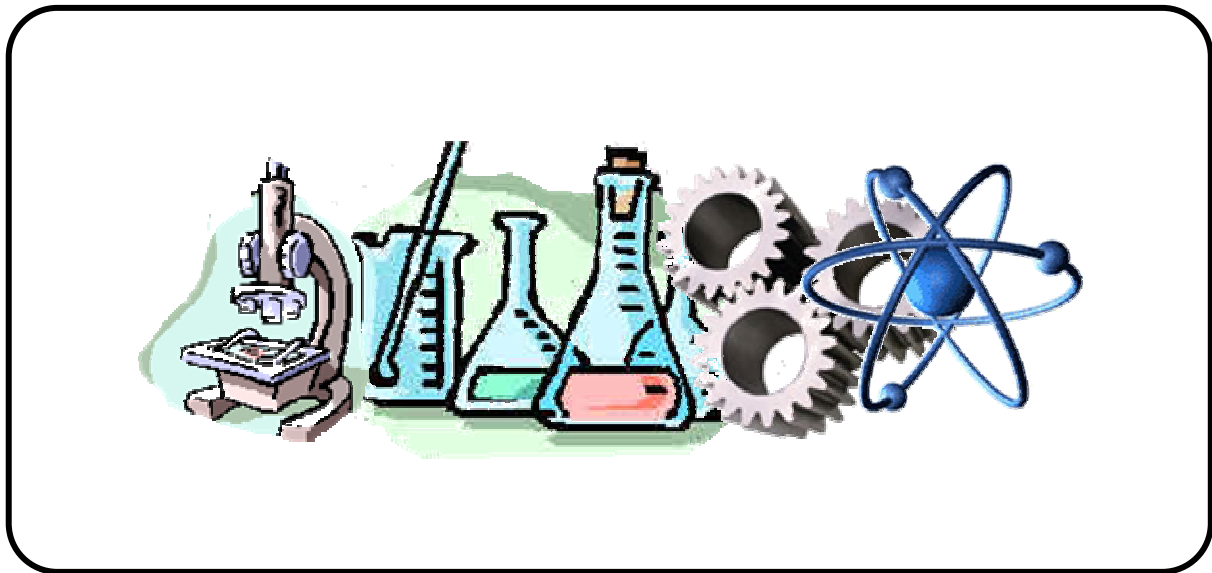


# Project EASE

(Effective and Alternative Secondary Education)

## INTEGRATED SCIENCE I



## MODULE 1



BUREAU OF SECONDARY EDUCATION

Department of Education  
DepED Complex, Meralco Avenue  
Pasig City



# Module 1

## Everyday Science



### *What this module is about*

What is science? What is technology? You know that science and technology are fields of study which are full of wonders and amazing discoveries. Today's world is an environment equipped with sophisticated machineries, which are brought about by the impact of science and technology.

Before you can understand the works of scientists, you must have a full grasp of what science is. An understanding of science and its processes must be an integral part of our daily life activities.

This module has four lessons:

- **Lesson 1 - Doing Some Science Games**
- **Lesson 2 - Impact of Science and Technology in Daily Life**
- **Lesson 3 - Superstitious Beliefs and Practices**
- **Lesson 4 - The Wonderful Traits of Scientists**



### *What you are expected to learn*

After going through this module, you are expected to:

1. give the operational definitions of science, technology, matter and its examples;
2. discuss the impact of science and technology in daily life;
3. analyze local superstitious beliefs, practices and their influences on how problems are solved in daily life; and
4. appreciate the contributions and desirable traits of outstanding scientists, both foreign and local.



## *How to learn from this module*

To achieve the objectives of this module, do the following:

1. Take your time reading the lessons carefully.
2. Follow the directions and/or instructions in the activities diligently.
3. Follow the time limit per lesson or activity as closely as possible.
4. Answer all the given tests and exercises.
5. Familiarize yourself with the following terms:

Term	Definition
Biology	- is the study of living things.
Biotechnology	- refers to all developed technologies related to living things.
Concoction	- refers to the boiled water with accompanying herbal leaves to cure some diseases.
Curiosity	- is the strong desire to understand events/phenomena.
Creativity	- is the ability to find answer to a problem using unusual or uncommon method.
Intellectual honesty	- refers to not claiming the works of others as one's own.
Open-mindedness	- not jumping to conclusions.
Rationality	- is a belief in cause and effect.
Technology	- is an application of science principles to practical use.



## *What to do before (Pretest)*

- A. In the box below are 5 categories. Identify the category to which each given superstitious belief belongs: (5 pts.)

Food and Nutrition	Health and Medicine
Livelihood (Fishing or Agriculture)	
Love and Marriage	Financial or Wealth

1) Mang Pedro is a fisherman. He goes out to the sea every night except during full moon. He says he'll never get a good catch during full moon because the fairies are around. To which category does this belong?

\_\_\_\_\_

2) While cleaning the mirror, Gina accidentally broke it. Her mother scolded her because this incident would mean they would experience bad luck for 7 years. To which category does this belief belong?

\_\_\_\_\_

3) The youngest daughter of Aling Lita does not take a bath in the evening because she believes that bathing in the evening would mean losing a cup of blood from her body. To which category does this belief belong?

\_\_\_\_\_

4) Girlie and Tom were soon to wed. They agreed that Girlie would fit her wedding gown before the wedding day to check if the fit was perfect. Their parents cautioned them against it saying that the wedding would not push through if they did so. To which category does this belief belong?

\_\_\_\_\_

5) During long summer months or dry season, farmers pray for rain to come by doing the "Rain Dance" ritual. To which category does this belief belong?

\_\_\_\_\_

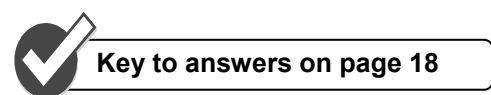
**B. Technology is either a way or manner of doing things called process or it may be the finished material called product or tools/gadgets. Classify the following technologies by writing it to its appropriate category. (12 pts.)**

Mining	Cars and Buses	Computers	Television
Shampoo	Pliers	Distillation	Hammer
Ax	Soap-Making	Pair of Scissors	Toothbrush
Candle-Making	Ballpens	Projector	Fermentation

Product	Process	Tool/Gadget
Example: Cars and Buses	Example: Mining	Example: Hammer

**C. Write the correct answer on the space provided before the number.**

- \_\_\_\_\_ 1. It is a systematized body of knowledge, which are based on series of experimentations.
- \_\_\_\_\_ 2. It refers to a scientific guess.
- \_\_\_\_\_ 3. It is anything that occupies space and it has mass.
- \_\_\_\_\_ 4. These are practices with no scientific bases.
- \_\_\_\_\_ 5. The application of scientific principles, laws and theories.
- \_\_\_\_\_ 6. He is known for his pioneering researches in the field of chemistry and technology.
- \_\_\_\_\_ 7. He found out that the planets follow an elliptical orbit.
- \_\_\_\_\_ 8. He is known for his three laws of motion.



# Lesson 1 Doing Some Science Activities

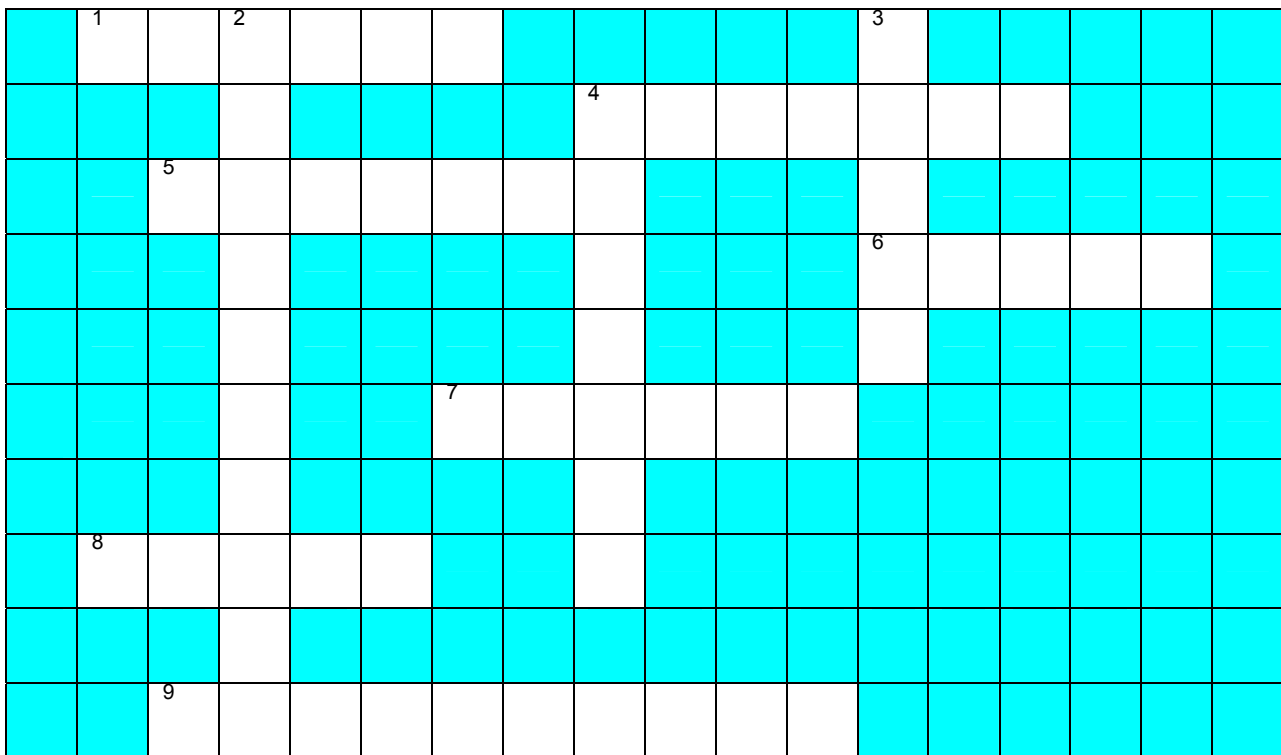
Do you know that science is fun? Try to work on these activities and experience the enjoyment that science could bring you.



*What you will do*

## Activity 1.1 Crossword Puzzle

Fill the boxes with the missing letters of the word being described across or downward.



### Across

- 1) anything that occupies space and has mass
- 4) the study of living things
- 5) a systematic body of organized knowledge
- 6) basic unit of structure among living things

### Down

- 2) the application of science principles to practical use
- 3) amount of push and pull, which can change speed and direction of moving objects
- 4) practices that have no scientific basis

- 7) the capacity or the ability to do work
- 8) the basic unit of matter
- 9) an educated guess



Key to answers on page 19



*What you will do*

**Self-Test 1.1 Answer the questions briefly.**

- 1) Give one technology and its importance to you.

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- 2) List down three examples of matter found at home. State whether it is in the form of solid, liquid or gas. Give their uses.

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- 3) Based on your examples of matter, how do you define matter? What do you call the smallest particle of matter?

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- 4) Suppose you want to find out the factors that could affect the growth of plants, what you usually do is to hypothesize. What is your idea about hypothesis?

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Key to answers on page 19



*What you will do*

**Activity 1.2 Word Grid**

Enclose the group of letters, which describes the attitudes of scientists and their way of doing things. The words can be read vertically, horizontally, diagonally and/or backwards.

H	U	M	B	L	E	X	O	P	E	N	Y	M	I	N	D	E	D	R	Z
O	V	G	N	F	Z	W	T	I	O	K	N	L	B	C	S	F	L	Q	U
N	B	K	L	O	G	I	C	A	L	W	A	I	O	Y	Z	B	P	O	W
E	R	I	U	M	V	R	R	H	Y	N	N	M	S	J	K	O	N	P	N
S	J	O	F	B	B	K	E	J	O	E	P	T	U	X	I	A	C	E	J
T	U	M	E	Y	Z	X	A	I	K	T	E	H	P	A	T	I	E	N	T
S	D	W	R	J	C	S	T	L	U	M	P	L	R	F	Y	W	Q	N	R
O	G	F	A	W	O	A	I	E	A	F	H	H	O	N	S	N	R	C	K
P	M	O	C	D	R	I	V	T	V	C	P	S	C	U	R	I	O	U	S
T	E	G	W	F	P	S	I	M	X	B	K	R	E	C	H	E	I	A	D
N	N	L	O	I	A	C	T	P	A	V	E	A	S	Z	W	T	R	C	E
X	T	P	N	T	R	X	Y	O	U	R	R	E	S	P	E	C	T	M	B



Key to answers on page 19





*What you will do*  
Self-Test 1.2

Based from the scientific attitudes formed in the word grid, answer the following questions:

A. What scientific attitude is being referred to by the following?

- 1) Give truthful opinion \_\_\_\_\_
- 2) Shows awareness of one's shortcomings \_\_\_\_\_
- 3) Improvises laboratory equipment \_\_\_\_\_
- 4) Correct reasoning and sound sense \_\_\_\_\_
- 5) Considers suggestions and accepts criticisms \_\_\_\_\_

Relate each scientific attitude identified in the word grid to the study of science.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_



Key to answers on page 20

## Lesson 2 Impact of Science and Technology in Daily Life

For sure the words “science” and “technology” have an impact in your life. You know very well that **science** refers to a highly organized and systematic body of knowledge from which all other concepts or ideas come from.

Yet, knowledge alone, if not applied, is practically useless. For example, we learn to appreciate the usefulness of wheels when these are attached to cabinets, TV racks and refrigerators, and moving these appliances becomes easy.



*What you will do*  
**Activity 2.1 My Daily Routine**

We usually follow a procedure in performing each activity listed in the table below. **For each activity, write the procedure followed and the material used in the appropriate column.**

Table 2.1 List of Daily Activities

Activities	Procedures	Materials Used
<b>Example:</b> Sleeping	<ol style="list-style-type: none"> <li>1. Wear pajama</li> <li>2. Fix the bed</li> <li>3. Pray</li> </ol>	Pajama, pillow, bed, prayer book, blanket
Swimming		
Taking a bath		
Eating breakfast		
Going to school		
Attending a birthday party		
Playing the guitar		
Studying		

Gardening		
Cleaning the house		
Relaxing at home		
Watching basketball game		
Writing a letter		
Reading daily newspaper		



**Key to answers on page 20**

Life in the last century is very different from life as we know it these days. For example in earlier times, radio and telephone were the most commonly used media to communicate and inform the people about events in our country and abroad.

Today, how do people communicate and get informed about the happenings here and abroad? We rely on cellular phones, TV with cables, Internet, e-mail and many more technologies. To know more about these technologies that make life easier try to perform Activity 2.2.



## *What you will do*

### Activity 2.2 The Gadgets that Make Life Easier

Fill out the table below by listing at least 10 technologies in the first column and the use/s of each technology in the second column.

Table 2.2 Technology and its Use/s

Technology	Use/s
<b>Example:</b> Ballpen	It is used for writing.



Key to answers on page 20

However there are some technologies that can bring more harm than good to people and environment. Living things and the environment suffer from the consequences of such technologies. Can you name at least 3 of these technologies?



## *What you will do* Self-Test 2.1

Name at least one recent discovery in each of the following fields and briefly describe them.

1. Medicine
2. Astronomy
3. Telecommunication



Key to answers on page 20

### **Lesson 3 Superstitious Beliefs and Practices**

Superstitious beliefs and practices are part of our culture. You learn about them from your relatives and friends from different places.

Here are some of the superstitious beliefs and practices that Filipinos hold:

1. When there is thunderstorm, you should cover mirrors with cloth so that this will not be struck by lightning.
2. Bad spirits are roaming around when the dog howls. Some believe that when a dog howls, something may happen like death of a family member or a neighbor.
3. When you move to a new house, the first thing to be brought is a sack of rice because this would mean good luck or prosperity.
4. The sisters or brothers in a family should not get married in the same year because only one of them will experience good fortune while the other will experience hardship during their married lives.

All superstitious beliefs have no scientific basis yet they greatly influence your way of thinking and doing things.

Our ancestors did not clearly understand the causes of many things in their environment. The occurrence of events was thought to be bringing either good luck or bad luck. However, with the advent of science and technology, we have learned to investigate and interpret events scientifically.

The succeeding activity will give you more information about these beliefs and practices.



## *What you will do*

### Activity 3.1 Superstitious Beliefs

- A. List down about 5 superstitious beliefs, which are still practiced in your community.

Superstitious Beliefs
<p><b>Example:</b> A black cat, which suddenly crosses our path, signifies bad luck.</p> <p><b>Start here:</b></p>

- B. Consider the situation below.

You are the eldest child in the family. You were made to decide what color of dress should be worn during a funeral of an immediate member of the family. Will it be white or will it be black? Why?

I will decide to...

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- 1)
- 2)



Key to answers on page 20



*What you will do*  
Self-Test 3.1

Answer briefly each of the following questions.

- 1) The wearing of “**Agimat**” or “**Anting-Anting**” to avoid getting hurt by bladed weapons is still popular among members of certain group. Do you believe that wearing this “**Agimat**” can protect you from harm? If yes why? If no why not?

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- 2) Getting married on a full moon spells a happy and fruitful marriage, especially when it falls on the 8th day of the month. Do you believe on this? Explain.

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Key to answers on page 20

## Lesson 4 The Wonderful Traits of Scientists

Our comfortable and easy lifestyles are the results of the hardwork of some scientists. These people possess certain admirable traits that are worth imitating. You can identify some of these desirable traits through this activity.



## *What you will do*

### Activity 4.1 Scientists and their Scientific Attitudes

- A. Find out the traits scientists demonstrate from the given information about them. Write it under the second column.**

Scientist	Trait
1) Galileo Galilei was curious about the heavenly bodies when he saw them the first time using a telescope. He was the first person to study the moon, the sun, the planets and the stars. What scientific trait did he possess?	1)
2) Johannes Kepler discovered that the planets follow an elliptical orbit and that their motion could be used to predict the planets' motion in the future. His discovery did not agree with the previous description of the planetary motion. He rejected the old idea because evidences supported his new findings. What scientific trait did he possess?	2)
3) Isaac Newton formulated the three laws of motion. He built his laws on the previous work of Galileo and others. But then he did not claim Galileo's work as his own. What scientific trait did he possess?	3)
4) Dr. Luz Oliveros-Belardo is a national scientist whose systematic studies of various local plants have led to the production of various new substances called essential oils which our now used in perfumes, medicine, and food. What scientific trait did she possess?	4)
5) Dr. Ricardo M. Lantican is a highly respected scientist. He is an expert in plant breeding. He is successful in his research on cytoplasmic	5)



<p>inheritance of hypersensitivity to a disease in maize. He is a man who accepts statement as a fact only if it is supported by convincing proofs. What scientific trait did he possess?</p> <p>6) Dr. William Padolina is best known for his role in the development of biotechnology. He was cited for his pioneering researches in the field of chemistry and biotechnology. He considers the evidences carefully before formulating a conclusion. What scientific attitude did he possess?</p>	<p>6)</p>
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Key to answers on page 21



*Let's summarize*

1. Science is a systematized body of knowledge based on facts known by actual experiences and observations.
2. The impact of Science and Technology is seen in the different aspects of modern life, which are both beneficial and destructive.
3. Science is viewed as a product and process.
4. Superstition is any belief or practice that is inconsistent with the laws of science. However, it is considered in a particular society as true and rational.
5. A scientist is an expert in science who does his work systematically and possesses scientific traits such as curiosity, resourcefulness, rationality, careful judgment, open-mindedness and honesty.
6. There are Filipino scientists who are known for their inventions.
  - Dr. Luz Oliveros-Belardo is a national scientist whose researches on local plants have paved the way to the production of essential oils.
  - Dr. Ricardo Lantican is an expert in plant breeding and is successful in his research on cytoplasmic inheritance of hypersensitivity to a disease in maize.
  - Dr. William Padolina is famous in the field of biotechnology.



## Posttest

**A. Superstitious beliefs could be categorized into five (5) groups such as food and nutrition, health and medicine, livelihood, love and marriage, and financial or wealth. To which category does each of these superstitious beliefs belong?**

- 1) During birthday celebration pancit or spaghetti is always served for long life.
- 2) Single ladies should not sing while cooking because they will marry an old bachelor.
- 3) You should not sleep if your hair is still wet because you will get blind.
- 4) Do not sweep the floor during nighttime because it will give you bad luck.
- 5) During New Year's Eve serve 12 different kinds of round fruits to bring in good luck for the entire year.

**B. Identify whether the following technologies is a product, a process or a tool/gadget.**

- |                |                |
|----------------|----------------|
| 1) airplane    | 7) pencil      |
| 2) baking      | 8) clothes     |
| 3) paper       | 9) boiling     |
| 4) computer    | 10) coffee     |
| 5) dyeing      | 11) brushing   |
| 6) evaporation | 12) toothpaste |
|                | 13) broom      |

**C. Read the situation below then write your views or opinion about it in 5 sentences. (3 pts.)**

A nuclear power plant is an example of a very sophisticated technology. Studies showed that using nuclear energy to generate electricity is more economical than using other sources of electricity. If you are the president of a certain country, and knowing the advantages and disadvantages of nuclear energy, will you put up a nuclear power plant? If yes, why? If no, why not?

**D. Write the correct answer on the space provided before the number.**

- \_\_\_\_\_ 1. He is known for his famous experiment in the Tower of Pisa.  
\_\_\_\_\_ 2. It is an applied science.  
\_\_\_\_\_ 3. It is a scientific trait, which describes a person for not jumping to conclusions.  
\_\_\_\_\_ 4. These are practices, which have no scientific basis.



Key to answers on page 21



## Key to Answers

### Pretest

A.

- 1) Livelihood
- 2) Financial or Wealth
- 3) Health and Medicine
- 4) Love and Marriage
- 5) Food and Nutrition

B.

Product	Process	Tool/Gadget
Cars and buses Computers Television Shampoo Toothbrush Ballpens Projector	Mining Soap-making Distillation Candle-making Fermentation	Pliers Pair of Scissors Hammer Ax

**Note: The teacher will give corresponding points.**

C.

- 1) Science
- 2) Hypothesis
- 3) Matter
- 4) Superstitious Beliefs
- 5) Technology
- 6) William Padolina
- 7) Johannes Kepler
- 8) Sir Isaac Newton

### Activity 1.1

	<sup>1</sup> M	A	<sup>2</sup> T	T	E	R						<sup>3</sup> F						
			E					<sup>4</sup> B	I	O	L	O	G	Y				
		<sup>5</sup> S	C	I	E	N	C	E				R						
			H					L				<sup>6</sup> C	E	L	L	S		
			N					I				E						
			O			<sup>7</sup> E	N	E	R	G	Y							
			L					F										
	<sup>8</sup> A	T	O	M	S			S										
			G															
		<sup>9</sup> H	Y	P	O	T	H	E	S	I	S							

### Self-Test 1.1

1. Example: Ballpen is one technology. We use it for writing.
2. Example: Water is liquid in form. It is used for drinking.
3. Matter is anything that occupies space and has mass. Atom is the smallest particle of matter.
4. Hypothesis is an educated guess.

### Activity 1.2

H	U	M	B	L	E	X	O	P	E	N	Y	M	I	N	D	E	D	R	Z
O	V	G	N	F	Z	W	T	I	O	K	N	L	B	C	S	F	L	Q	U
N	B	K	L	O	G	I	C	A	L	W	A	I	O	Y	Z	B	P	O	W
E	R	I	U	M	V	R	R	H	Y	N	N	M	S	J	K	O	N	P	N
S	J	O	F	B	B	K	E	J	O	E	P	T	U	X	I	A	C	E	J
T	U	M	E	Y	Z	X	A	I	K	T	E	H	P	A	T	I	E	N	T
S	D	W	R	J	C	S	T	L	U	M	P	L	R	F	Y	W	Q	N	R
O	G	F	A	W	O	A	I	E	A	F	H	H	O	N	S	N	R	C	K
P	M	O	C	D	R	I	V	T	V	C	P	S	C	U	R	I	O	U	S
T	E	G	W	F	P	S	I	M	X	B	K	R	E	C	H	E	I	A	D
N	N	L	O	I	A	C	T	P	A	V	E	A	S	Z	W	T	R	C	E
X	T	P	N	T	R	X	Y	O	U	R	R	E	S	P	E	C	T	M	B

## Self-Test 1.2

A.

1. honest
2. humble
3. creative
4. logical
5. open-minded

**B. (Note: The teacher is given the option to check student's responses. Their answers may vary)**

Example: Scientist should be honest in reporting the data of his experiment. He should state whether it has a positive or negative effect to the community.

Rubric Scoring

- 2 - Give at least two correct descriptions of the given scientific attitude as applied to the study of science.
- 1 - Give one correct description of the given scientific attitude but with some grammatical errors.
- 0 - Give incorrect description of the specified scientific attitude.

## Activity 2.1

(Note: The teacher is given the option to check student's responses. Their answers may vary.)

## Activity 2.2

(Note: The teacher is given the option to check student's responses. Their answers may vary.)

## Self-Test 2.1

(Note: The teacher is given the option to check student's responses. Their answers may vary.)

Example: In Medicine - A Laser Probe was discovered, which could detect 90% of pre-cancerous cells. LASER stands for Light Amplification by Stimulated Emission of Radiation.

Rubric Scoring

- 2 - Give two or more correct descriptions of the discovery in a specified field like medicine. Use correct grammar.
- 1 - Give one correct description of the discovery with no grammatical error.

0 - Give incorrect description of the discovery in a certain field.

### **Activity 3.1**

A. (Note: The teacher is given the option to check student's responses. Their answers may vary.)

B. (Note: The teacher is given the option to check student's responses. Their answers may vary.)

#### Rubric Scoring

2 - No right answer. It could be white or black. Give correct justification and with no grammatical errors.

1 - Give correct justification with some grammatical errors.

0 - No justification for the answer.

### **Self-Test 3.1**

1. I don't believe in "agimat" or "anting-anting" because there is no scientific basis that can support this observation.

2. I don't believe because a happy and fruitful marriage depends upon the good relationships between the couple.

### **Activity 4.1**

- 1) He is curious.
- 2) He is open-minded.
- 3) He is intellectually honest.
- 4) She is resourceful.
- 5) He exhibits rationality.
- 6) He has careful judgment.

### **Post-test**

A.

- 1) Food and Nutrition
- 2) Love and Marriage
- 3) Health and Medicine
- 4) Livelihood
- 5) Livelihood

B.

- 1) Product
- 2) Process
- 3) Product
- 4) Product
- 5) Process
- 6) Process
- 7) Product
- 8) Product
- 9) Process
- 10)Product
- 11)Process
- 12)Product
- 13)Tool

C. (Note: The teacher is given the option to check student's responses. Their answers may vary.)

Rubric Scoring

- 3 - Give two advantages and one disadvantage of putting up nuclear power plant.  
Give correct justification with no grammatical errors.
- 2 - Give one advantage and one disadvantage with no grammatical errors.
- 1 - Give one advantage and one disadvantage with grammatical errors.
- 0 - No correct answer.

D.

- 1) Galileo Galilie
- 2) Technology
- 3) Open-mindedness
- 4) Superstitious Beliefs

**-End of Module-**

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