

4 VIDEO #4 Space; Measurement

Overview

Mathematical concepts are learned through the active involvement of children with the objects, materials and people in their world. Children need materials through which they can begin to make the relationships which have their origins in their mental actions. Teachers who recognize children as active learners provide appropriate materials, experiences and guidance which permit children to explore and learn mathematical knowledge.

In this module you will see children and teachers involved in exploring **space** and practicing **measurement**. The teachers' knowledge about mathematics and their understanding of children enable them to organize environments in which children freely use all their sensory, physical and mental capacities to learn these concepts.

Questions to Consider

1. What are children learning as they climb?
2. What is the best equipment for children to use to learn measurement?
3. What do teachers do to help children learn about space and measurement?

Vocabulary

Read these terms with their definitions before viewing the program.

Measurement determining the dimensions of anything.

Space an interval between points or objects.

Instructional Objectives

When you have successfully completed this module, you will be able to:

1. Describe the concepts: space, measurement.
2. Match each concept with materials and/or activities appropriate to learning the concepts.
3. Describe how children learn about space and measurement.
4. Identify the relationships and uses of space.
5. Identify the dimensions of an object or material which children measure.
6. Analyze the teacher's role in children learning about space and measurement.

Self-Test

After studying the objectives and watching the video take the self-test to check your progress.

1. Define the following concepts:
 - a. space
 - b. measurement
2. Next to each material or activity write the math concept learned
 - a. climbing on waffle blocks _____
 - b. building block enclosures _____
 - c. making play dough _____
 - d. balancing beans on a scale _____
 - e. pouring water from one size container to another _____
3. List dimensions of an object or material the children may measure as they play.
 - a.
 - b.
 - c.
 - d.
4. Describe what children are learning about space as they play on climbing equipment.
5. Describe what children are learning about space as they build with blocks.

Select the phrase which best completes the statement.

- ___ 6. The child stayed with the balance beam activity for a long period of time because
- a. it was challenging to her.
 - b. she was intellectually engaged.
 - c. she was determined to succeed.
 - d. all of the above.
- ___ 7. When children are measuring anything they
- a. must have tools such as rulers or scales (formal).
 - b. should use string or their hands as tools (informal).
 - c. may use both the formal or informal tools.
 - d. none of the above.
- ___ 8. When introducing measurement or space activities to the children the teacher should consider the
- a. math concept only.
 - b. ages and interest of the children.
 - c. mess children will make.
 - d. all of the above.
9. Analyze the teacher's technique in helping children learn concepts of space and measurement.

Path to Math

Self-Test Answer Key

Video #1 - One to One Correspondence; Comparing

- a. Match one object to another.
b. Finding a relationship between two things.
- a. one to one correspondence
b. one to one correspondence
c. comparing
d. comparing
- e. one to one correspondence
f. comparing
- d
- b
- c
- a
- d
- T
- F
- T
- T
- F

Video #2 - Classification and Seriation

- a. Organize things into groups based on some characteristic.
b. Comparing more than two things and arranging them in order.
- a. classification
d. seriation
- a. color
d. function, texture, pattern
- a. pitch - high to low
b. size - short to tall
- c. length - long to short
d. width - thin to fat
volume - loud to soft
color - light to dark
- b
- d
- a
- d
- c
- b
- T
- T
- F
- T
- T
- F
- T
- T

Video #3 - Shape; Parts and Wholes

- a. Recognize and name outward form of an object.
b. Recognize that portions of something make a total.
- a. parts and wholes
d. parts and wholes
- b
- c
- d
- a
- c
- b
- d
- T
- T
- F
- T
- F
- T

Video #4 - Space, Measurement

- a. recognizing the relationships (direction, position, distance) and uses (pattern, organization, construction).
b. determining the dimensions of anything.
- a. space
d. measurement
- a. length, height
d. quantity, width
- Children are learning direction - up and down; position - high, middle, low; distance - near, far.
- Children are learning to make patterns with the blocks, they are organizing the space when they make enclosures, and they are constructing using space as part of their structures.
- d
- c
- b
9. The teachers provided a variety of experiences and materials. If no climbing equipment was available they made an obstacle course using tables and chairs. They commented appropriately about what the children were doing by using *space* words referring to the child's direction and position. They asked open-ended questions which encouraged children to think about their own actions and gave teachers insights into children's thinking processes. They appreciated that younger children used materials more manipulatively. They asked children to make predictions, to test them, and to draw conclusions. They did not correct children's mistakes, allowing the children to find their own solutions.

Video #5 - Number and Counting; Numerals

- a. a collection of units.
b. counting in order from memory.
c. attaching numeral names to specific number of objects.
d. a symbol used to express a number.
- a. numerals
c. numerals
e. number
- b
- d
- c
- a
- T
- T
- F
- T
- F
- F
- F