

# Teaching Suggestions

## Science and Mathematics Lab

(Course 2, Lesson 7-3)

### *Relating Ratios to Dinosaurs*

#### OVERVIEW

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This activity provides students with the opportunity to measure the length and height of model dinosaurs, calculate ratios of height to length, and compare the ratios to actual measurements of selected dinosaurs. Students will be required to measure and calculate these ratios and proportions.

#### RECOMMENDED TIME

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1 class period

#### MATERIALS

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- toy dinosaurs in a variety of types and sizes
- calculator
- metric ruler

#### PREPARATION

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You may want to ask students to bring toy dinosaurs or books on dinosaurs from home.

#### TEACHING THE LAB

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1. Have students work individually or in pairs. If students work in pairs, each student should take measurements.
2. Demonstrate to students how to measure the length and height of a model dinosaur. Students may need to straighten out the tail or measure along it for an accurate measurement.

# Teaching Suggestions

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### Relating Ratios to Dinosaurs (continued)

#### Answers and Conclusions

1. Sample answer:

Toy Dinosaur	Height/Length (mm)
<i>Stegosaurus</i>	40/100
<i>Triceratops</i>	35/96
<i>Ankylosaurus</i>	23/70

2. Sample answer:

Real Dinosaur	Height/Length (m)
<i>Stegosaurus</i>	3.2/7.5
<i>Triceratops</i>	3.0/9.0
<i>Ankylosaurus</i>	2.2/10.0

3. Sample answer:

*Stegosaurus*

*Triceratops*

*Ankylosaurus*

$$\frac{40 \text{ mm}}{100 \text{ mm}} = \frac{3.2 \text{ m}}{7.5 \text{ m}}$$

$$\frac{35 \text{ mm}}{96 \text{ mm}} = \frac{3.0 \text{ m}}{9.0 \text{ m}}$$

$$\frac{23 \text{ mm}}{70 \text{ mm}} = \frac{2.2 \text{ m}}{10.0 \text{ m}}$$

$$300 \neq 320$$

$$315 \neq 288$$

$$230 \neq 154$$

Sample answer: *Stegosaurus* is the most accurate.

4. Sample answer:

Dinosaur	Toy Height (mm)	Actual Height (mm)	Ratio	Toy Length (mm)	Actual Length (mm)	Ratio
<i>Stegosaurus</i>	40	3,200	1/80	100	7,500	1/75
<i>Triceratops</i>	35	3,000	1/86	96	9,000	1/94
<i>Ankylosaurus</i>	23	2,200	1/96	70	10,000	1/143

# Science and Mathematics Lab

(Course 2, Lesson 7-3)

## Relating Ratios to Dinosaurs

### INTRODUCTION

Dinosaurs inhabited Earth until about 65 million years ago. Some dinosaurs were very large, while others were quite small. In this lab, you will measure toy dinosaurs and compare these measurements to those of actual dinosaurs using ratios and proportions.

### OBJECTIVES

In this lab, you will:

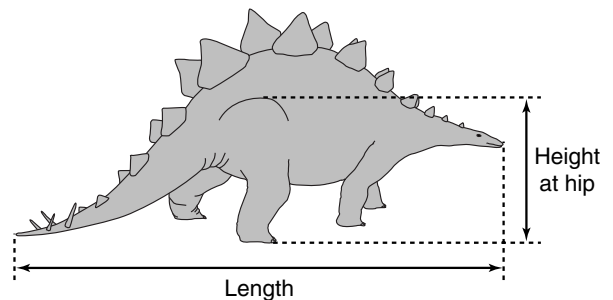
- measure the length and height of toy dinosaurs.
- compare these measurements to actual measurements using ratios and proportions.

### MATERIALS

- toy dinosaurs in a variety of types and sizes
- calculator
- metric ruler

### PROCEDURE

1. Select three dinosaurs of different sizes.
2. Measure the height and length of each dinosaur and record the data in the table.  
To find the height of the dinosaur, measure from its hip (the top of the hind leg) to the bottom of its hind foot. To find the length of the dinosaur, measure from its nose to the tip of its tail.



### DATA AND OBSERVATIONS

Dinosaur	Height (mm)	Length (mm)

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## Relating Ratios to Dinosaurs (continued)

Some actual measurements for selected dinosaurs (based on fossil remains) are shown below.

Dinosaur	Height (m)	Length (m)
<i>Saltasaurus</i>	2.4	12.0
<i>Ankylosaurus</i>	2.2	10.0
<i>Stegosaurus</i>	3.2	7.5
<i>Triceratops</i>	3.0	9.0
<i>Tyrannosaurus rex</i>	3.7	14.0

### Questions and Conclusions

- Write the ratio of height to length for your three toy dinosaurs in the form of a fraction.

Toy Dinosaur	Height/Length (mm)

- Write the ratio of height to length for the same three real dinosaurs in the form of a fraction.

Real Dinosaur	Height/Length (m)

- Compare the ratios for the toy dinosaurs to the real dinosaurs. Are the cross products equal? Which of your toy dinosaurs is the most accurate?
- Find the ratio in simplest form of the height of each toy dinosaur to the height of the real dinosaur. Then find the ratios of the lengths.

Dinosaur	Toy Height (mm)	Actual Height (mm)	Ratio	Toy Length (mm)	Actual Length (mm)	Ratio