

GROW YOUR PALS PROGRAM GUIDE



THE NATIONAL FFA MENTORING PROGRAM

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LESSON 1.36

What Decomposes and What Doesn't?

Unit:
ENVIRONMENTAL SCIENCE

PRECEPTS

A. Action

- A1. Work independently and in groups to get things done



Lesson Type:
Large Group

NATIONAL STANDARDS

ESS.03.05.01.b. Distinguish the characteristics of inorganic and organic compounds as they relate to environmental service systems.

NL-ENG.K-12.12 - Applying Language Skills

NS.K-4.1 Science as Inquiry

NS.K-4.4 Earth and Space Science

STUDENT LEARNING OBJECTIVES

As a result of this lesson, the student will ...

- Define organic matter, *organic*, *inorganic* and *decompose*.
- Discuss the concept and purpose of *controls* in scientific experiments.
- Explain the process of decomposition, including conditions necessary for it to occur.
- Explain the importance of proper disposal of non-decomposing items.





TIME

Instruction time for this lesson: **50-75 minutes; additional time for allowing material to be in ground and then recovering material at a later date.**



RESOURCES

National FFA Organization. (2003). LifeKnowledge Precepts and Signs of Success Strategies for Great Teaching. (Reardon and Derner) – for use in lesson review/evaluation



TOOLS, EQUIPMENT AND SUPPLIES

- ✓ Scissors
- ✓ Permanent marker to identify group names
- ✓ Shovel
- ✓ Ice pick or nail
- ✓ One square foot hole per each group
- ✓ One piece of paper per person
- ✓ One pencil per person
- ✓ One piece of construction paper per person
- ✓ Magazines
- ✓ PALS1.36.LG.ASSESS.A- one per student

Per Group:

- ✓ One paper bag for control items (*if needed*)
- ✓ Ground markers for buried jugs
- ✓ Two paper lunch bags
- ✓ Two plastic sandwich bags
- ✓ Two plastic pens
- ✓ Two wooden pencils
- ✓ Two paper napkins
- ✓ Two Styrofoam plates
- ✓ Two paper plates
- ✓ One gallon milk jug - cut off tops prior to class

KEY TERMS



The following terms are presented in this lesson and appear in ***bold italics***:

Organic

Inorganic

Decompose

Control



CONTENT OUTLINE

Objective 1. | Classify *Organic* and *Inorganic Matter*

A. Obtain the needed materials:

1. *Organic Matter*

- a. Two paper lunch bags
- b. Two pencils
- c. Two paper plates

2. *Inorganic Matter*

- a. Two sandwich bags
- b. Two pens
- c. Two Styrofoam plates

Objective 2. | Identify a *control* group.

A. One of each item from *organic* and *inorganic matter*.

B. Place the six items in a marked bag with group name and store.

Objective 3. | Prepare containers to bury materials.

A. Prior to class, make sure you have cut off the tops of one milk jug per group and poked holes inside them

B. Place *organic* and *inorganic* matter into jugs

C. Mark ground where jugs were buried

D. Draw predictions of what garbage will look like

Objective 4 | Three months later, remove jugs from ground.

A. Carefully remove contents

B. Identify *organic and inorganic matter* found

C. Compare to *control* group

D. Identify and define items that have *decomposed*

INTEREST APPROACH

Students will begin today's lesson by participating in a Motion e-Moment®. Students will act out if items are grown in the ground or man made.



Raise your hand if you have ever helped your family take the garbage out? It is a job that is not always fun but just has to be done.



Let's play a game. I will tell you the name of an item. If that item came from something that grew out of the ground, you will crouch down with your hands above your heads and stand up as if you are growing out of the ground. If the item did not come from the ground, you will make yourself into a ball on the floor. What questions do you have? Great, let's get started.

1. Pencil; students should stand as if they are growing--yes, a pencil comes from the wood in trees.
2. Plastic bags; students should make a ball on the floor--yes, plastic is something made by people.
3. Paper; students should stand as if they are growing--yes, paper comes from trees.
4. Marker; students should make a ball on the floor--yes, markers are something made by people.
5. Plastic orange juice container; students should make a ball on the floor--yes, plastic is something made by people.
6. Paper milk jug; students should make a ball on the floor--yes, paper comes from trees.

Great job! Today we are going to examine the products we put into our garbage and what happens to our garbage when it is put into the ground.

SUMMARY OF CONTENT AND TEACHING STRATEGIES

OBJECTIVE 1. | Classify *organic* and *inorganic* matter.



*Each group of four students will identify the six objects as **organic** or **inorganic**.*



Items that we just talked about, such as pencils, paper and other items, that grow from the ground are also called **organic** items. **Organic** means an item is made of natural materials. Other items such as plastics, glass and metals like a tin can are also called **inorganic**. **Inorganic** means something that has to be made and does not grow from the ground.

Line up shoulder to shoulder facing the front of the room, you have 15 seconds. Go.

Or, use your own method to divide the groups. Next divide the students into groups of four.



As a group you will be given 12 items. Your challenge is to place these items into two different groups. The first group is “**organic**” and the second is “**inorganic.**” When you think you have them in the correct group stand up!

With your group, report to a special place in the room where you can begin your sort! Send the tallest person to the front of the room to receive your materials.

Or use your own method to begin the sorting process; you may want to have the 12 items already grouped together to cut down on time. Good luck!

I. Classify **Organic** and **Inorganic Matter**

A. Obtain the needed materials

1. **Organic Matter**

- a. Two paper lunch bags
- b. Two pencils
- c. Two paper plates

2. **Inorganic Matter**

- a. Two sandwich bags
- b. Two pens
- c. Two Styrofoam plates

Check for understanding, move through the room to check in with each group.



Have the shortest person in your group share one item and if that item is **organic** or **inorganic**.



When all groups have placed items in correct category you may move on!



Congratulations! You are ready to throw this garbage out!

OBJECTIVE 2. | Identify a **control** group.



*Help students set the stage for a **control** group.*



Before we throw this garbage away, let’s use half of these items to help us remember what they looked liked today. In a moment you will take one of each item and place it in a bag with your groups name upon it.

Have each group put their material in a bag and use a marker to write the team members names on the front and store.



Why would it be important to remember what this garbage looks like today before we throw it into the ground?

We are looking for a way to compare how they look today to how they look after they have been in the ground.

We will call this our **control** group. These items will **control** how they looked when we first started our experiment today.

II. Identify a **control** group

- C. One of each item from **organic** and **inorganic matter**.
- D. Place the six items in a marked bag with group name and store.



What questions are there?

*Help students gather the appropriate materials for their **control** group.*

OBJECTIVE 3. | Bury jugs of garbage in the ground.



Students will place their “garbage” into jugs, place into pre-dug holes and mark with a group name marker.



Each group is receiving a jug (*hand out jugs*). Place the remaining six items into the jugs. (Give groups time to complete this task) When I say GO your group will line up with your jug. We will head outside and bury our garbage in the ground. What questions are there?

GO

III. Prepare containers to bury materials

- E. Prior to class, make sure you have cut off the tops of one milk jug per group and poked holes inside them
- F. Place **organic** and **inorganic** matter into jugs
- G. Mark ground where jugs were buried
- H. Draw predictions of what garbage will look like

Review the process and identify the time it will take before we can dig up the garbage. Have them make predictions as to what they think will happen.



In three months, we are going to come back to these jugs, dig them up and take a look at our garbage. What do you think it will look like?

Head back to classroom



Let's draw a picture of our predictions and put it in our bags with our **control** items.



*Hand out paper and pencils to students and allow them to draw their predictions. Make sure they have their names on the papers before you put them into their **control** group bags. You may want to show on a calendar when three months from today will be.*



MINI REVIEW/EVALUATION

*Check for understanding of key terms **organic matter**, **organic** and **inorganic**. Have students search the classroom for one item that is **organic** and one item that is **inorganic**.*



In a moment you will search the room to find one item that you believe is **organic** and place it here on the floor. *Designate an area for **organic** and **inorganic** items.* Also find one item that you believe is **inorganic** and place it over here. What questions do you have? Begin.

Once all objects are in place, quickly review and check with class for their agreement.



Let's see how the whole group feels about our **organic** and **inorganic** items. Thumb's up if you agree. Thumb's down if you disagree. Congratulations! You have done a great job identifying what is **organic** and **inorganic matter** today as well as creating a **control** group for our garbage experiment! I will be looking forward to seeing you in three months and discovering what happens to our garbage.

THREE MONTHS LATER

OBJECTIVE 4. | Three months later, remove jugs from the ground.



*Review process of finding **organic** and **inorganic** matter, and what our **control** group will do.*



I have been looking forward to this day for three months! Who will share with us what today is all about?

(Wait for response) .



Today is the day we will find out what has happened to that garbage we buried. What kind of garbage did we bury?

*Looking for **organic** and **inorganic** matter.*



That's right! How did we decide to remember what the garbage looked like on the day we buried it?

*Looking for a **control** group.*



Yes, we saved one of each piece of garbage as our **control** group so that we would know for certain what our garbage looked like. Let's go out and dig it up.

For younger groups, you may want to have jugs dug up and waiting next to the holes.



Carefully lay out the items from your jugs. Take out the **control** group and compare. What is the same? What is different? Were your predictions correct? *(Remind them to look at the predictions they made and see if they were correct or incorrect).*

IV. Three months later, remove jugs from the ground

E. Carefully remove contents

F. Identify **organic and inorganic matter** found

G. Compare to **control** group

H. Identify and define items that have **decomposed**



*Identify what decomposing means and what items may have **decomposed**.*



What did you notice about your **inorganic** items? *They did not change, perhaps dirtier.*

What did you notice about your **organic** items? *They started to fall apart.*

That is what we call to **decompose**. **Decompose** means that an item can break down and become part of the earth. It is a circle; the material grows from the ground and then can break apart and become the earth for other plants to grow from.



REVIEW / SUMMARY

Draw conclusions based upon findings.

*Cut out magazine pictures to make a collage of items that are **organic** and **inorganic**.*



We will create a poster. On one side we will have pictures of items that we could throw away and would **decompose**, or **organic matter**. On the other side we will have pictures of items that we could throw away and they would stay the same, or **inorganic matter**. Here are magazines. Take three pictures of **organic** material and paste on this side. Take three pictures of **inorganic** matter and paste on this side.

Once students are finished, check their work and hang art on the wall. You may want to have a sample of finished work.



Great work! You now are experts in **organic** and **inorganic matter**, and what items we throw away can **decompose** into the ground. Your next challenge is to put that knowledge to use the next time it is your job to take out the garbage. What will you put in the ground?

APPLICATION



Small Group Suggestion

Take a trip to a local recycling plant. Take a look at what can and can't be recycled and discuss why?



One-on-One Suggestion

*Make a poster using pictures from magazines about what is **organic** and what is **inorganic**.*



PALS1.36.LG.ASSESS.B | EVALUATION ANSWER KEY

Have the students complete the evaluation sheet that includes identifying six common items as *organic* or *inorganic* by correctly circling the correct label. Use PALS1.36.LG.ASSESS.A.

ANSWERS TO EVALUATION:

See PALS1.36.LG.ASSESS.B

PALS1.36.LG.ASSESS.A

Name _____

Date _____

Please identify if each object is organic or inorganic by circling the correct label for the following items.



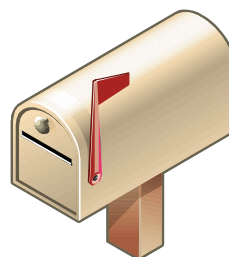
Organic or Inorganic



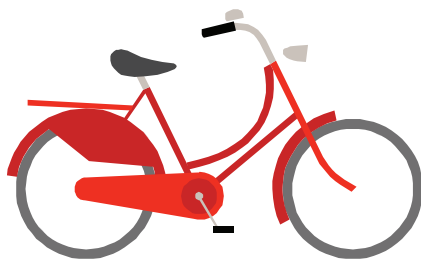
Organic or Inorganic



Organic or Inorganic



Organic or Inorganic



Organic or Inorganic



Organic or Inorganic

PALS1.36.LG.ASSESS.B

Name _____

Date _____

Please identify if each object is organic or inorganic by circling the correct label for the following items.



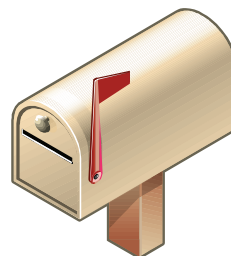
Organic or Inorganic



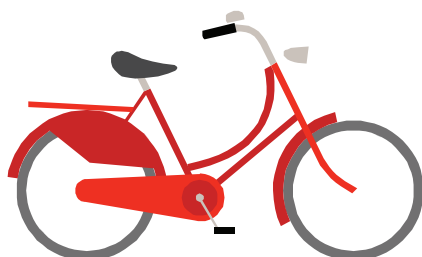
Organic or **Inorganic**



Organic or Inorganic



Organic or **Inorganic**



Organic or **Inorganic**



Organic or Inorganic