

Section
2.1 DOCUMENTATION

Mathematics Pilot Study Demographic Survey

Mathematics Pilot Study Multiple Choice Items

Mathematics Pilot Study Open-ended Items

(Administered December 11, 2002)

UNH Title II Report Section 2.I
Mathematics Demographic Survey
December 2002

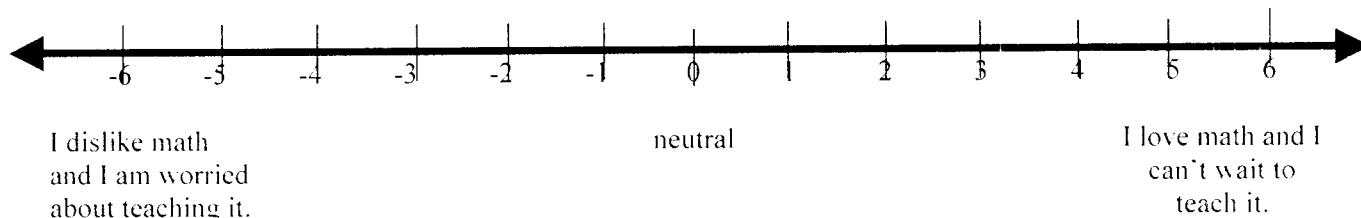
UNH Mathematics Pilot Study

Name _____ Date: _____

Thank you for participating in the science assessment pilot study. These assessment results will assist us in enhancing our program. Again, we wish to remind you that your score on this assessment will not become part of your record. We will share the results with you for your information only.

Please answer these questions before taking the mathematics assessment:

Where would you place yourself on this continuum? Mark an X.



Please answer these questions before taking the mathematics assessment on the following pages:

1. Which of the following mathematics courses did you take in high school?

- | | |
|---|---------------------------------------|
| <input type="checkbox"/> Business Mathematics | <input type="checkbox"/> Geometry |
| <input type="checkbox"/> Algebra I | <input type="checkbox"/> Trigonometry |
| <input type="checkbox"/> Algebra II | <input type="checkbox"/> Calculus |

Other: _____

2. How many mathematics courses have you taken in college? _____

Please list:

3. Which statement best describes your view of teaching mathematics at the elementary level?

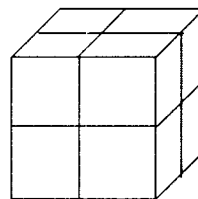
- Mathematics is a difficult and complex subject area that should be taught by mathematics content specialists
- Mathematics is a subject area that requires intense discipline and concentration to master.
- Mathematics teachers should be guiding students in exploring multiple solutions to problems and challenging students to think deeply.
- Mathematics should be taught with step-by-step instructions to help students learn the concepts.

University of New Haven
Multiple Choice - Math

Date _____ Name _____

Circle the letter of the correct response for each of the following.

1. In this figure, how many small cubes were put together to form the large cube?



the large

- a) 7 b) 8 c) 12 d) 24

2. In which number does the 7 have a value of 700?

- a) 7008 b) 6790 c) 5173 d) 3657

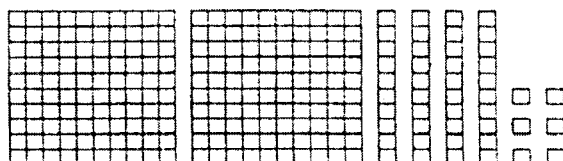
3. What is the next number in the pattern: 2, 6, 18, 54, ___?

- a) 72 b) 105 c) 158 d) 162

4. Martha had 6 plants in her front yard and 4 plants in her backyard. Which number sentence could be used to find out how many plants Martha had all together?

- a) $6 \times 4 =$ b) $6 - 4 =$ c) $6 + 4 =$ d) $6 \div 4 =$

5. What number is shown by the base ten blocks in this picture?



- a) 642 b) 426 c) 264 d) 246

6. What part of the following is shaded?



Circle the correct response. $\frac{4}{6}$ or $1\frac{1}{3}$

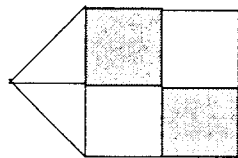
7. Which of the following is **not** an example of expanded notation?

- a) $327 = 3 \text{ hundreds} + 2 \text{ tens} + 7 \text{ ones}$
- b) $1504 = (1 \times 1000) + (5 \times 100) + (4 \times 1)$
- c) $245 = 100 + 130 + 15$
- d) $3472 = (3 \times 10^3) + (4 \times 10^2) + (7 \times 10^1) + (2 \times 10^0)$

8. If your heart is beating 66 times a minute. At this rate, about how many times does it beat in one hour?

- a) 4,000
- b) 400
- c) 40,000
- d) 400,000

9. What fraction of the area of this shape is shaded?



- a) $\frac{2}{6}$
- b) $\frac{1}{2}$
- c) $\frac{2}{5}$
- d) $\frac{3}{4}$

10. There are 3 fifth graders and 2 sixth graders on the swim team. Everyone's name is put in a hat and picking one name from the hat chooses the captain. What are the chances that the captain will be a fifth grader?

- a) 1 out of 5
- b) 1 out of 3
- c) 3 out of 5
- d) 2 out of 3

University of New Haven

Math Grant - OPEN-ENDED

Date _____ Name _____

Answer the following. Please show all your thinking on this paper.

- 1) Mari needs to multiply 2.1 and 9.8. Write the two numbers you would multiply to ESTIMATE this product. Then write one or two sentences to explain why you used these numbers.

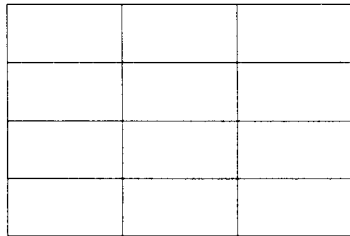
Estimated Numbers: _____

Explanation: _____

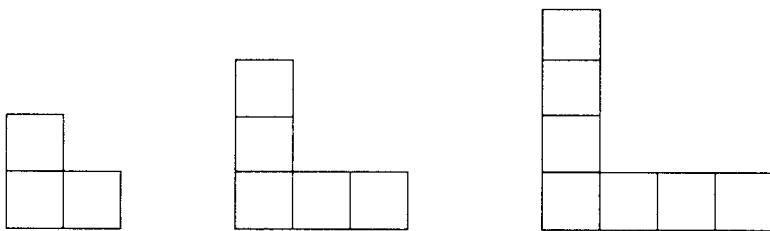
- 2) Draw a picture that would represent the mixed number $2 \frac{2}{3}$.

- 3) Write one or more number sentences to demonstrate and prove that subtraction is not commutative.

4) Shade $\frac{1}{6}$ of the shape.



5) Look at the following pattern made out of square blocks.



a) How many square blocks would be in the eighth pattern?

b) What pattern do you see?

6) I am thinking of two numbers. When I add the numbers, their sum is 7. When I subtract the numbers, their difference is 1. What are the two numbers?

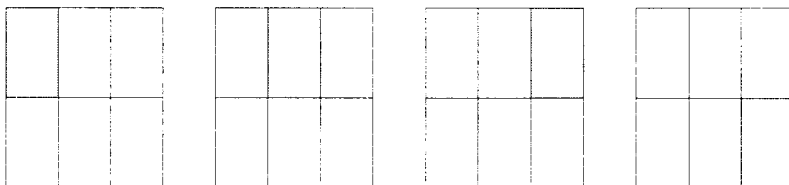
7) Examine the following samples of student work and determine the difficulties the children are experiencing. Tell what you might do to remediate each difficulty.

a) Jen: I need 7 dollars to go to the movies. I have 3 dollars. How much more do I need? Student's response: $7 + 3 = 10$

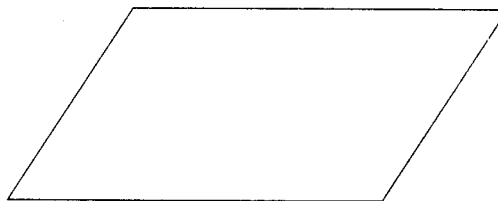
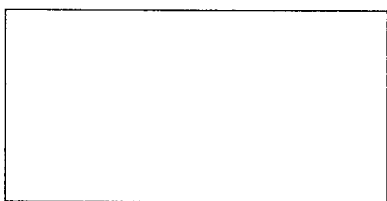
b) Bill sold 267 of his prize-winning marbles. He had 500 to start. Now he claims that he has 367. What's wrong with his subtraction?

$$\begin{array}{r} 500 \\ - 267 \\ \hline 367 \end{array}$$

8) These shapes follow a pattern.



Which shading should be next in the pattern? Draw the next shading and **explain** why you think that it is the next shading in the pattern.



9) a. List two ways that the figures above are alike?

●) _____

●) _____

b. List two ways the figures above are different?

●) _____

9) _____

- 10) Judy is selling muffins at a stand. She wants to sell the muffins in packs of 2 and 4. This chart shows how she planned to sell each of them:

<i>Muffins</i>	<i>Cost</i>
2-pack	\$1.50
4-pack	\$2.50

Judy sorted 60 muffins into the two types of packs. When she was done, she found that she had the same number of 2-packs as 4-packs. Use the space below to show the number and types of muffin packs Judy now had available to sell at the stand.

- 11) John can purchase his lunch at the school cafeteria. Each day he wants to have juice that costs 50¢, a sandwich that costs 90¢, and fruit that costs 35¢. His mother has only \$1.00 bills. What is the least number of \$1.00 bills that his mother should give him so he will have enough money to buy lunch for 5 days?

12) Write a problem that can be solved using the information in the box.

THE BASEBALL CARDS

Jim has 27 baseball cards

Mary has 13 baseball cards.

Jenn has 41 baseball cards.

Now solve the problem.

UNH Title II Report Section 2.I
Open-ended Mathematics Items (Page 7 of 9)

- 13) Using the numbers given, place them in the squares to get the smallest possible sum and then solve the problem. You may use the numbers only once.

$$\frac{\square}{\square} + \frac{\square}{\square}$$

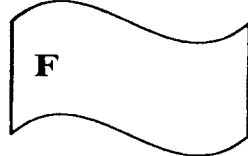
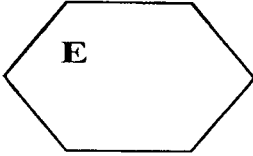
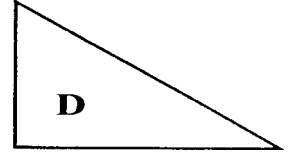
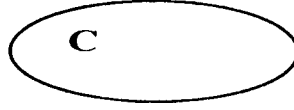
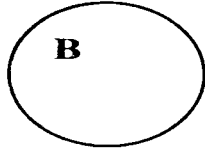
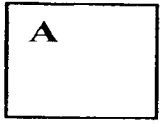
Use the Numbers

1, 2, 3, 4

Now solve the problem:

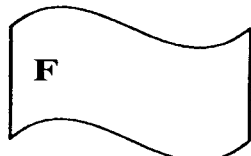
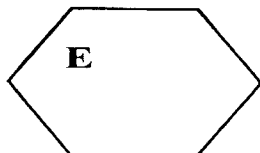
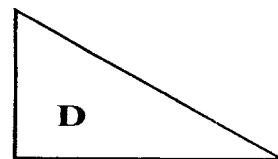
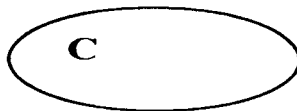
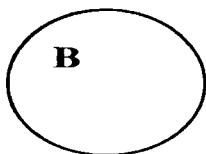
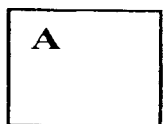
14)

- a) Sort all 6 of these shapes in 2 groups so the figures in each group have something in common. Then write a sentence that explains how you grouped the shapes.



Group 1	Group 2

b) Now sort them in another way and explain how you grouped them.



Group 1	Group 2
