NAME _____

EXAM 1 – Part 1 – Monday, Feb. 7, 2005.
Math 320: Math for Elementary School Teachers

20–MINUTES MENTAL DRILL

INSTRUCTIONS: ONLY WRITE THE FINAL ANSWER, NO SCRATCH PAPER, NO SCRIBBLING ON THIS SHEET, NO CALCULATORS, USE INK PEN ONLY. EXERCISE THE COMPUTATIONAL TRICKS (THINKING STRATEGIES) WE HAVE BEEN LEARNING. EACH QUESTION IS WORTH 2 POINTS.

1. $833 - 381 =$ ☐

2. $89 + 113 =$ ☐

3. Average $154, 152, 153, 149 =$ ☐

4. $(11)_{10} = (\quad)_2$

5. $(1111)_2 = (\quad)_{10}$

6. $(2B)_{16} = (\quad)_{10}$

7. $1340 \div 5 =$ ☐

8. $25 \times 88 =$ ☐

9. $150 \div 6 =$ ☐

10. The tip on 24\$ = ☐

NAME _____

EXAM 1 – Part 2 – Monday, Feb. 7, 2005.
Math 320: Math for Elementary School Teachers

PART 2: 30–MINUTES TEST

INSTRUCTIONS: USE SCRATCH PAPER, WRITE COMPLETE AND FINAL ANSWERS USING INK PEN, NO SCRIBBLING, NO CALCULATORS. PARTIAL CREDIT WILL BE GIVEN IF DESERVED, SO JUSTIFY AND SHOW ALL YOUR WORK.

1. (5pts) Fill in the blanks:

(a) _____, _____, and _____, are the three interpretations of subtraction, and they can be illustrated using _____ models or _____ models

(b) "How many segments of a fixed size are there in another larger segment?" This question illustrates the _____ interpretation of division.

(c) The commutative and _____ properties of addition together imply the _____-_____ property.

(d) Operations inside parenthesis are done _____.

(e) *Division* is defined by _____, as in the following example:

2. (5pts) Write a word problem for $100 \div 20$ division using the partitive interpretation and illustrate your problem by using an appropriate diagram.

3. (5pts) Give a full "teacher's solution" for the following word problems:
(a) 5 children shared the cost of a present equally. Each of them paid $ 6. What was the cost of the present?

(b) Heather weighs 32 kg. Alexi is twice as heavy as Heather. Olga weighs 21 kg less than Alexi. What is Olga's weight?

4. (5pts) State the Quotient-Remainder Theorem and explain it using a set model.

5. (5pts) Pile 1 has 10 pennies, Pile 2 has 5 pennies, Pile 3 has 7 pennies. In the "pennies game" the first player should remove _____ pennies from Pile _____

Justify your answer and show your work below. Draw a picture.

6. (5 pts) Compute the expression below without using the algorithms, but using the mental math strategies we have learned instead. Write all the steps you have taken and show the strategies you have used.

$$[(654 \div 109) \times 43 \times (652 \div 326)] \div 12 - (34 \times 5 - 127) =$$