

See Figure 11.4 on Page 439

Four types of dry cells are:

Dry cells are often used in :

② WET CELLS

Definition:

What do most wet cells use as an electrolyte and why?

③ PRIMARY & SECONDARY CELLS:

Describe the difference between a primary cell and a secondary cell.

Name the 4 types of secondary cells and state 1 use of each.

④ FUEL CELLS & SOLAR CELLS

Briefly describe each type of cell.

FUEL CELL:

SOLAR CELL:

REVIEW 11.1

BLM 11-2

1. Use the given terms to fill in the table.

- only batteries
- few emissions
- no emissions
- batteries and a fossil-fuel engine

	Electric Car	Hybrid Car
Power Supply		
Emissions		

2. Fill in the blanks to explain why the electrodes in a cell are different metals.

One _____ must give up electrons, and different metals hold on to their _____ with different strengths. If the two _____ were made of the same material, then neither would give up its _____ to the other.

3. Which 2 sets of terms are used to classify batteries?

Wet/Dry Cell Big/Small Cell Primary/Secondary Cell Electric/Hybrid Cell

4. Circle the phrase that correctly completes the sentence.

An electrolyte

A. is a solution or paste that conducts charge

B. allows positive ions to move from one electrode to the other

C. all of the above

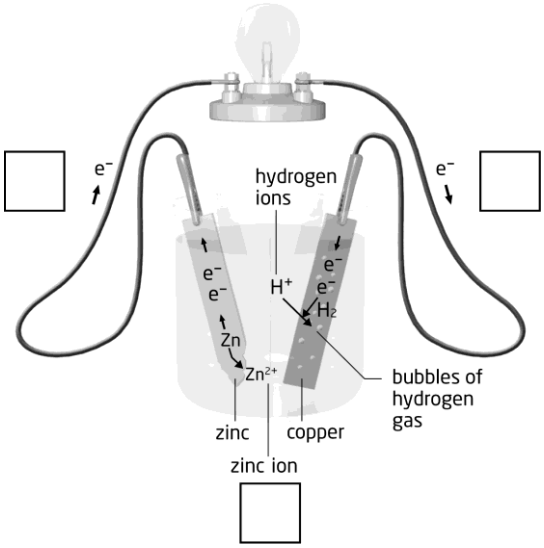
D. none of the above

5. **a.** Label the diagram with A, B, and C to illustrate what happens to the electron.

A. combining with zinc ions in the electrolyte

B. leaving the zinc electrode

C. moving through the circuit toward the copper electrode



b. Which electrode will lose mass as the cell operates? Explain your answer.

6. An experiment was done to see how long a flashlight would last with different types of batteries. Below are the results of this experiment.

Type of Battery	How Long the Flashlight Stayed On	Cost of Battery
Zinc-carbon	3 h	$3
Alkaline	6 h	$5
Nickel-metal hydride	7 h	$10

Based on these results, which battery would you buy?

7. ~~Cross out~~ the ***incorrect*** reasons to use a dry cell for flashlights.

Because dry cells last the longest.	Because it is too difficult to make wet cells.	Because fuel cells are expensive.	Because all dry cells can be recharged.

Because fuel cells require hydrogen from other sources.	Because wet cells contain sulfuric acid, which can cause injury.	Because dry cells are relatively inexpensive.

8. Label each statement about hydrogen fuel cells in cars as True (T) or False (F).

____ The emissions from the hydrogen fuel cells are a lot more dangerous to the environment than burning fossil fuels.

____ Hydrogen fuel cells are expensive.

____ Hydrogen fuel cells are not capable of providing enough energy for automobiles, buses, and can only be used for small devices such as cell phones.

____ Automobiles using the fuel cell are too noisy for the roads.

____ Hydrogen must be produced from other sources.