

MATH 4010
Problem set 3
Due date: 10/03/07

Name _____

Please attach the appropriate cover sheet to your assignment. Remember that it must be stapled if you are turning in a hard copy, and it can not be late. **To get full credit you must have neat work and show all your work – with all the necessary explanations!**

(1) For base 4 make an addition table, a base 4 number line, labeling at least 20 tic marks and **a set of base 4 blocks (you should cut these out to use in your assignment)**

1. Work each of these problems and show how you used your table:

- $2_{(4)} + 13_{(4)} =$
- $12_{(4)} - 3_{(4)} =$

2. Illustrate each problem on a base 4 number line:

- $13_{(4)} + 2_{(4)} =$
- $12_{(4)} - 3_{(4)} =$

3. Illustrate each problem with base 4 blocks sketching your steps:

- $2_{(4)} + 13_{(4)} =$
- $12_{(4)} - 3_{(4)} =$
- $223_{(4)} + 132_{(4)} =$
- $201_{(4)} - 23_{(4)} =$

4. Write a four fact family for $3_{(4)} + 2_{(4)}$.

(2) Use base ten blocks to illustrate these two problems showing all your trading pieces and the whole process very clearly:

- $327 + 86$
- $243 - 78$

(3) What does it mean for a natural number in base 10 to be even? Consider the rule for determining if a very large number is even or odd. Can you write a similar rule for numbers written in base 5 and base 6? Investigate these bases to see if you can come up with a rule for each base. State your rule very clearly, explaining why you think it works, and how you came up with it. Try your rule on these numbers in each base: even or odd? Justify your answer using your rule.

1. $123221031_{(10)}$

2. $123221031_{(6)}$

3. $123221031_{(5)}$

4. $331102_{(10)}$

5. $331102_{(6)}$

6. $331102_{(5)}$

(4) Select one item from your exam which you missed or on which you did not do as well as you would have liked. Write the item, show how you worked it on the exam, analyze your error(s) and describe what you did not understand clearly. What understanding or model would have made this item easier for you?

Reflection (must be typed and labelled Marilyn Burns video) Comment on the techniques Marilyn Burns used when interviewing the children about place value. Use specific examples. Think about what you will use and how you would begin an interview with a first or second grader about subtraction. What will be your first question? How will you proceed?