3.5 Mental Math and Estimation

Important Note: Estimation is an *approximate* answer to an arithmetic problem.

Some Mental Math Strategies:

1. Use commutativity/associativity/distributivity

ex. 13 + 21 + 45 + 39 + 27

2. Additive/multiplicative compensation

ex. 98 + 47

64(5)

3. Special factor

ex. 48(25)

84(5)

4. Left-to-right addition

ex. 237 + 436

Some Estimation Strategies:

1. Range estimate

ex. 196(23)

2. Compatible number estimation

ex. 89(15)

3. Rounding

ex. 2317 + 4341

More examples:

1. 40 + 160 + 29 + 31

2. 75 + 28

3. 3679 - 474

4. $5075 \div 25$

5. 123(3)

6. $25 \times 32 \times 4$

7. Fliers are being delivered to 3625 houses and there are 42 people who will be doing the distribution. If distributed equally, about how many houses will each person visit?

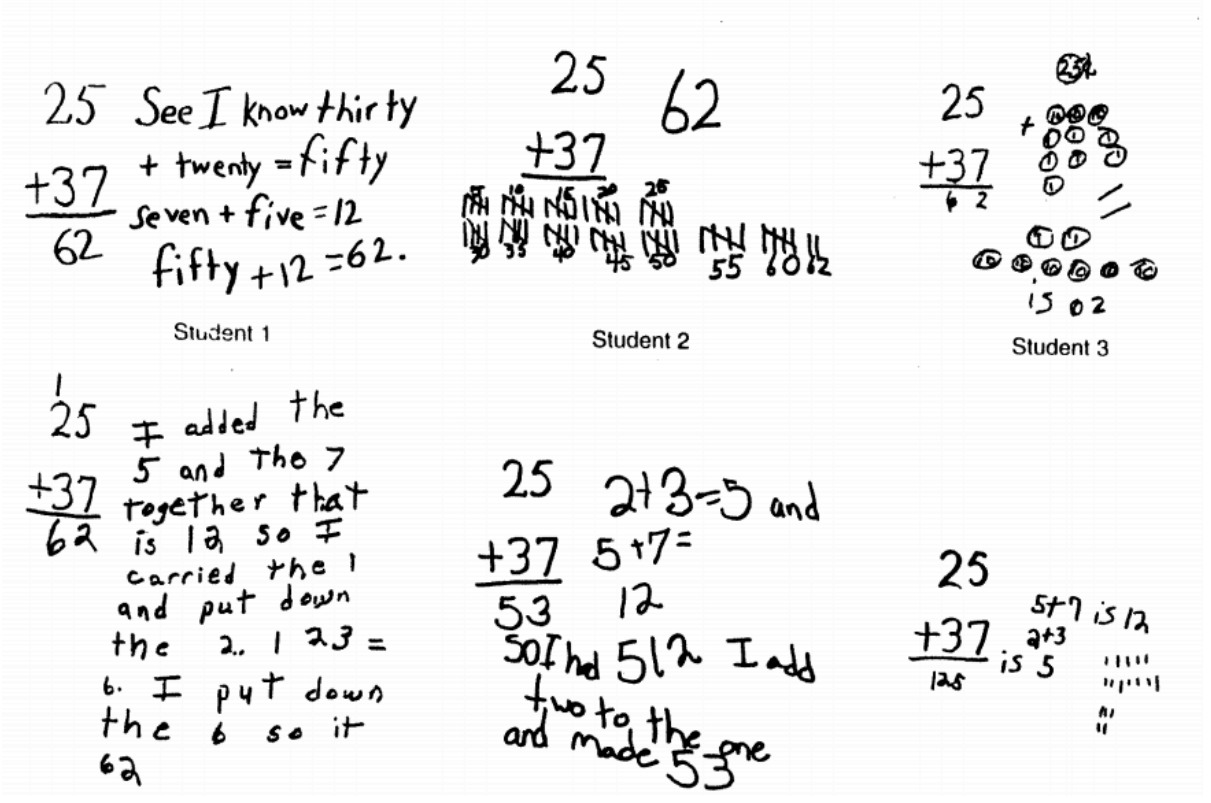
Without computing, tell which of the following have the same answer.

(a) 88(44) and 44(22)

(b) 93(15) and 31(45)

(c) 12(18) and 20(17)

Can you "estimate" by calculating the answer exactly and then rounding?



What are they thinking?

$$\begin{array}{r} 23 \\ -15 \\ \hline 12 \end{array}$$

$$\begin{array}{r} 4\,15\,11 \\ 5\,6\,2 \\ -\,2\,3\,7 \\ \hline 3\,2\,5 \end{array}$$

$$\begin{array}{r} 3\,5\,1\,2 \\ 2\,8\,7 \\ \hline 1\,8\,5 \end{array}$$

$$\begin{array}{r} 1\,5\,3 \\ \times\ \ 4 \\ \hline 2\,4\,2 \end{array}$$