M1: Place Value Math Tasks

Math Task 1: Place Value Riddles
The following task is a modification of a task taken from "Elementary and Middle School Mathematics: Teaching Developmentally", 8e, John A. Van de Walle.

Problem
1. Below is a list of base-ten riddles. Solve each riddle and show your work.
    a. I have 22 ones and 3 tens. Who am I?
    b. I have 4 hundreds, 12 tens, and 6 ones. Who am 1?
    c. I have 30 ones and 3 hundreds. Who am I?
    d. I have 13 tens, 2 hundreds, and 21 ones. Who am I?
    e. If you put 3 more tens with me, I would be 115. Who am I?
    f. I am 45. I have 25 ones. How many tens do I have?
    g. I have 17 ones. I am between 40 and 50. Who am I? How many tens do I have?
2. Take your answers for 1a-e and convert them into base 6 (so using the symbols 0,1,2,3,4,5). Show all your work.
3. Create 4 different base-six riddles similar to the base-ten riddles above. Give the answers to your riddles showing all your work.

Math Task 2: Ordering Whole Numbers

Task
1. Order the following numbers from least to greatest: 67, 123, 90, 7, 9, 456, 1001. Explain your method of ordering the numbers using base-ten terminology (ie ones, tens, etc.).
2. Order the following base 6 numbers from least to greatest WITHOUT converting them to base-ten first: 111_{six}, 5_{six}, 203_{six}, 34_{six}, 55_{six}, 1001_{six}. Explain your method of ordering the numbers using base-six terminology (ie ones, sixes, etc.).

Math Task 3: Rounding with Whole Numbers

Task
1. Round 765,271,348 to the nearest:
    a. Million
    b. Ten million
    c. Hundred Thousand
    d. Thousand
2. Develop a 'rounding rule' for base-six numbers that is similar to our base-ten rule.
3. Round (explaining all your steps) the base-six number 354321_{six} using your rule from number (2) to the nearest:
    a. 36
    b. 216
    c. 1296