Quiz 4

Key

This is a two-stage quiz. During the first stage, use your knowledge & calculator to take this quiz. You have 15 min. In the second stage, you are now welcome to use your books, notes, and students in the class to retake the same quiz. You have 15 min. to write one solution (with everyone's name on it!!!) to be turned in for the group.

Show *all* your work. Reasonable supporting work must be shown for any partial credit.

1. [2] The work below is wrong. Find the error(s) & try to detect the reason for the error.

$$84 - 36 = (80 + 4) - (30 + 6) = (50 + 30 + 4) - (30 + 6) = 50 + 4 + 6 = 50 + 10 = 60$$

The student lost the -6 in the number -36. The minus was dropped and instead the 6 was added. ie. forgot to distribute the negative sign

2. [2] Let a and b be whole numbers. Is the following statement always true, sometimes true, or never true? Briefly justify your answer.
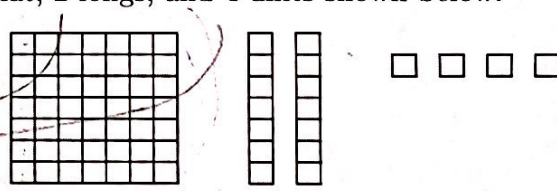
$$a - b = b - a$$

Sometimes true.
eg if $a = b$ then
$a - b = 0 = b - a$

but if $a \neq b$ then the equality fails.
eg if $a = 2$ and $b = 1$
$a - b = 1 \neq -1 = b - a$

3. Consider the number represented with one flat, 2 longs, and 4 units shown below.

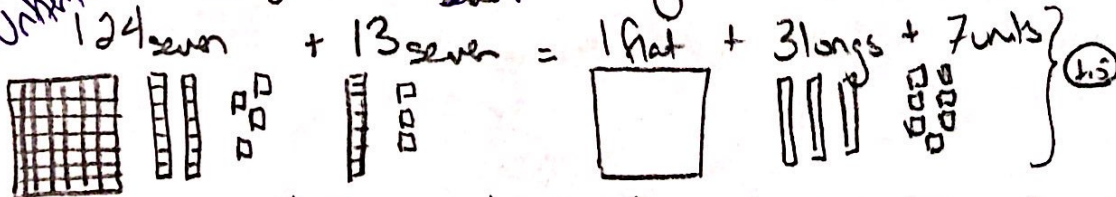(a) [2] Write the number of units in positional notation for the given base.

base 7

$1\ 2\ 4_{seven}$

note: # of units
$1 \cdot 7^2 + 2 \cdot 7 + 4 = 49 + 14 + 4 = 67$

(b) [4] Add the above number to 13_{seven}. Provide steps as you would for a 2nd grader.

Recall 13_{seven} is in base 7, so our longs are 7 units

So $13_{seven} = 1 \cdot long + 3 \cdot units$ or $7 + 3$ or 10 units. We show that

$124_{seven} + 13_{seven} = 1\ flat + 3\ longs + 7\ units$

We regroup the 7 units to one long.

Now we have 7 units which makes a long so we have
$1\ flat + 4\ longs$ or 140_{seven}

note: # of units
$67 + 10 = 77$