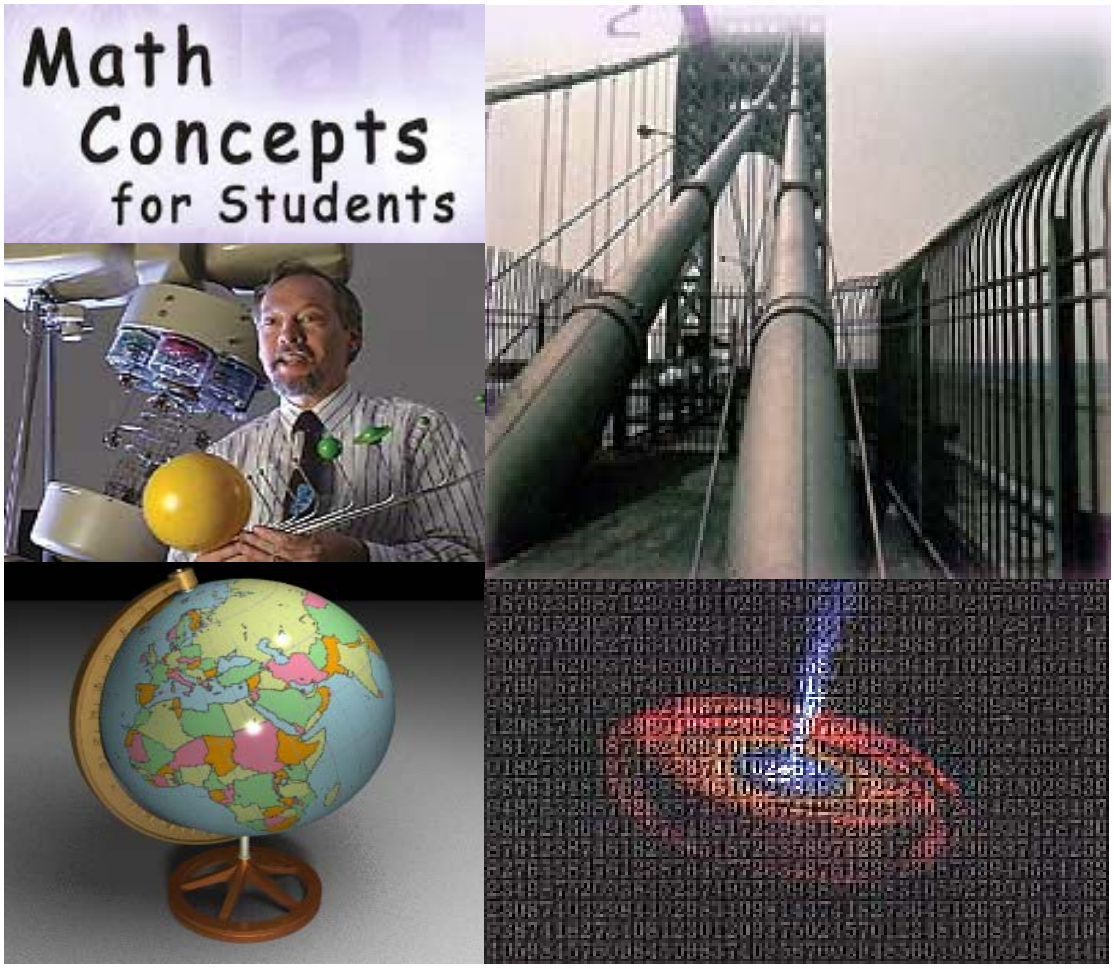
C a p t i o n e d M e d i a P r o g r a m
VOICE (800) 237-6213 **TTY** (800) 237-6819 **FAX** (800) 538-5636 **E-MAIL** info@captionedmedia.org **WEB** www.captionedmedia.org

#12186
SCALE

CLEARVUE/SVE, 2004
Grade Level: 1–6
8 Minutes



CAPTIONED MEDIA PROGRAM RELATED RESOURCES

#11791 RATIOS
#12190 TIME
#12199 LENGTH
#12200 WEIGHT

Funding for the Captioned Media Program is provided by the U.S. Department of Education

TEACHER'S GUIDE

MATH CONCEPTS FOR STUDENTS
Scale

Learning Objectives

After completing the program and participating in discussion, students will be able to:

- Understand the concept and appropriate use of scale;
- Explain the scale model of something as vast as the solar system;
- Describe how small Earth is compared to other objects in our solar system;
- Relate facts about the extraordinary size of the universe and the speed of light; and
- Explain why scale models are needed and useful in our lives.

Review Questions

1. Ask students to discuss what is meant by scale. How is scale used? What two scales were used to make the model of the solar system shown in this program?
2. Ask students where this scale model of the solar system is located. How far does it extend? Whose idea was it?
3. Have students discuss the size of Earth in relation to the solar system. How many Earths could fit in the sun? Inside of Jupiter?
4. What is the speed of light? What does it mean? Why do astronomers measure things in light years?
5. What is different about most models of the universe and this one? How small is Pluto? How big is Jupiter? How big is the sun? What would the sun look like if you were standing on Pluto?

Target Vocabulary

astronomer
scale
distance
feet
miles
scale model
solar system
speed of light

Activities

1. Have students research scale models of the solar system on the Internet. Where are other models located? What is different between them and the one highlighted in this program? How far away are some of the comets from the Peoria model?
2. Have students brainstorm other things that scale models are useful for. Have them research more on the Internet. Ask them to prepare a brief report about the history and importance of scale.
3. Ask students to research the history of scale models. Who was the first person to attempt to make a scale model of the universe? When was this? What methods were used?
4. Have students brainstorm things in their own lives that illustrate the importance of scale. Have them build their own model to illustrate how scale applies.

CLEARVUE & SVE
6465 N. Avondale Avenue
Chicago, IL 60631
800-253-2788 • 773-775-9433
www.clearvue.com • CustServ@clearvue.com

Math Concepts for Students

*Name*_____

Scale

What do you remember from the program? After viewing *Scale*, fill in the blanks from the word bank below. Some words may be used more than once.

1. Sheldon Schafer is an _____. He built a model of our solar system to help people understand the vast size of the universe.

2. Schafer began by using the _____ in Peoria, Illinois, to represent the sun.

3. In the program, the _____ of the solar system represents both the sizes of planets and the distances between them.

4. In the program, the sun was approximately 33 feet across, making the _____ for this model at 42 feet equal to one million miles.

5. In the program's scale, Earth is approximately _____ inches across.

6. One million Earths could fit inside of the _____.

7. The largest planet in the solar system, _____, could only fit 1,000 Earths inside. However, this planet could fit all the other planets and their moons inside and still have room for more.

8. _____ in space is calculated in light years. A light year is the distance light can travel in one Earth year.

9. The _____ of light is 186,000 miles/second.

10. In the program, _____, which is the farthest planet from the sun, is 50 miles outside of Peoria and only measures an inch in the scale model.

WORD BANK

astronomer	scale model	
distance	speed	
four	sun	
Jupiter	Pluto	
planetarium dome	scale	

Math Concepts for Students

ANSWER KEY

Scale

What do you remember from the program? After viewing *Scale*, fill in the blanks from the word bank below. Some words may be used more than once.

1. Sheldon Schafer is an astronomer. He built a model of our solar system to help people understand the vast size of the universe.

2. Schafer began by using the planetarium dome in Peoria, Illinois, to represent the sun.

3. In the program, the scale model of the solar system represents both the sizes of planets and the distances between them.

4. In the program, the sun was approximately 33 feet across, making the scale for this model at 42 feet equal to one million miles.

5. In the program's scale, Earth is approximately four inches across.

6. One million Earths could fit inside of the sun.

7. The largest planet in the solar system, Jupiter, could only fit 1,000 Earths inside. However, this planet could fit all the other planets and their moons inside and still have room for more.

8. Distance in space is calculated in light years. A light year is the distance light can travel in one Earth year.

9. The speed of light is 186,000 miles/second.

10. In the program, Pluto, which is the farthest planet from the sun, is 50 miles outside of Peoria and only measures an inch in the scale model.

WORD BANK

astronomer	scale model	
distance	speed	
four	sun	
Jupiter	Pluto	
planetarium dome	scale	