

# NTTI Media-Rich Lesson

Andrea Smith

---

**NAME**

Help, I'm Shrinking!

---

**LESSON TITLE**

Third Grade

---

**GRADE LEVELS**

4 45-Minute Class Periods

---

**TIME ALLOTMENT**

---

**OVERVIEW**

Imagine being so small that everything else appears really big. When size changes so does your perspective. As students read "Hotel Animal" they will find out how two alligators manage to survive on vacation where they are smaller than everyone else in the hotel. Finally, students will see how MATCH BOX car designers use mathematical know-how to scale down the size of an actual car. The students will use their knowledge of size and measurement to draw to scale their shrinking classmate.

---

**SUBJECT MATTER**

Mathematics

---

**LEARNING OBJECTIVES**

Students will be able to...

- Draw a figure given its measurements
- Calculate the measure of an object twice its size or more
- Use appropriate instrument and unit of measurement for measuring the size of an object
- Scale up or down to draw figure
- Identify geometric relations

---

**STANDARDS**

## MATHEMATICS

**National Standards** - National Council of Teachers of Mathematics (NCTM)

Standards 3, 4, and 5: [Geometry & Spatial Sense and Measurement](#)

Geometry Standards for Grades 3–5

<http://www.standards-e.nctm.org/document/chapter5/geom.htm>

**State Standards** – Georgia Quality Core Curriculum Standards (QCC)

Geometry & Spatial Sense: Measurement

### [Grade 3](#)

**Topic:** Spatial Sense 7

**Standard:** Visualizes, draws, and compares geometric shapes in various positions / orientations.

**Topic:** Geometry 9

**Standard:** Identifies geometric relations (parallel, inside, outside, same size, same shape, same size and shape, shorter/ shortest, longer/ longest, smaller/ smallest, larger/ largest) geometric transformations (same size and shape, but different position) and line of symmetry. **Topic:** Measurement 11

**Standard:** Measures using appropriate instruments and appropriate units, length, capacity, weight/mass, time, and temperature. Length, Millimeter, Inch, Centimeter, Foot, Meter, Yard, Kilometer, Mile, Capacity, Milliliter, Ounce, Liter, Cup, Pint (Liquid and Dry), Quart (Liquid and Dry),

Gallon, Weight/Mass, Gram, Ounce, Kilogram, Pound, Time, Second, Week, Minute, Month, Hour, Year, Day, Decade, Century, Temperature, Degree Fahrenheit, Degree Celsius

**Topic:** Measurement 13

**Standard:** Selects appropriate customary and metric units of measure. Length, Millimeter, Inch, Centimeter, Foot, Meter, Yard, Kilometer, Mile, Capacity, Milliliter, Ounce, Liter, Cup, Pint (Liquid and Dry), Quart (Liquid and Dry), Gallon, Weight/Mass, Gram, Ounce, Kilogram, Pound, Time, Second, Week, Minute, Month, Hour, Year, Day, Decade, Century, Temperature, Degree Fahrenheit, Degree Celsius.

**Topic:** Word Problems 36

**Standard:** Solves one- and two-step word problems related to appropriate third grade objectives. Includes oral and written problems and problems with extraneous information as well as information from sources such as pictographs, bar graphs, tables, and charts. **MEDIA COMPONENTS**

### Video

[Hotel Animal](#), Reading Rainbow, Episode 123

This video, hosted by LeVar Burton explores some of the many ways math is used as the MATCHBOX® car production team demonstrates its process for shrinking cars, and a submarine sandwich shop owner fills an order for a 6' long sandwich.



<http://gpn.unl.edu/rainbow/>

*Literature*

Duquette, K. [Hotel Animal](#). Viking Children's Books. ISBN 067085056X  
This book explores math from a different perspective as two tiny lizards check into an oversized Hotel Animal.

*Website*

[Reading Rainbow](#), builds on lasting friendships between children and books, is targeted to children 4-8. Click on Hotel Animal for a preview of the video, and purchasing information.

<http://gpn.unl.edu/rainbow/>

---

## MATERIALS

*Per Class*

Hotel Animal (video and or book)  
Markers  
Crayon  
Overhead projector  
Transparencies  
Chart paper  
Roll of white butcher paper

*Per Group of Students*

Ruler or meter stick  
Drawing or sketch paper  
Magnifying glass  
MATCHBOX® car

*Per student*

Graph paper  
Balloon

---

## PREP FOR TEACHERS

Before teaching this lesson, **CUE** your videotape to the first segment you are going to use in the Learning Activity.

Place all instructional materials noted in the materials list on the table for students use during the lesson. Make sure that each lab station or table has all of the necessary components and handouts already in place for the start of the lesson.



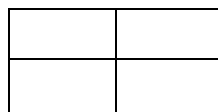
## INTRODUCTORY ACTIVITY: SETTING THE STAGE (Engage)

### Step 1

Introduce lesson by asking: “How many of you have seen the movie “Honey I Shrunk the Kids? If not, just imagine if you shrunk small enough to fit into this car (*hold up a MATCH BOX car*), how everything around you would appear.” (*solicit student responses*) Then say, “As size changes so does your perspective, or the way you see things. Think about ways of making things bigger, or smaller. Use any of the materials on the table to demonstrate what you would do to make an object bigger or smaller. (*place 2 magnifying glasses, 4 balloons and markers at each table; students may choose to draw a figure on the balloon, blow it up then release the air. Others may choose to examine an object using the magnifying glass.*)

### Step 2

Demonstrate for students how we can change the size of a drawing by increasing or decreasing the measurements. ( Place (1) transparency of centimeter graph paper on the overhead.) Draw a 2 x 2 figure on the overhead. (*See example below*) Ask the students, “How would the figure change if you drew the same figure twice the size?” (*sample responses: the figure would become a 4 x 4; it would get bigger*). Say: “This model represents a scale drawing.”



2 x 2 figure



4 x 4 figure

### Step 3

Now let the students practice. (provide students with centimeter graph paper, and markers or colored pencils) Instruct the students to draw a polygon on their graph paper any size then ask the students to draw the same figure three times the size as the one before.

How did you find the correct size of the second figure? (sample response: use a calculator to multiply the dimensions of the first object by three; use a ruler to measure the size)

---

## LEARNING ACTIVITIES

### Step 4

Provide your students with a **FOCUS FOR MEDIA INTERACTION** by saying; Things can appear big or small depending on your size. “ We will watch a video clip from “Hotel Animal”. As you are listening to the story, pay close attention to the events and the words the author uses that pertain to size and how things look to Little Camille and Tiny Leon. **Play the video tape at the cue** beginning with the story entitled, “Hotel

Animal”. **Review handout 1** for discussion points and suggested segments to **Pause for Media Interaction and CHECK FOR COMPREHENSION**. **Pause** the video tape at the end of the story.

### Step 5

Allow students time to Think-Pair-Share (think about the story as it relates to the focus for media interaction, discuss response with a partner, then share collective ideas with the class) events from the story that pertain to size from Camille and Leon’s view; record student responses on chart paper. (responses will vary)

*(Note: as students are discussing the story, **Fast Forward** the videotape to where LaVar visits the designers of the MATCH BOX® car)*

### Step 6

Provide your students with a **FOCUS FOR MEDIA INTERACTION** by saying; “Camille and Leon found a place just the right size for them. You can scale up or scale down anything you want to build it just takes mathematical know-how. *(hold up a MATCHBOX® car. One MATCHBOX® car is placed at each table)*. Have you ever thought about who designs the MATCHBOX® car? How the miniature cars are made to look just like the actual car? What mathematical know-how does it take to make the scale-down version of a car? What measurement tools are used to get the exact measurements? What details must be gathered to make the precise model? How much bigger do you think the actual size of a car is compared to the MATCHBOX® car? You will find the answers to these questions and many more as you view the video clip.” **PLAY** the videotape at the beginning of the segment showing the engineers at work. **Review handout 2** for discussion points and suggested segments to **Pause for Media Interaction and CHECK FOR COMPREHENSION**. **Stop** videotape at the end of the segment showing how the MATCHBOX® car is designed.

Ask students to Think-Pair-Share what they learned from the clip. *(answers will vary.)* How much bigger is the actual car compared to the MATCHBOX® car? *(answer – 63 times bigger)*

---

## CULMINATING ACTIVITY

### Step 7

Say: We’re going to simulate the process engineers use to create scale drawings. You will make a scale down drawing of your partner. Reduce their size three times. On your table are materials for you to use. (this process is using the “**inquiry approach**” to learning – students accomplish the task using what they have learned from the lesson, the teacher will guide students in completing the task by asking questions to promote further understanding and connections.) Provide paper for students to create a chart to show their measurements. Allow students to be creative.

Walk around as students work on their drawings. Ask questions to **CHECK FOR COMPREHENSION**. (Sample questions: how will you determine the new size of your



partner?) *(sample response: measure the length of his/her arm, measure his/her height then divide each measurement by three to get the new measurement).*

Students will display their drawings to show the size difference and the chart to show what measurements were used to confirm appropriate calculations.

---

### **CROSS-CURRICULAR EXTENSIONS**

**Language Arts** - Write an adventure story about Camille and Leon's trip home in their new MATCHBOX® car, include key terms to indicate size, also include descriptions of things Camille and Leon might see from a "tiny" point of view.

---

### **COMMUNITY CONNECTIONS**

Invite an engineer or an architect to your class to share with students how they use mathematics to design buildings, bridges, etc.



### Help, I'm Shrinking!

#### Gather the facts:

- Pause after the designer takes pictures of the actual car for discussion utilizing the following questions.
- Pause the tape when Lavar announces that the size of the MATCHBOX® car is 63 times smaller than the actual car.
- Pause after the MATCHBOX® car is carved.
- Pause after the miniature model / sample is made.
- Pause at the end to discuss any further issues from the students.

#### Guiding questions to use for **Media Interaction**:

Who designs the MATCHBOX® car?

How is the miniature cars made to look just like the actual car?

What mathematical know-how does it take to make the scale-down version of a MATCHBOX® car?

What measurement tools are used to get the exact measurements?

What details must be gathered to make the precise model?

How much bigger is the actual size of a car compared to the MATCHBOX® car?

## Help, I'm Shrinking!

### *Hotel Animal*

Pause 1: (Pause tape before Camille & Leon check in at the desk with Tomas)  
Describe the hotel and hotel guest from Little Camille and Tiny Leon's perspective.

Pause 2: (Pause tape at the scene of Camille and Leon putting on clothes to go to the hotel ballroom)  
Describe Little Camille and Tiny Leon's challenges with the size of objects as they walked to their room. Discuss their experience in the restaurant.

Pause 3: (Pause as Camille reaches the chandelier)  
Describe what happens as Leon and Camille are dancing.

Pause 4: (Pause at the scene with Camille in bed)  
Where does Camille end up? What comforts does Camille find in the attic?

Pause 5: (Pause at the end of the story)  
Identify the places where they search for Camille? How did they find Camille?

Pause 6:  
Share any other details from the story that pertain to size from Camille & Leon's view.

