



## Grade 7 - Quarter 3\_Week 8

Name: \_\_\_\_\_ Grade & Section: \_\_\_\_\_

Teacher: \_\_\_\_\_ Score: \_\_\_\_\_

### Activity Sheet No. 7: Different Types of Charging Process



#### START UP

At the end of this worksheet, the learners will be able to:

1. Describe the different charging process.
2. Observe the behavior of charged objects; and
3. Cite situations that would show how the law of electrostatics is applied in one's life.



#### CAPTURE

Have you ever experienced placing your arm near the screen of the television or unrolling a new plastic cover?

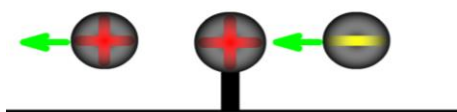
The hair on your arm will stand on their ends. This is the effect of static electricity.

Static electricity refers to electric charges at rest.

The idea of electric charges goes back to the ancient Greeks when Thales rubbed fossilized tree sap with a piece of wool which attracts light objects. This tree sap, known as *amber*, possesses an electric charge.

The interactions between the charges are summarized in the following law:

**Like Charges Repel**  
**Opposites Attract**



#### ELECTROSTATIC LAW

**Like charges repel and unlike charges attract.**

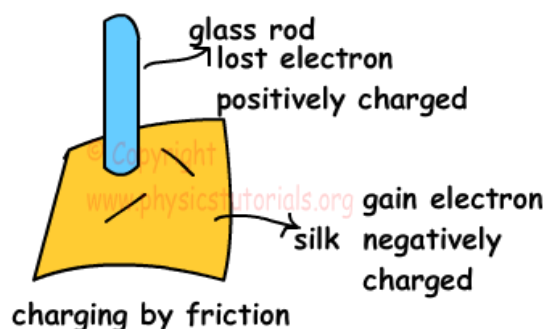
If some objects are said to be negatively or positively charged, some objects can be considered electrically neutral or uncharged. This means that their positive and negative charges are balanced.

A natural body can be charged using the different methods described below:

#### By rubbing or by friction

Rubbing two different materials against each other may cause the transfer of electrons from one material to another. This upsets the balance between the positive and negative charges.

When rubbed, some objects lose charge almost as soon as they gain it.

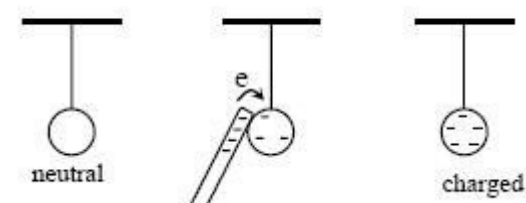
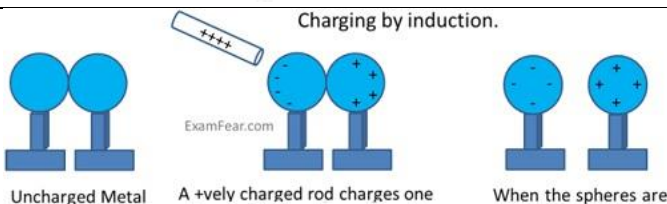




# DIVISION OF GEN. TRIAS CITY

## Project ISuLAT Activity Sheets in Science 7

(Intensified Support to Learning Alternatives Through Modules and Worksheets)

<p>This happens because electrons flow through the object or surrounding materials until the balance of negative and positive charge is restored.</p>	
<p><b>By conduction</b></p> <p>Conduction is the transfer of electrons from a charged object to another object by direct contact. In the conduction process, a body with one type of charge produces the same type of charge on a conductor.</p>	<p>Charging by conduction:</p> 
<p><b>By induction</b></p> <p>Induction is the movement of electrons to one part of an object. In the induction process, the opposite type of charge is induced.</p>	<p>Charging by induction.</p>  <p>Uncharged Metal spheres</p> <p>A +vely charged rod charges one sphere with -ve charge. The other sphere automatically gets +vely charge.</p> <p>When the spheres are separated, the charges get equally distributed.</p>



## INTEGRATE

### Learning Task No. 1: Am I Positive or Negative?

#### Objective

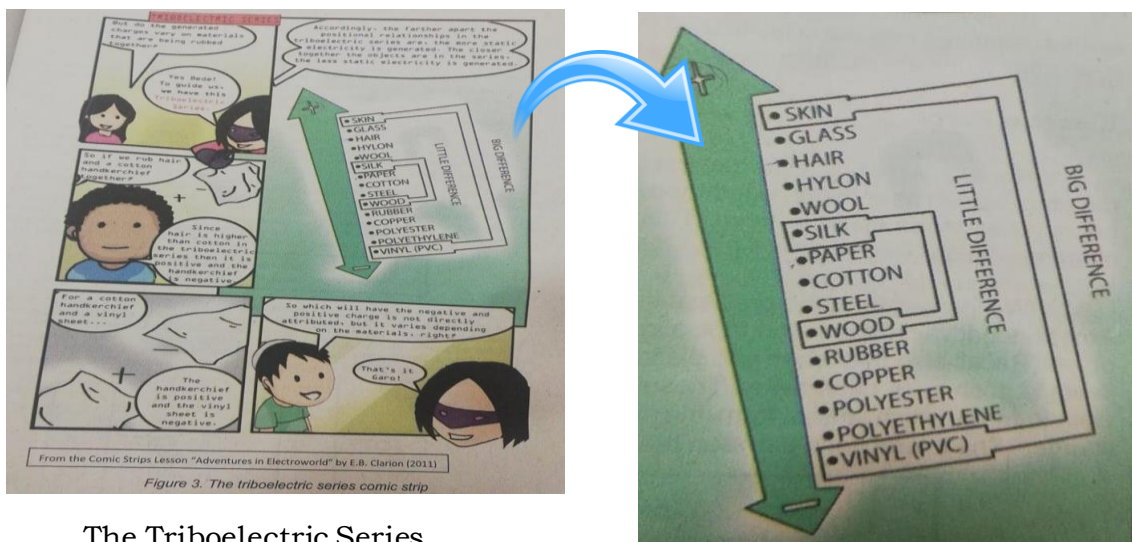
After performing this activity, you should be able to predict the materials which would lose or gain electrons when paired up following the triboelectric series.

#### Material Needed:

- Comic Strip

#### Procedure

1. Study the comic strips in Figure 3 and complete a table similar below.



The Triboelectric Series



## DIVISION OF GEN. TRIAS CITY

### Project ISuLAT Activity Sheets in Science 7

(Intensified Support to Learning Alternatives Through Modules and Worksheets)

**Direction:** Complete the table. Choose your answer in Column 2 and 4 from the pair of material in Column 1. In Column 3 and 4, identify if it is positive or negative.

**Table 1. List of materials and their charge interaction based on Triboelectric Series.**

(1) Materials Rubbed Together	(2) Material which would Lose electrons	(3) Charge of the material After Losing electrons	(4) Material which would Gain electrons	(5) Charge of material After Gaining electrons
hair and paper				
glass and copper				
steel and copper				
hair and polyester				
rubber and skin				
vinyl and wood				
wool and silk				
polyethylene and cotton				
vinyl and wool				
cotton and paper				

### Learning Task No. 2

Do the activity below to explore and explain the interaction between charges.

**Materials:** plastic comb, bits of paper

**Procedure:**

1. Run a comb through your dry hair.
2. Bring the comb near the bits of paper. Observe what happens.

**Questions:**

1. Is there any sign of interaction between the comb and the bits of paper?
2. Do you observe any interaction?
3. What have you found out in this activity?



**ENRICH**

**PERFORMANCE TASK NO. 4 (Note: Use a short bond paper)**

Electric charges obey the Electrostatic law where like charges repel and unlike charges attract. Cite situations that would show how the law is applied in your life by preparing a poster. The criteria for assessment are presented in the rubrics below.

CRITERIA	DESCRIPTION			
	4 points	3 points	2 points	1 point
Concepts/ Content Accuracy	Concepts were evident throughout; all terms used correctly.	Concepts were apparent; all but one or two terms used accurately.	Concepts were usually apparent; used some terms correctly.	Concepts were lacking most of the time; very few terms used correctly
Organization	Well-prepared and made no mechanical errors; the overall presentation was effective.	Prepared and made a few mechanical errors that did not interfere with effectiveness of the presentation.	Not completely prepared and made mechanical errors that did not interfere with the presentation.	Not prepared and made mechanical errors; some interfered with the presentation.
Creativity	Interesting, engaging, visually stimulating; aesthetically appealing use of props, colors, graphics, language, and humor.	Interest, motivation, effort, and time obviously present; very little use of props, colors, graphics, language, and humor, but enough to engage and hold attention.	Some use of props, colors, graphics, language, and humor; will engage, but will not stimulate.	Bland, no variability; did not use props, colors, graphics, language, and humor, does not catch audience attention.

Highest possible score: 12

Lowest possible score: 3



**References:**

**Textbook**

Lilia M. Rabago, Ph.D, Marie Jessica B. Alumaga, Echel Simon-Antero, Crescencia C. Juaquin, Ph.D, Catherine Genevieve B. Lagunzad, Ph. D, Ricardo M. Crisostomo, Alicia L. Padua, and Thelma R. Mingoa, Ph. D. *Science and Technology 7*. 1253 G. Araneta Ave., Quezon City, Philippines: Vibal Publishing House, 2014.

**Online Sources**

Retrieved from: <https://www.examfear.com/notes/Class-12/Physics/Electric-Charges-Fields/797/Charging-by-Induction.html>

Retrieved from: <https://www.physicstutorials.org/home/electrostatics/types-of-charging>

Retrieved from: [https://www.stickmanphysics.com/stickman-physics-home/unit-7-electrostatics/electrostatics-conduction-induction-and-friction/?fbclid=IwAR04NfuqAadATGldAyS357Aa\\_tNlc7h3B9BmN3JmMloLUR2hBsfkV2GkR0c](https://www.stickmanphysics.com/stickman-physics-home/unit-7-electrostatics/electrostatics-conduction-induction-and-friction/?fbclid=IwAR04NfuqAadATGldAyS357Aa_tNlc7h3B9BmN3JmMloLUR2hBsfkV2GkR0c)

Retrieved from: <https://www.toppr.com/ask/content/concept/charging-by-conduction-and-induction-209344/>