Native American Mound Construction

Objectives:
Students will gain an understanding of the Native American Mound builders in Mississippi and the amount of work undertaken by the people of these early cultures. Students will calculate the amount of soil used in the construction of a mound and the modern day equivalent.

The *Native American Mound Construction* lesson and handouts are adaptable for grades 3-6.

Mississippi Department of Education 2011 Curricular Connections		
Common Core Math	Third Grade	3.OA, 3.MD 6-7
	Fourth Grade	4.OA, 4.NBT 4-5
	Fifth Grade	5.NBT 5-6, 5.MD 3-5
	Sixth Grade	6.NS 2, 6.G 2

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Materials: *Mississippian Mounds* overview; *The Numbers Behind Mound Building; The Volume Behind Emerald Mound; School Bus Cut Outs;* masking tape; scissors.

Procedures:

Activity One: The Numbers Behind Mound Building
1. Distribute the *Mississippian Mounds* overview and discuss it with your class.
2. Distribute *The Numbers Behind Mound Building* and have students complete the math problems.

Activity Two: How Big is Emerald Mound?
1. Distribute *The Volume Behind Emerald Mound*.
2. Mark off a rectangle 43"x 27" on the floor of the classroom.
3. Have student cut out "school buses" from *Cut Out Sheet*.
4. Have students determine how many school buses would take up the base of the mound by laying the schools buses out along one long side and one short side of the mound (see diagram).
5. Figure the area of the mound using ***Area = Length x Width.***
6. Next, have the students figure the height of the mound in school buses. Mound height is 35 feet, school bus height is 11 feet.
7. Calculate the volume of the mound in school buses using ***Volume = Area x Height***.
8. Discuss the size of mounds and the work involved in building them with the limited technology available to the Native Americans.

Activity One: *Mississippian Mounds*

Throughout Mississippi there are large man made hills called mounds. These mounds were built by Native Americans hundreds of years ago. There are three types of mounds: burial, ceremonial, and effigy. Burial mounds are usually shaped like cones and used to bury the dead. Ceremonial mounds are flat on top because this is where Native Americans put important buildings, such as temples and the homes of very important tribesmen such as the chief. Effigy mounds look like animals.

There are thousands of mounds in the United States, but the only time European explorers witnessed the Indians using them was during the early 1700s at the Grand Village of the Natchez Indians. There the Europeans noted that the most important person of the tribe, the chief, lived on the highest mound, while the temple, the center of religious activity, was on the mound directly across from him. During New Moons and other religiously significant events, the Natchez would gather from nearby mounds to celebrate at the temple.

It took the manpower of entire communities of Native Americans to build these mounds. They dug dirt with their hands and with sticks and used baskets to move the earth. Then they stamped the earth down with their feet until over time a mound was constructed. As more Europeans came to the New World, the Native American population began to decline and their mound sites were abandoned. Many were plowed over to become farm land or used to graze livestock, both of which led to the destruction of mounds. But some, like those at the Grand Village of the Natchez Indians, Winterville Mounds in Greenville, and Emerald Mound along the Natchez Trace have survived and can be visited today.

Emerald Mound, an eight acre Native American mound, was built by the Mississippians, ancestors of the Natchez Indian tribe. It is located about ten miles northeast of Natchez along the Natchez Trace Parkway (milepost 10.3) and is open, free of charge, daily from dawn to dusk.

NAME _____ DATE _____

Activity One: The Numbers Behind Mound Building

Answer the questions below.

1. Use the following estimates from archaeologists at the Cahokia Mounds (east of St. Louis in Illinois) to solve the following questions:

One basket carried is about 1.5 cubic feet of dirt.
One person could dig, fill a basket full of dirt, and carry and dump it in about fifteen minutes.

a. In five hours or 300 minutes of work how many trips can one person make?

b. In one five-hour day, how many cubic feet of dirt could one person move?

c. The Great Sun's Mound at Grand Village contains 7,200 cubic feet of earth and was built in four stages. If each stage was built by thirty people, how long would it take them to build each stage?

2. Mississippi's largest mound site is Emerald Mound. It contains approximately 6,300,000 cubic feet of dirt. Using the figures above calculate how long it would take 600 people working five hour days to build Emerald Mound.

3. Use the following information to determine how long would it take two men, working eight hours a day to build a 22,680 cubic foot mound:

One operator can load a truck with a fourteen cubic yard capacity in eight minutes.
The truck driver can move the dirt from the load site to the mound site, unload his dirt and return to the loader in seven minutes.

a. If one cubic yard equals twenty-seven cubic feet. How many cubic feet of dirt are in a truck load?

b. How long is a round trip?

c. How many loads will it take to achieve the desired mound?

d. How many minutes does it take to build the mound?

e. How many hours will it take to build the mound?

f. How many work days will it take to build the mound?

NAME _____ DATE _____

Activity One: The Numbers Behind Mound Building Answer Key

Answer the questions below.

1. Use the following estimates from archaeologists at the Cahokia Mounds (east of St. Louis in Illinois) to solve the following questions:

One basket carried is about 1.5 cubic feet of dirt.
One person could dig, fill a basket full of dirt, and carry and dump it in about fifteen minutes.

a. In five hours or 300 minutes of work how many trips can one person make?

60 minutes
15 minutes = 4 trips /hour

5 hours
X 4 trips
20 trips / 5 hours

b. In one five-hour day, how many cubic feet of dirt could one person move?

20 trips/5 hours
X 1.5 cubic feet
30 cubic feet / 5 hours

c. The Great Sun's Mound at Grand Village contains 7,200 cubic feet of earth and was built in four stages. If each stage was built by thirty people, how long would it take them to build each stage?

30 people
X 30 cubic feet
900 cubic feet / day

7,200 cubic feet
900 cubic feet / day
= 8 days

8 days
4 stages
= 2 days per stage

2. Mississippi's largest mound site is Emerald Mound. It contains approximately 6,300,000 cubic feet of dirt. Using the figures above calculate how long it would take 600 people working five hour days to build Emerald Mound.

600 people
X 30 cubic feet
18,000 cubic feet / day

6,300,000 cubic feet total
18,000 cubic feet / day = 350 days

3. Use the following information to determine how long would it take two men, working eight hours a day to build a 22,680 cubic foot mound:

One operator can load a truck with a fourteen cubic yard capacity in eight minutes. The truck driver can move the dirt from the load site to the mound site, unload his dirt and return to the loader in seven minutes.

a. If one cubic yard equals twenty-seven cubic feet. How many cubic feet of dirt are in a truck load?

14 cubic yards
X 27
378 cubic feet

b. How long is a round trip?

7
+ 8
15 minutes

c. How many loads will it take to achieve the desired mound?

22,680
378 = 60 loads

d. How many minutes does it take to build the mound?

15 minutes
X 60
900 minutes

e. How many hours will it take to build the mound?

900 minutes
60 minutes
=15 hours

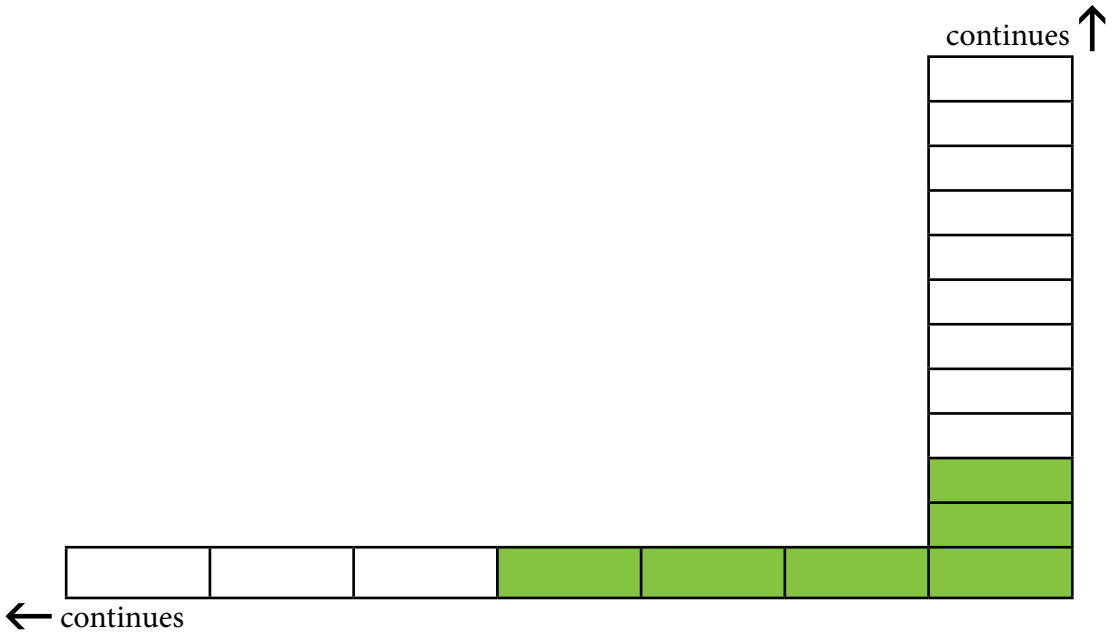
f. How many work days will it take to build the mound?

15 hours
8 hours =1 day and seven hours

NAME _____ DATE _____

Activity Two: The Volume Behind Emerald Mound

Emerald Mound is 768 ft long and 432 ft deep and 35 ft tall. How many school buses would it take to fill up the Emerald Mound. We are going to scale that down. Your teacher has marked off a rectangle on the floor that will represent Emerald Mound. With your class, cut out your rectangles on the adjoining worksheet, these will be your school buses. Use them to measure the length and width or depth of the rectangle marked out on the floor by your teachers. See the example in the diagram below.



1. How many school buses are equal to 768 feet or the length of the mound?

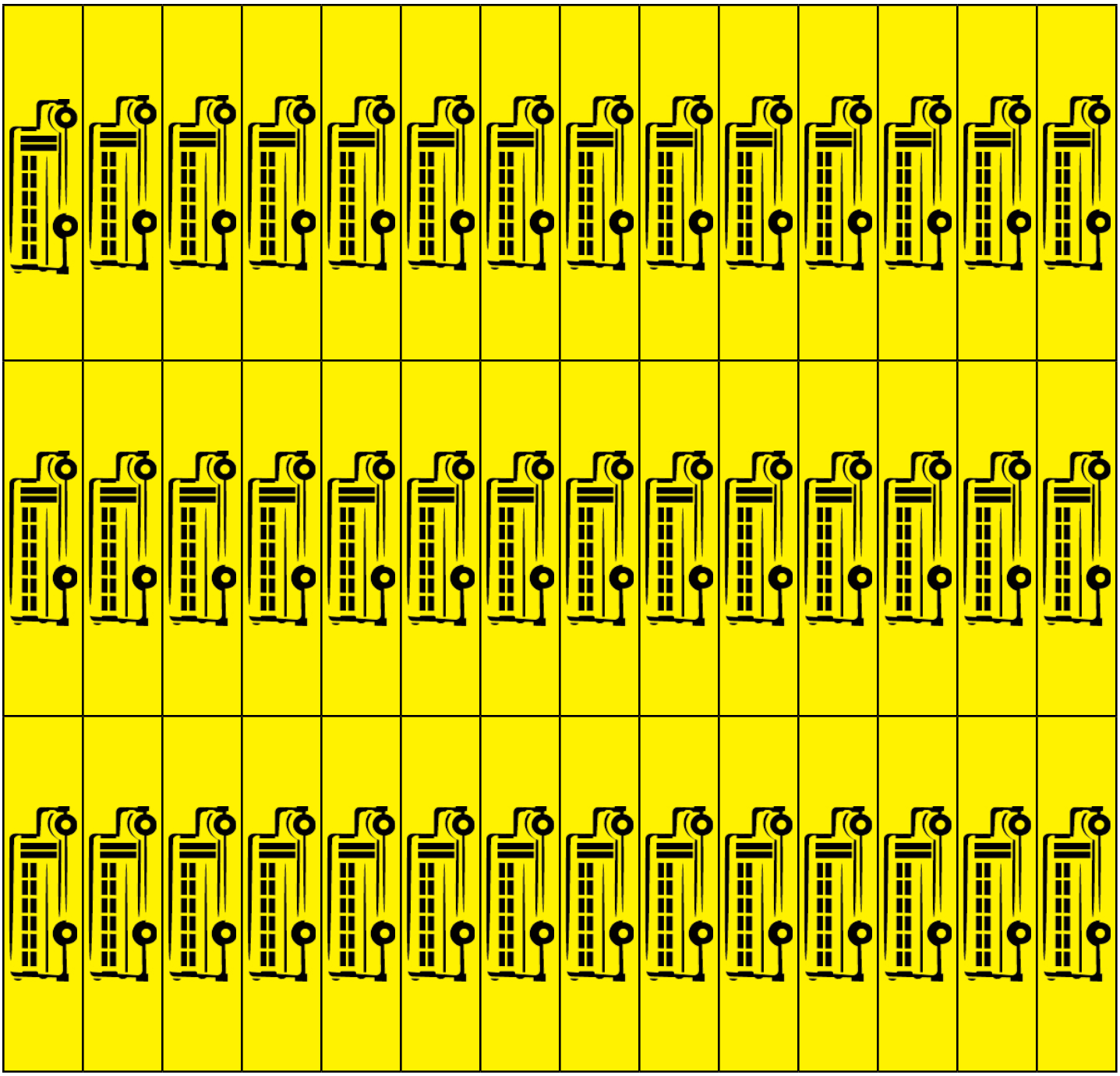
2. How many school buses are equal to 432 feet or the width/depth of the mound?

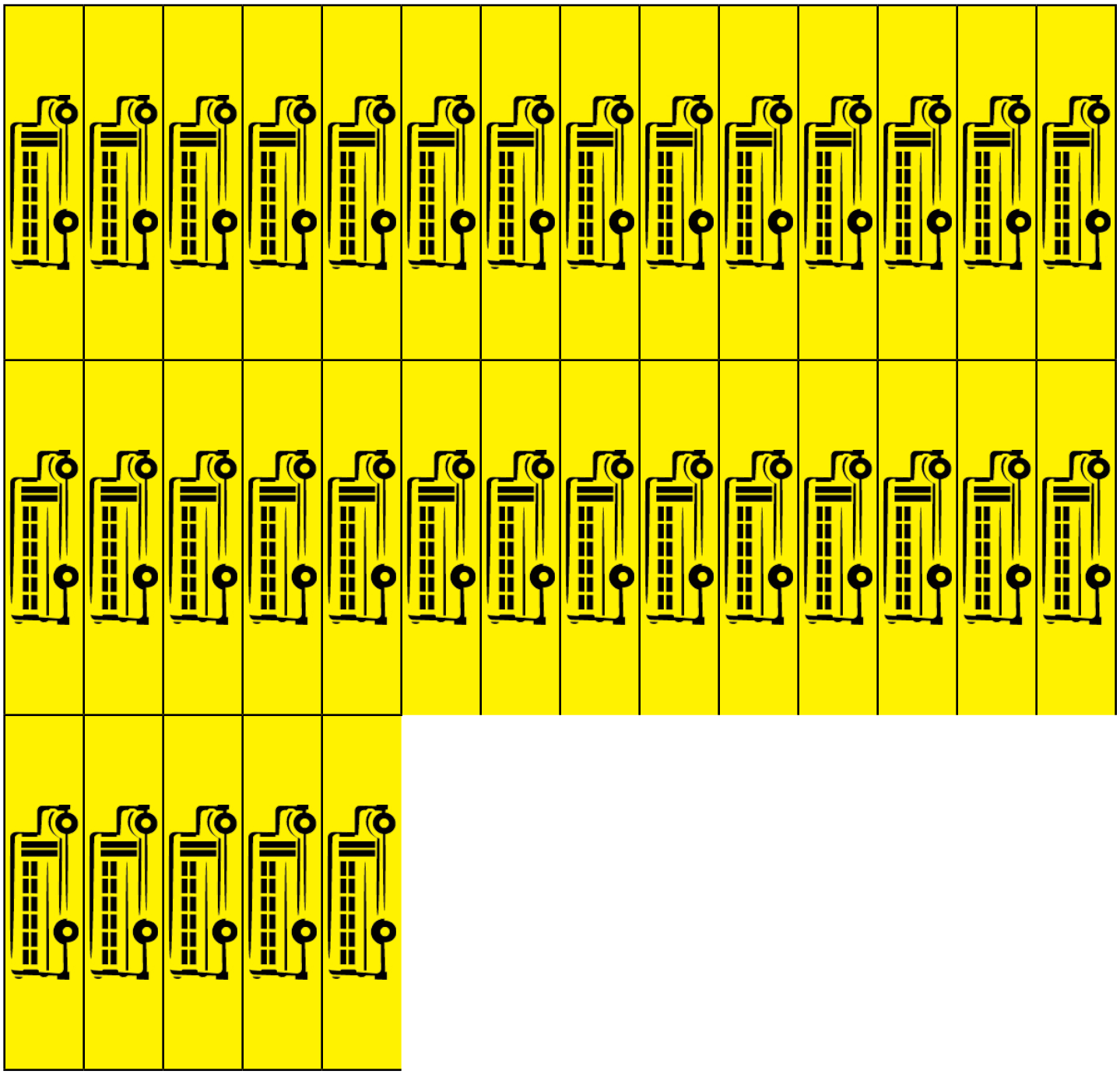
3. Calculate the base area of the mound by multiplying in buses using ***Length x Width = Area***

4. If you know that the height of the mound is approximately 35 feet and the height of a school bus is 11 feet, how many layers of school buses would it take to completely fill the mound?

5. Calculate the volume of the mounds in buses using ***Area x Height = Volume***

School Bus Cut Outs





NAME _____ DATE _____

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1. How many school buses are equal to 768 feet or the length of the mound?

19 ¼

2. How many school buses are equal to 432 feet or the width/depth of the mound?

54

3. Calculate the base area of the mound by multiplying in buses using ***Length x Width = Area***

19.25 X 54 = 1039.5 buses

4. If you know that the height of the mound is approximately 35 feet and the height of a school bus is 11 feet, how many layers of school buses would it take to completely fill the mound.

35 / 11 = 3.18 buses

5. Calculate the volume of the mounds in buses using ***Area x Height = Volume***

1039.5 X 3.18 = 3305.61 buses

MISSISSIPPI DEPARTMENT OF HISTORY LESSON PLANS

TEACHER EVALUATION

COMPLETE BOTH SIDES AND PLEASE MAIL OR FAX TO THE ADDRESS ON THE NEXT PAGE. THANK YOU!

TEACHER NAME _____

SCHOOL NAME & ADDRESS _____

_____

EMAIL *(OPTIONAL)* _____

TOTAL NUMBER OF STUDENTS_____ **GRADE LEVEL** _____

LESSON TITLE _____

1. In your opinion, did this unit elicit better than average student response; if so, how?

2. Which segments of the unit exceeded your students' attention span?

3. Will this unit be of assistance to you in developing future classroom activities; if so, how?

4. How did this unit add to your earlier teaching on the same subject?

5. Would this teaching unit be handier to use as a:
   ___multi-day unit ___multi-week unit ___other

6. Were the activities and lessons appropriate for your students? How?

Please rate the following lesson materials and activities by circling the appropriate number.

4=excellent, **3**=good, **2**=average, **1**=inadequate

Directions and notes	4	3	2	1
Curricular Connections	4	3	2	1
Student Worksheets	4	3	2	1
Interactive Activities	4	3	2	1
Historic Images	4	3	2	1
References and Resources	4	3	2	1

Activity One	4	3	2	1
Activity Two	4	3	2	1
Overall unit	4	3	2	1

We would appreciate any additional comments on this teaching unit and any suggestions for improvement. Comments may be entered in the space below.

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