

Oregon



**Developed By:**

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# Summer Ag Institute Lesson Plans

**Title of Lesson:**

**Worm Composting in the Classroom**

**Academic Subject:**

**Science, Math**

**Theme:**

**Life Processes**

**Grade Level:**

**5**

**CIM/CAM Standards:**

1. Math—Measure length, weight, area, and temperature/Estimate measurements/Review calculations and strategies to verify accuracy and reasonableness.
2. Physical Science—Describe objects according to physical properties/ Describe changes that occur in matter.
3. Life Science—Describe the basic needs of living things/Describe a habitat and the organisms that live there.

**Learner Objective: (The student will)**

1. Be able to show understanding of what part worms play in creating healthy soil.
2. Help to feed, monitor conditions, and maintain a healthy environment in which worms can live.

## Vocabulary:

1. pH—possibility of hydrogen.
2. digest—to break down food into a form the body can use.
3. decompose—to break down a complex food into more simple foods for digestion.
4. topsoil—the top layer of ground that has more food for plants.
5. subsoil—the layer of ground under the topsoil that is denser and has less food for plants.

**Anticipatory Set:** If possible, take the students outside and dig up some dirt. Notice what is there, and when you find a worm, ask students if they know why worms are there and what they do.

## Instructional Outline (Teaching Content)

1. Volume =  $l \times w \times h$   
Fluid volume of pints, quarts, gallons
2. Weight is measurement of how heavy something is.
3. “A pint is a pound the whole world round”  
One pint = 1 pound  
1 lb. Paper gets 3 lbs. Water. Calculate  $4 \times 3 = 12$  pts.
4. Estimate how many worms are in 1 lb. or weigh out 1 lb. worms.
5. Observe and talk about the parts and the behavior of worms. Intro and discuss “Vocabulary” and “Worm Trivia” (also attached sheets on anatomy).

## Strategies

### (What to do, explain or have students do)

1. Find the fluid volume of various bins. Determine the volume of the bin to be used. (See sheet on “Making a Compost Bin”) Adult makes the compost bin. Then,
2. Estimate 1 pound of newspaper. Weigh out 4 lbs. of newspaper, from instructions. Rip, rip, rip. See “Making a Compost Bin”.
3. See instructions. Add enough water so that it is “as moist as a wrung-out sponge”.
4. Wanna count worms? You decide how many.
5. Have students notice that worms are sensitive to light, are slimy, have segments and a fat middle section.

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| <p>6. Estimate and weigh out various combinations of fruit and vegetable scraps to make 1 pound. Discuss volume and density.</p>   | <p>6. See sheet on “Foods to Avoid”. Compare the volume of 1 lb. Lettuce with 1 lb. Potato.</p>  |
| <p>7. Explain how a worm breathes (through its skin) so its bedding must be moist and breathable. Have students predict what will happen when the worms are introduced to the bin and why.</p> | <p>7. Put moistened bedding into bin (“As moist as a wrung-out sponge”) and introduce worms and prepared food scraps. Cover food scraps with sawdust.</p>  |
| <p>8. Temperature range 55-75/ Optimal 72-74<br/>pH range 6-8 / Optimal pH 7<br/>Optimal humidity or moistness is 80%</p>  | <p>8. Take temperature, pH, and moisture readings. Adjust as needed. Close lid. See “Bin Maintenance”.</p>   |
| <p>9. From a daily to semi-weekly basis, monitor food, temperature, pH, moistness. Intro and anticipate “Compost Neighborhood” critters. Continue for at least 6 weeks.</p>                    | <p>9. Keep simple records of conditions and mark feeding spots. Check in with “Troubleshooting” and “Bin Maintenance” frequently for a successful project and opportunities for follow-through activities listed under Closure section</p> |