Perseverance in Math

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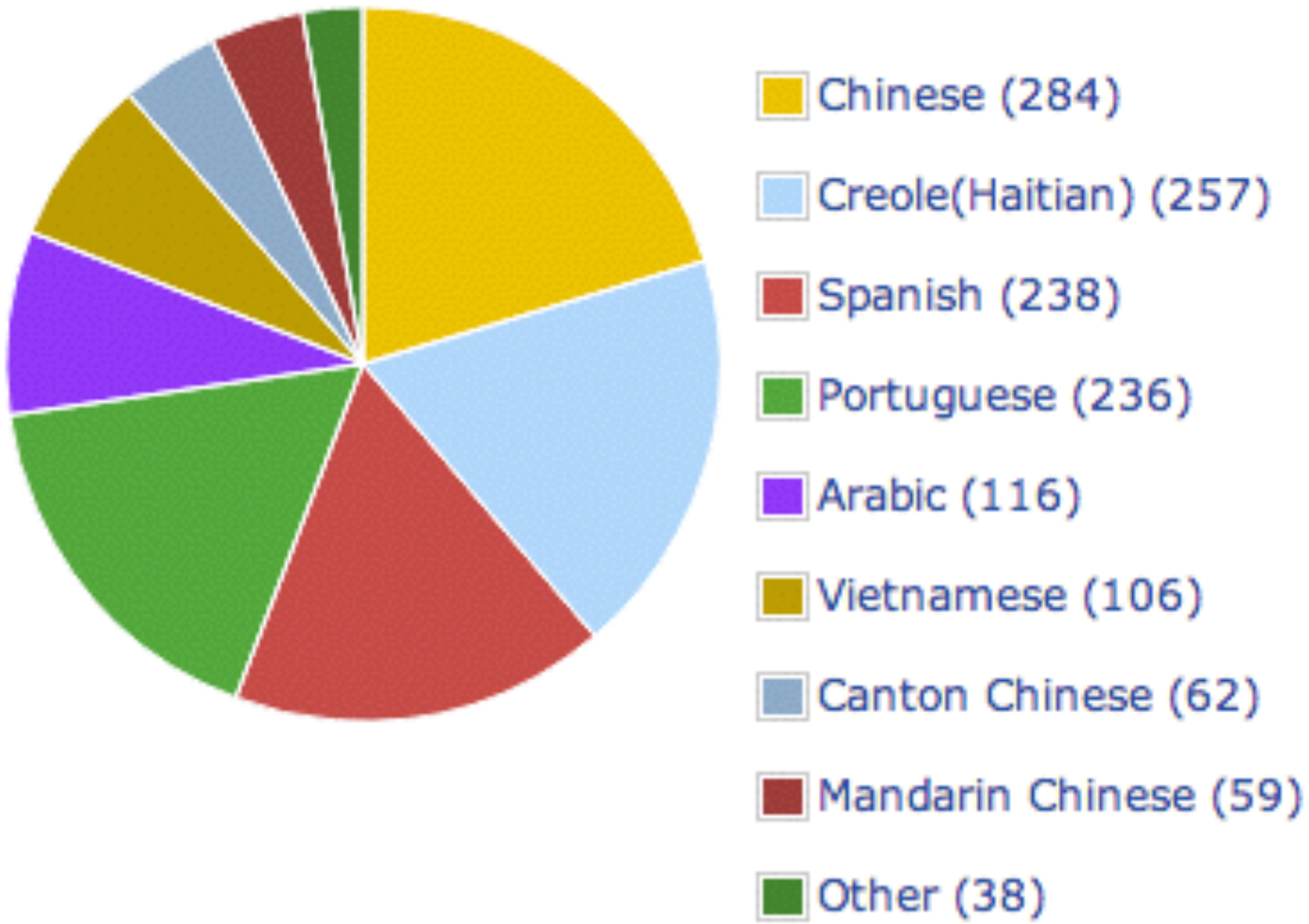


Objectives

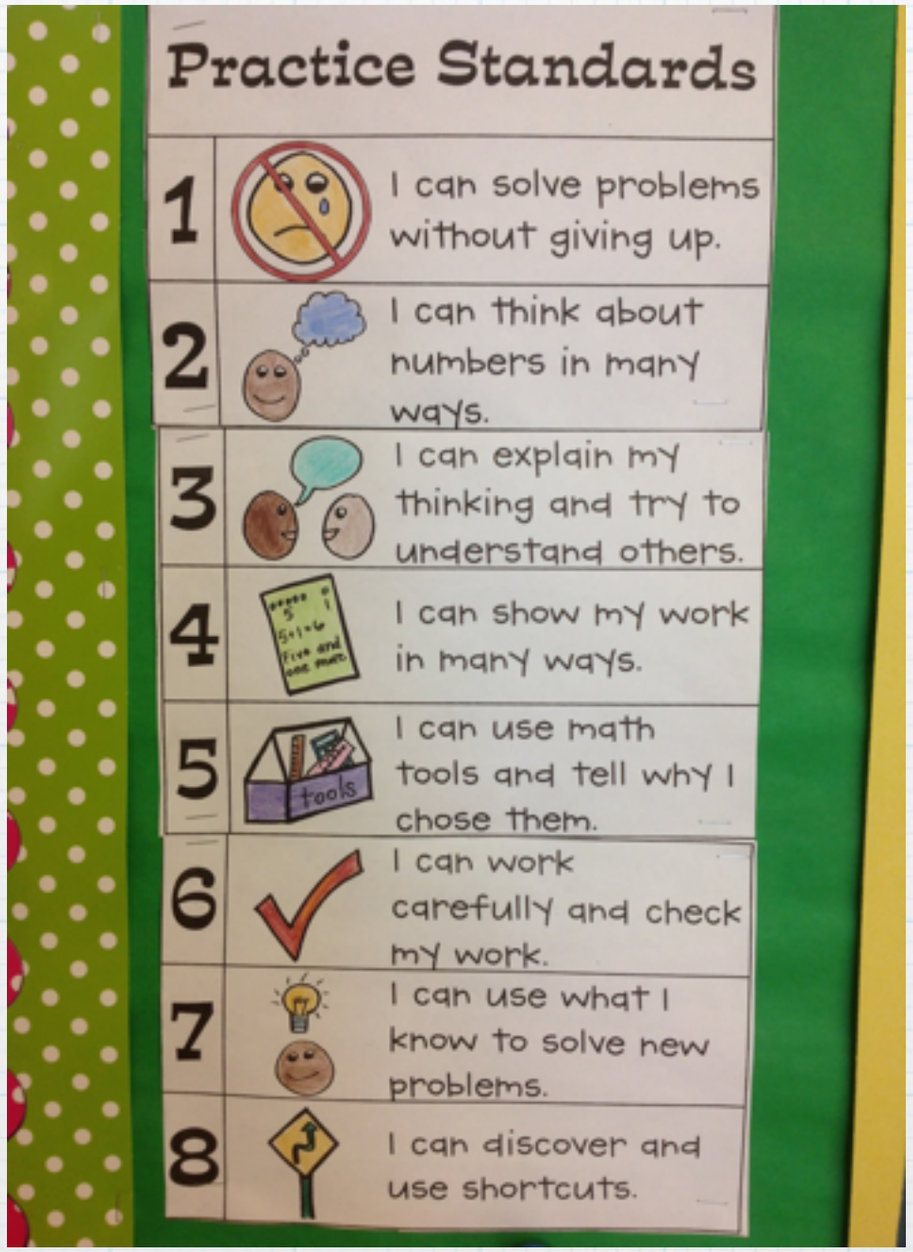
* Provide examples on how to effectively meet content and language standards by providing ELLs the necessary strategies to persevere in math

T.T.

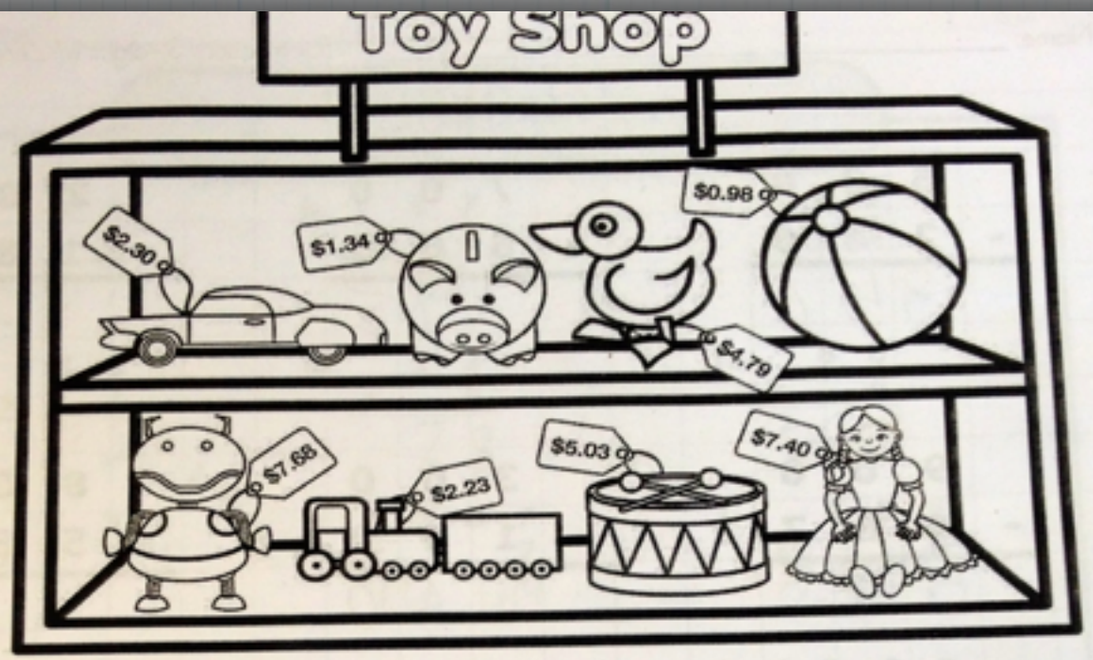
"What is perseverance?"

"Perseverance is..."

Perseverance Needs to be Explicitly Taught!



How do we identify the degree of perseverance amongst diverse learners ?



1. How much would it cost to buy a robot and a piggy bank?

answer: 9.02

2. How much would it cost to buy a toy car and a plastic duck?

answer: 3.28

3. How much would it cost to buy two beach balls?

answer: 1.86

. How much would it cost to buy a drum and a doll?

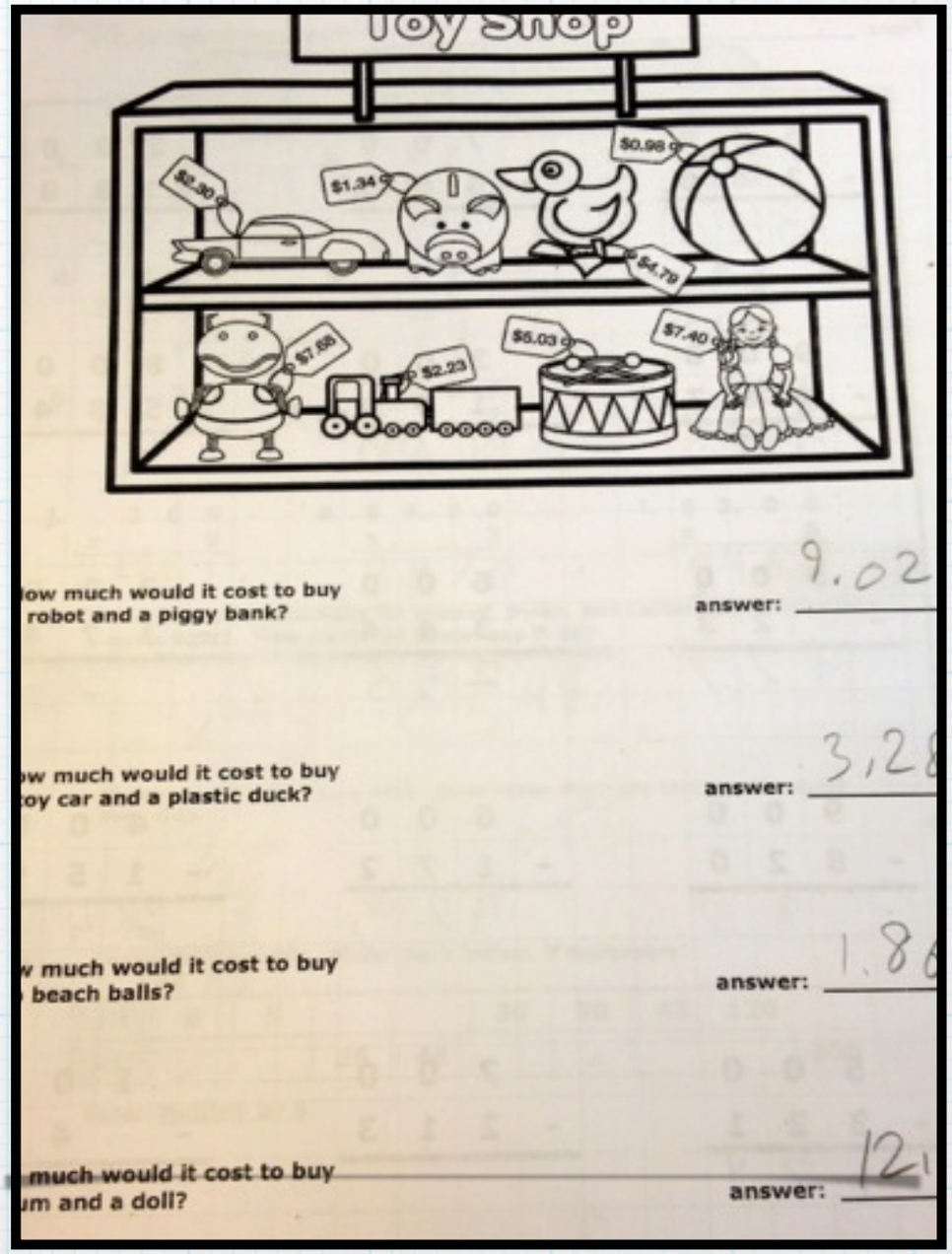
answer: 12.43

T.T.

What evidence of perseverance is being demonstrated in this example?

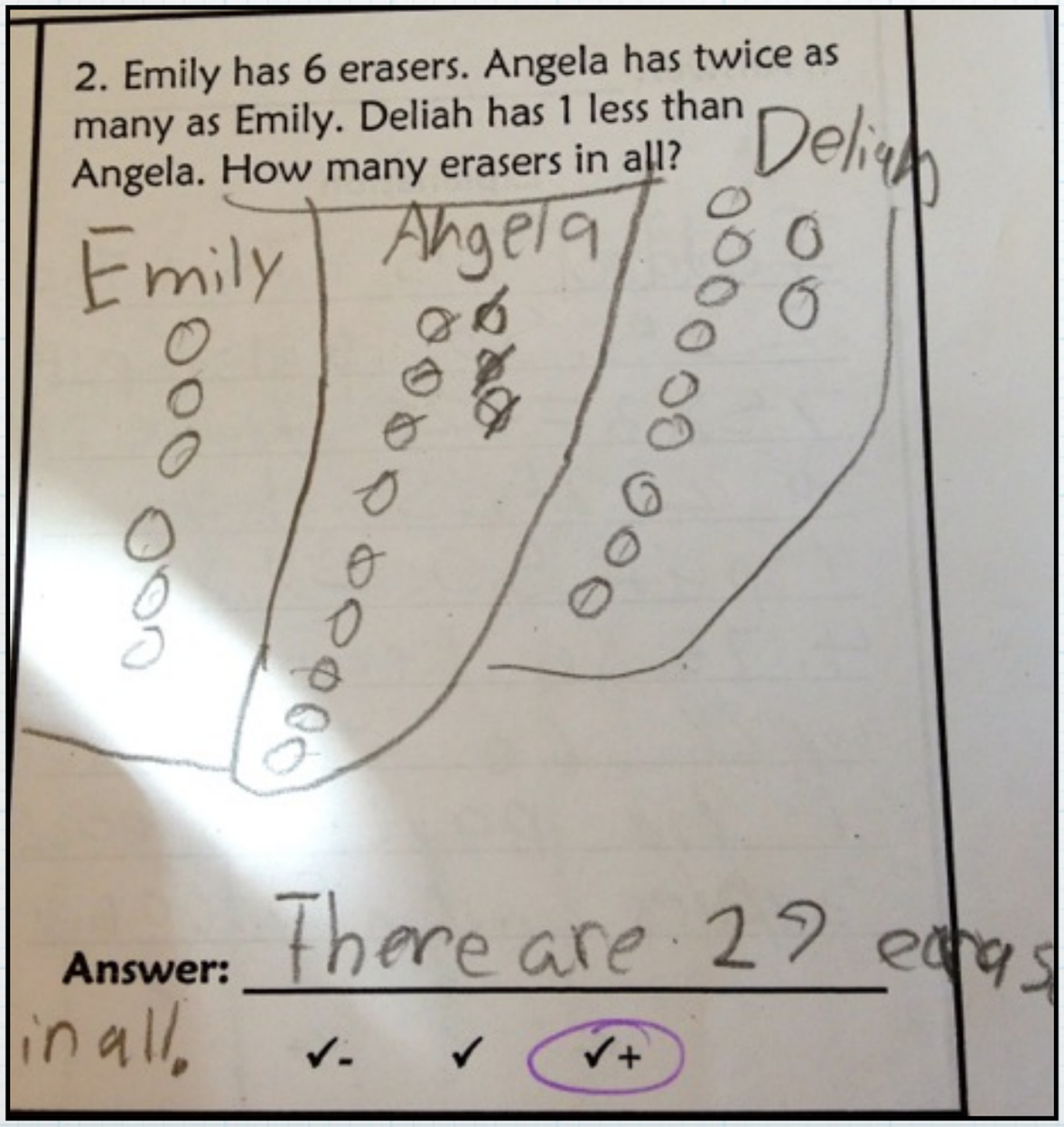
Observable Evidence of Perseverance

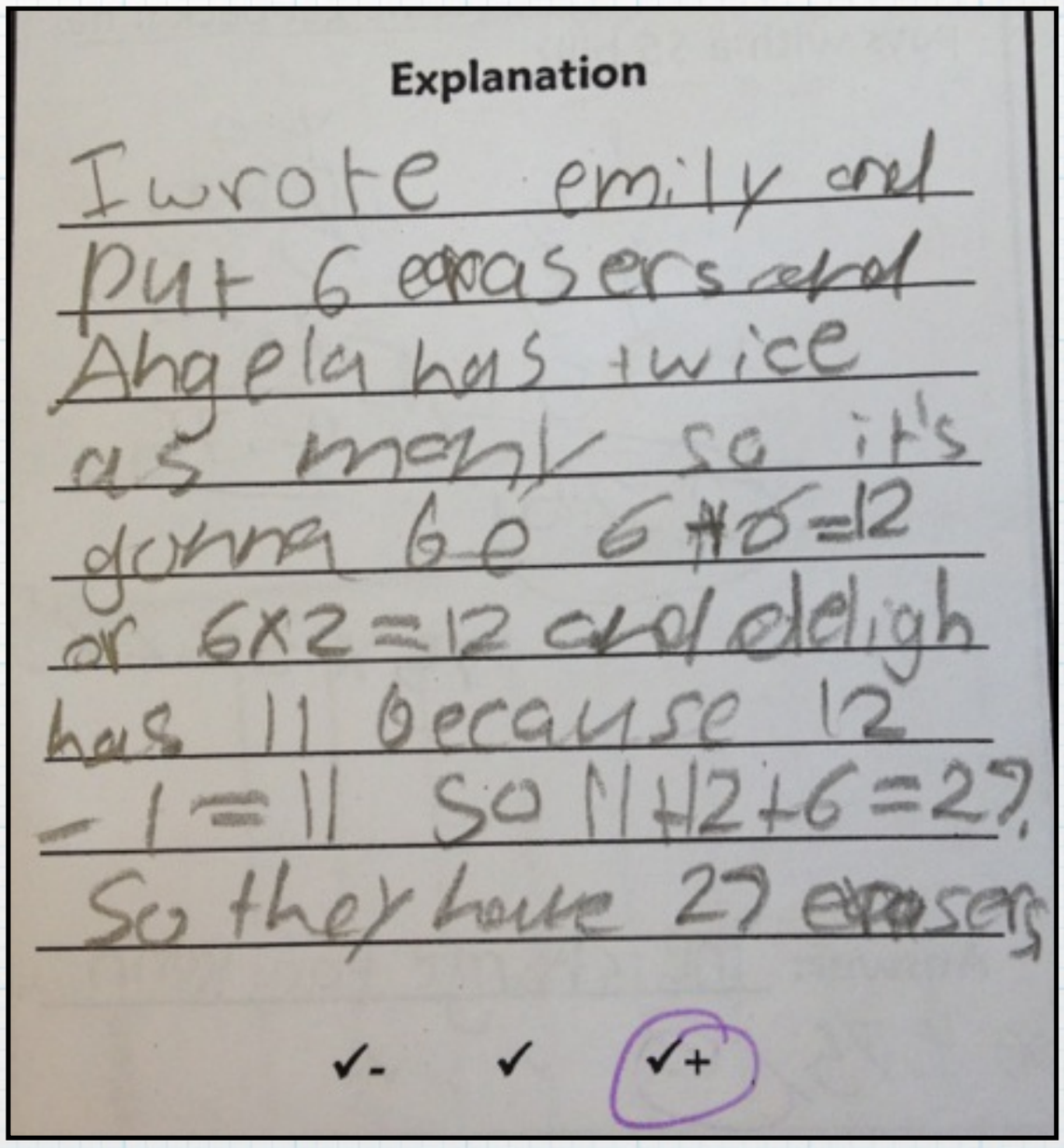
- Solved the problems correctly



What evidence of perseverance is being demonstrated in this example?

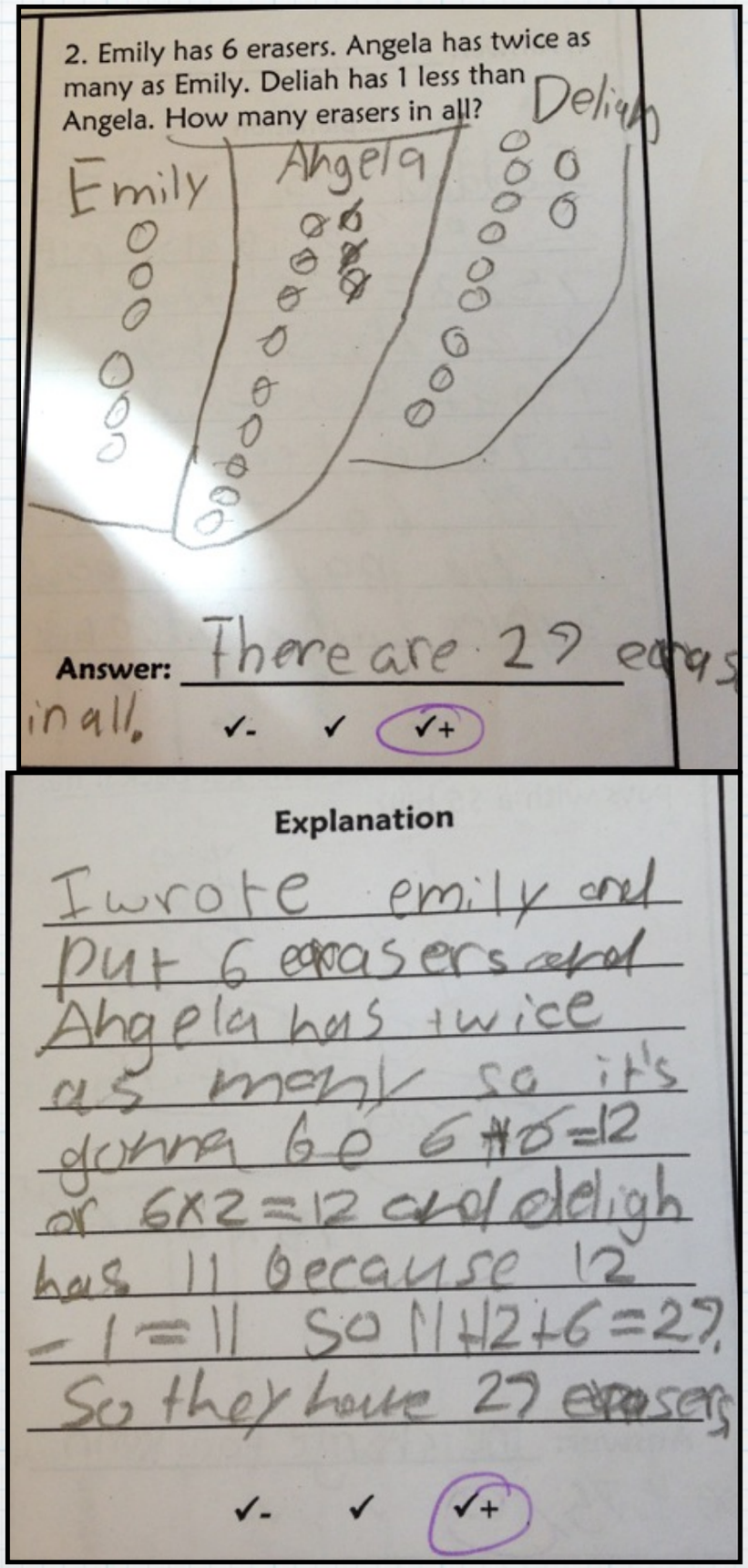
T.T.





Observable Evidence of Perseverance

* Solution is correct AND
  * Underlines the question
  * Shows a clear strategy for solving the problem
  * Gives a clear explanation on how they solved the problem



What evidence of perseverance is being demonstrated in this example?

T.T.

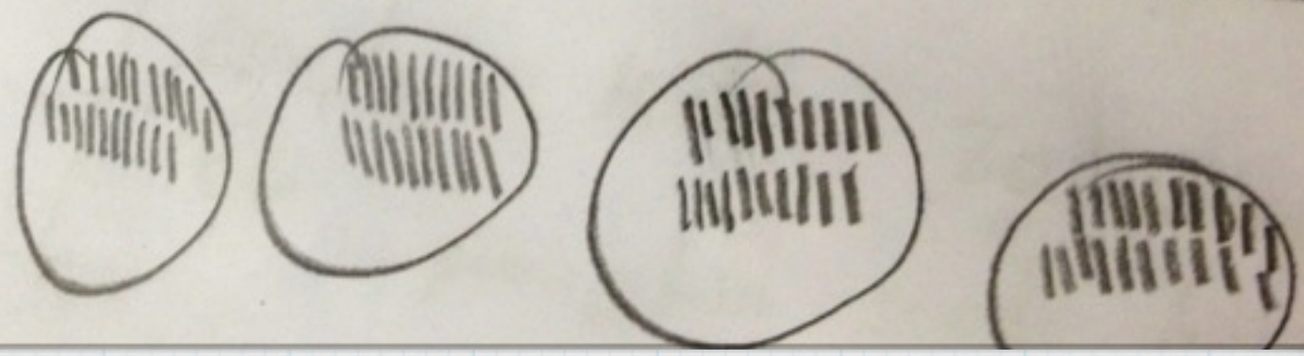
Sharing Pumpkin Seeds

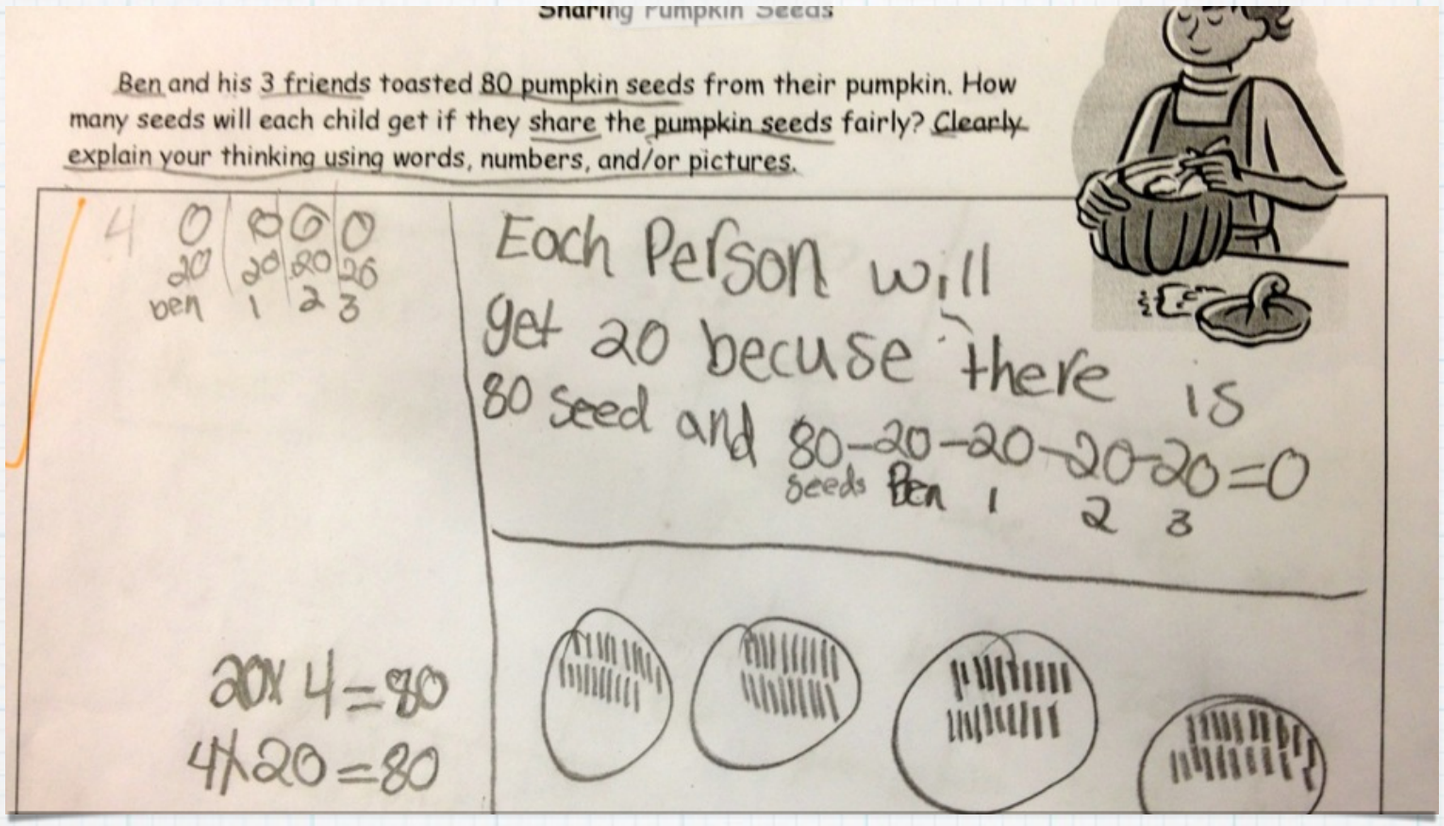
Ben and his 3 friends toasted 80 pumpkin seeds from their pumpkin. How many seeds will each child get if they share the pumpkin seeds fairly? Clearly explain your thinking using words, numbers, and/or pictures.

4 0 20 20 20 20 20 20 20 20
Ben 1 2 3

Each Person will get 20 because there is 80 seed and 80 − 20 − 20 − 20 − 20 = 0
seeds Ben 1 2 3

20 × 4 = 80
4 × 20 = 80



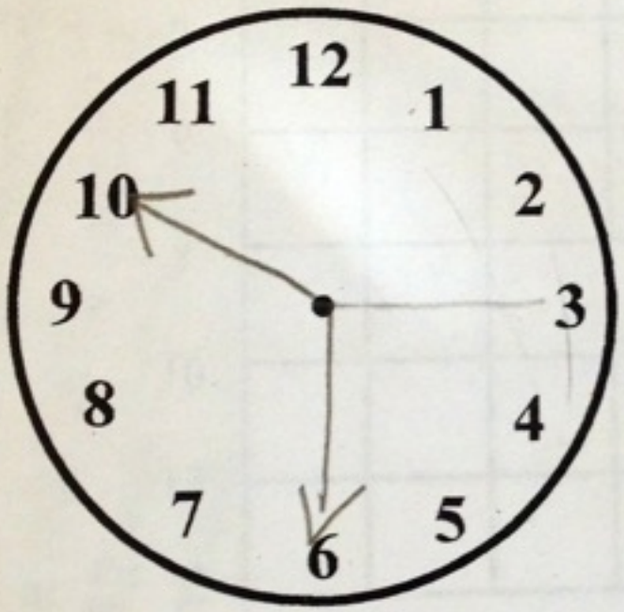


Observable Evidence of Perseverance

- underlines important information in the problem
- shows work
- student explains their thinking
- demonstrates several ways to solve the problem
- student checks their work carefully

Road Blocks for ELLs

2. The New Year's Eve party started at half past 10 and went until midnight. How long did the party last? Draw the hands on the clocks below to help you find the answer.



2. The temperature at 8:00 a.m. was 68°F. If the temperature rose 2° each hour, what was the temperature at 11:00 a.m.?

"Ms. Kaplan what does the temperature, rose, 2 zero each hour mean?"

Strategies To Help ELLs Persevere

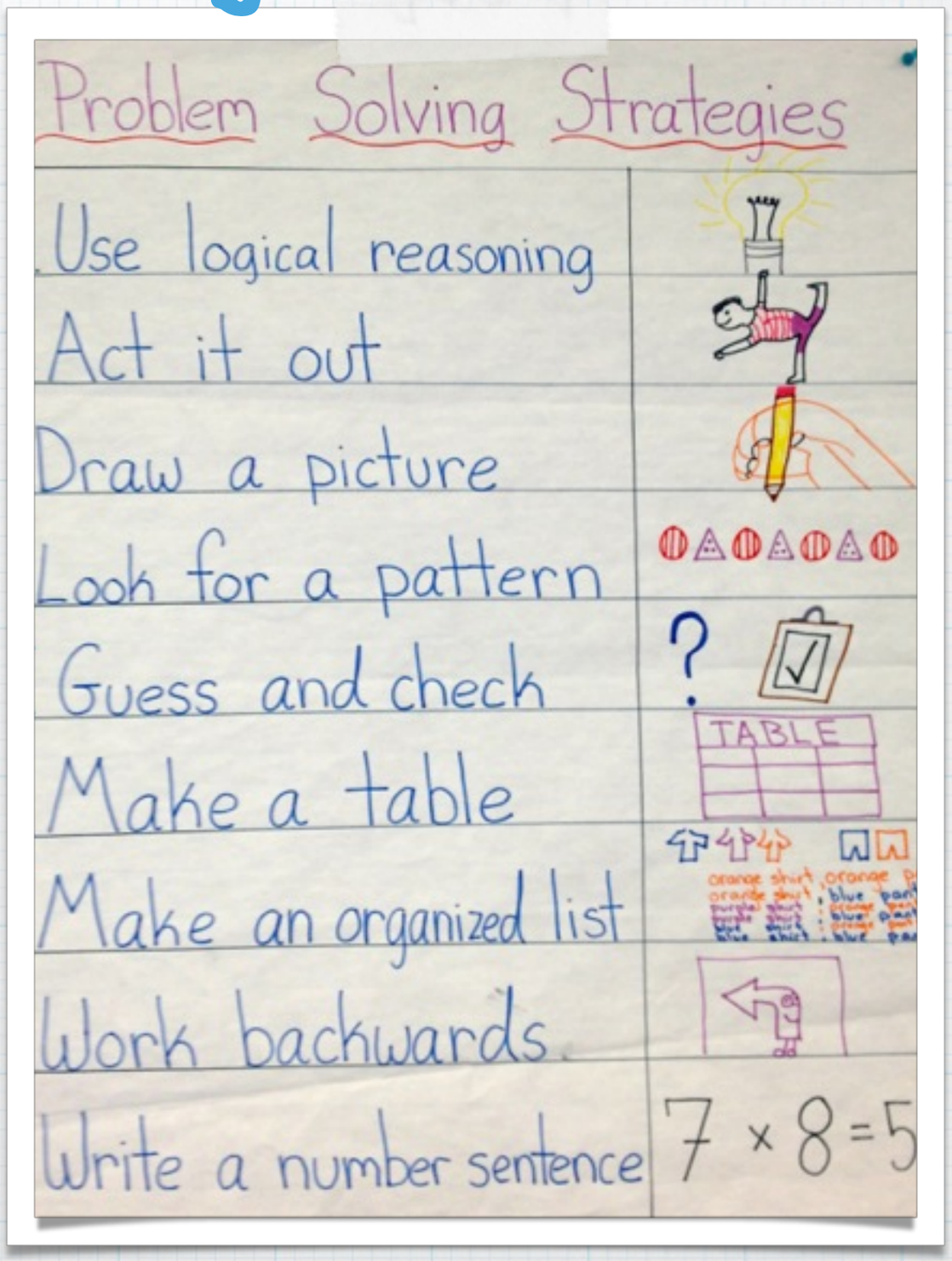
WIDA Interactive Scaffold: Explicitly Teaching Strategies to increase Math Perseverance Gradual Release

* I Do. You watch
    - Teacher models how to analyze question, identify strategy, solve the problem, write explanation
* I Do. You help.
    - Teacher practices strategies for analyzing the question with students
    - Teacher and students discuss strategies that could be used to solve the problem
    - Teacher supports students with writing an explanation on how to solve the problem
* You do. I help.
    - Students practice math problems, teacher identifies strategy to use to solve the problem
* You do. I watch.
    - Students identify which problem solving strategy and operation works best for them to solve the problem on their own
    - Students write explanation on how they solved the problem

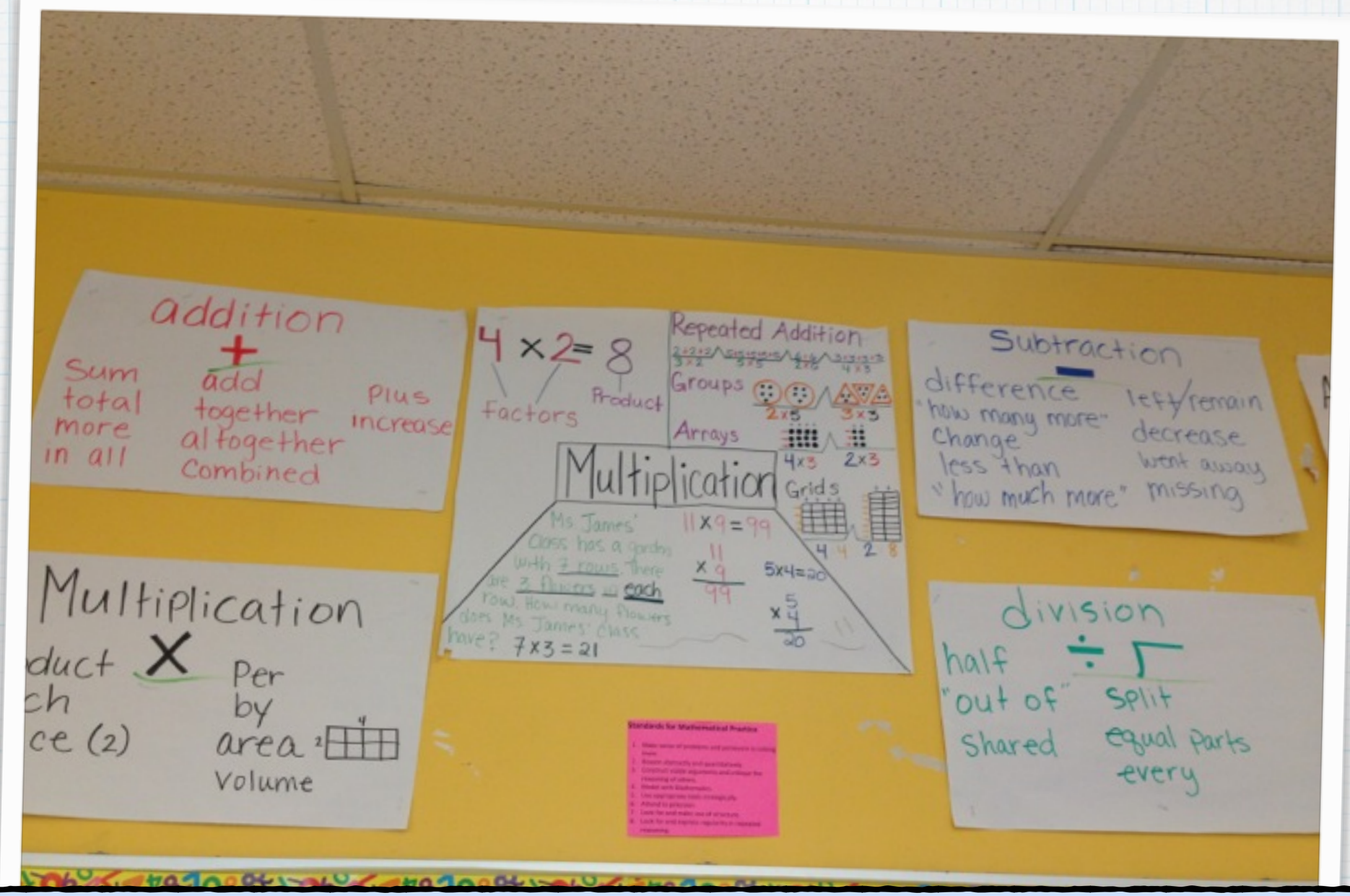
Meta-cognitive Problem-Solving Tools

* Create anchor charts and model how to refer to them when solving math word problems

* Include visuals in anchor chart



Problem-Solving tools



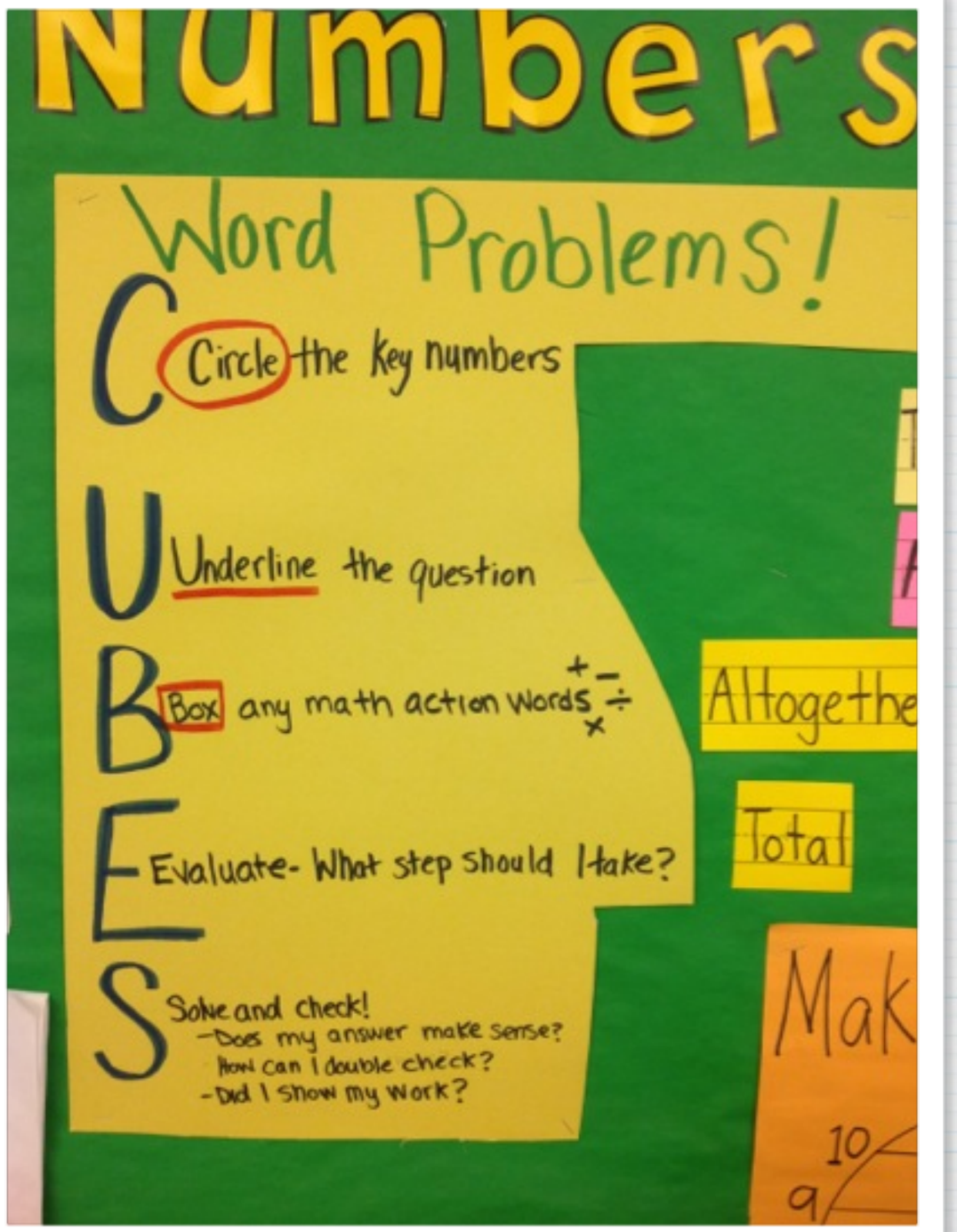
Giving students operational clue words can help give them the tools they need to solve word problems

Problems with Relying solely Clue Words

Ms. Kaplan has 22 students in her classroom which is 5 less than Ms. James. How many students does Ms. James have?

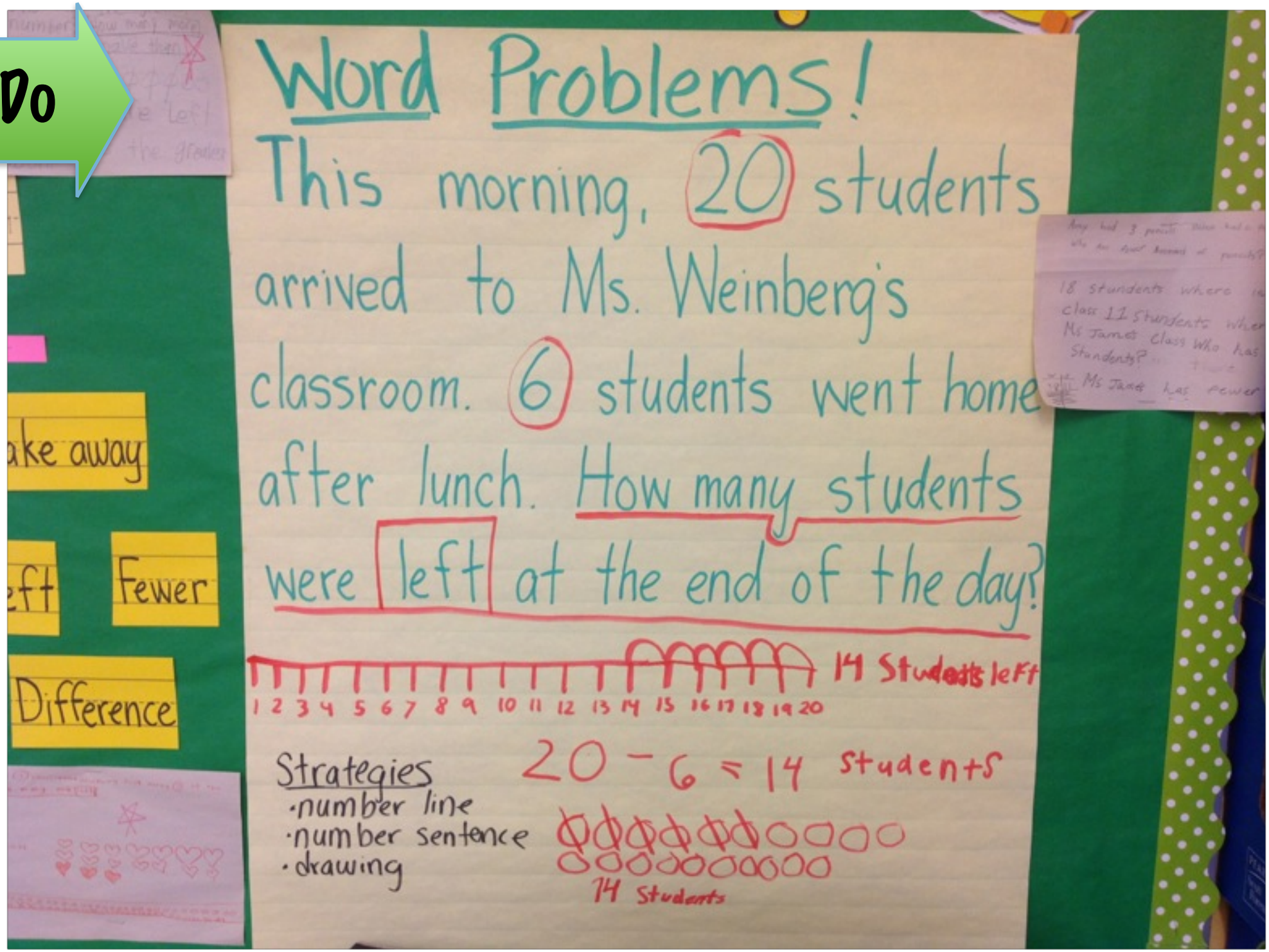
CUBES

* Strategy for analyzing the word problem
  - (C)ircle the important numbers
  - (U)nderline the question
  - (B)ox operational words
  - (E)valuate- what do we do next?
  - (S)olve and check

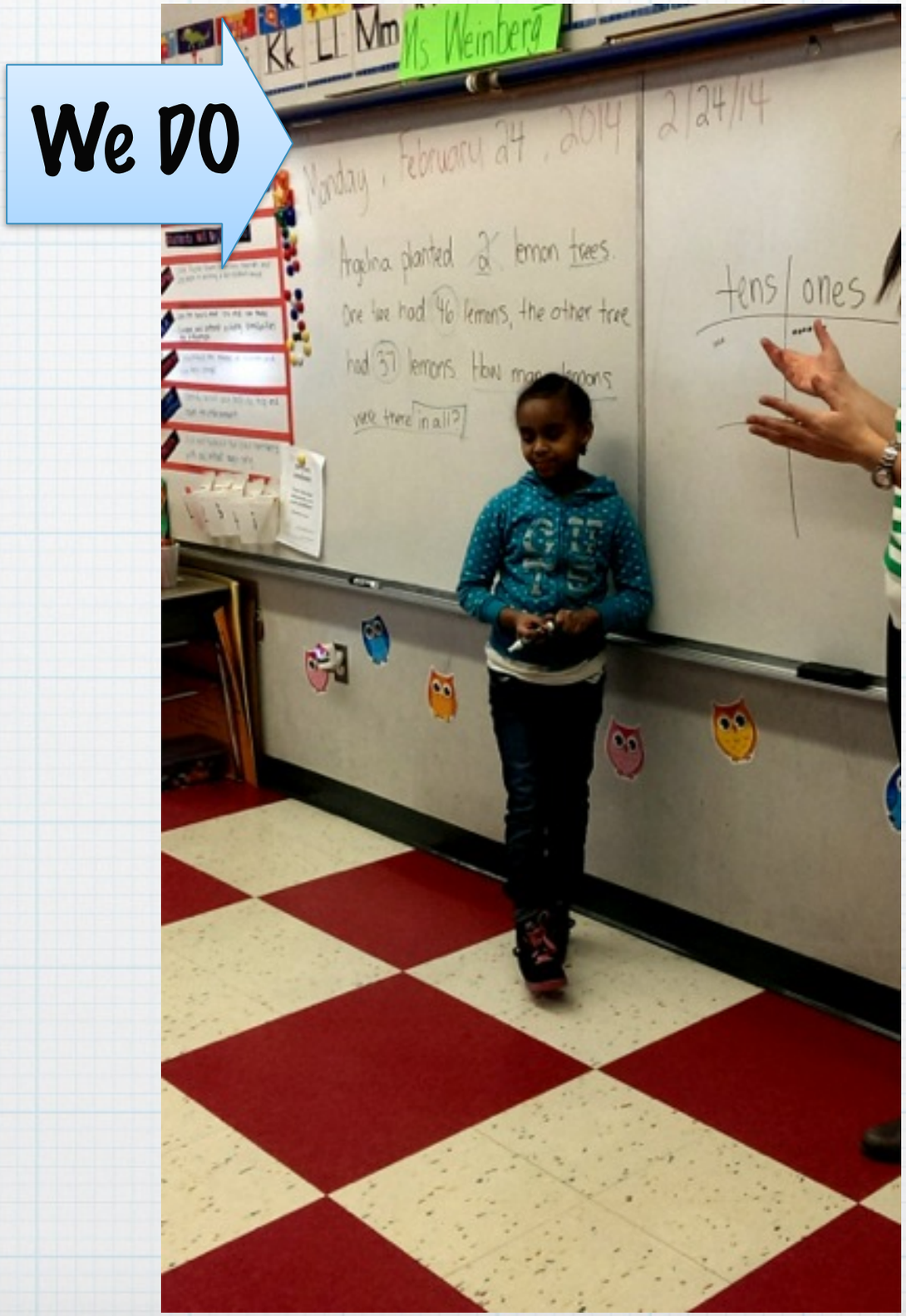


CUBES

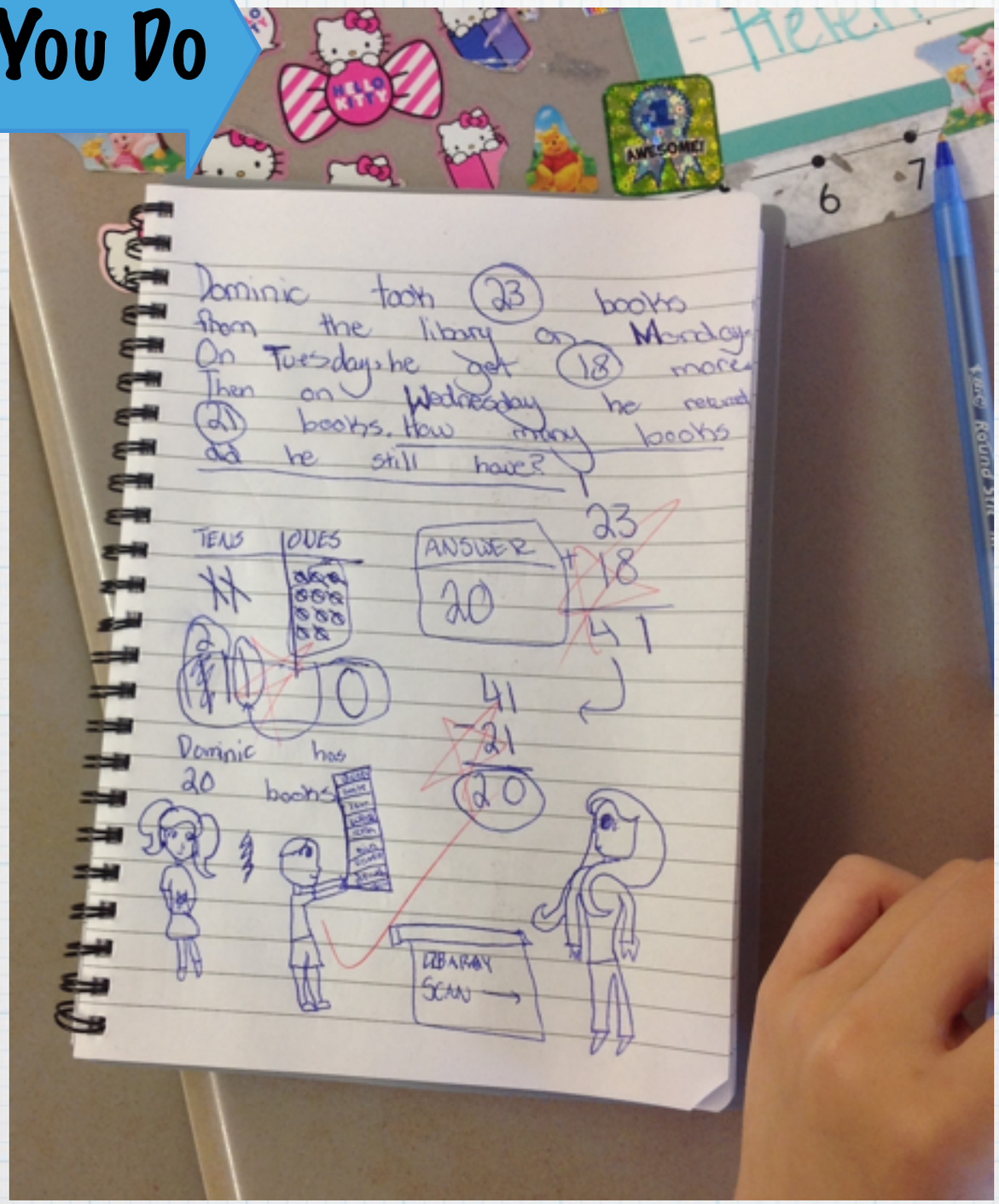
I Do

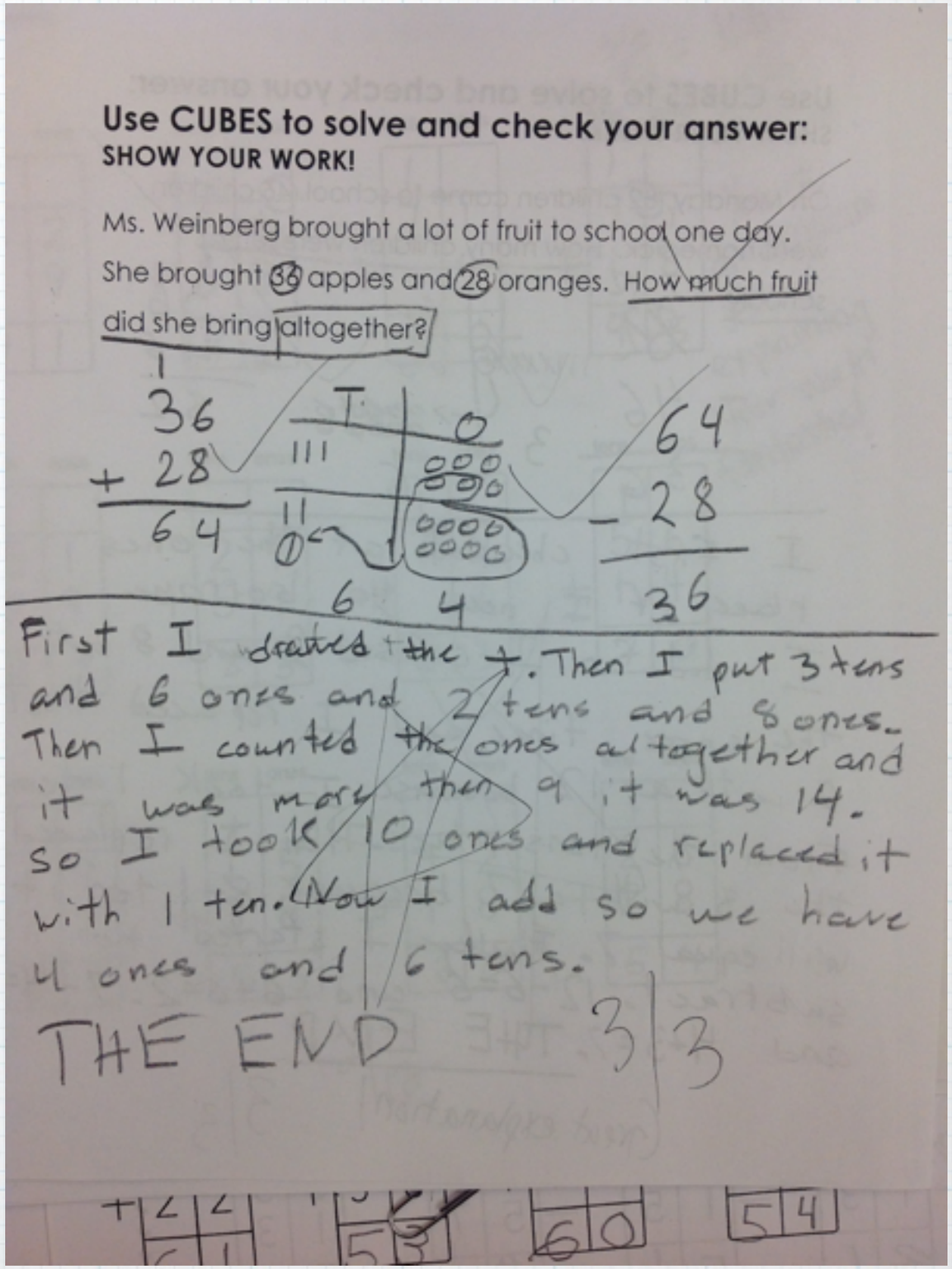

Word Problems!
This morning, 20 students arrived to Ms. Weinberg's classroom. 6 students went home after lunch. How many students were left at the end of the day?
14 Students left
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Strategies
·number line
·number sentence
·drawing
20 - 6 = 14 students
14 students
ake away
eft
Fewer
Difference

CUBES

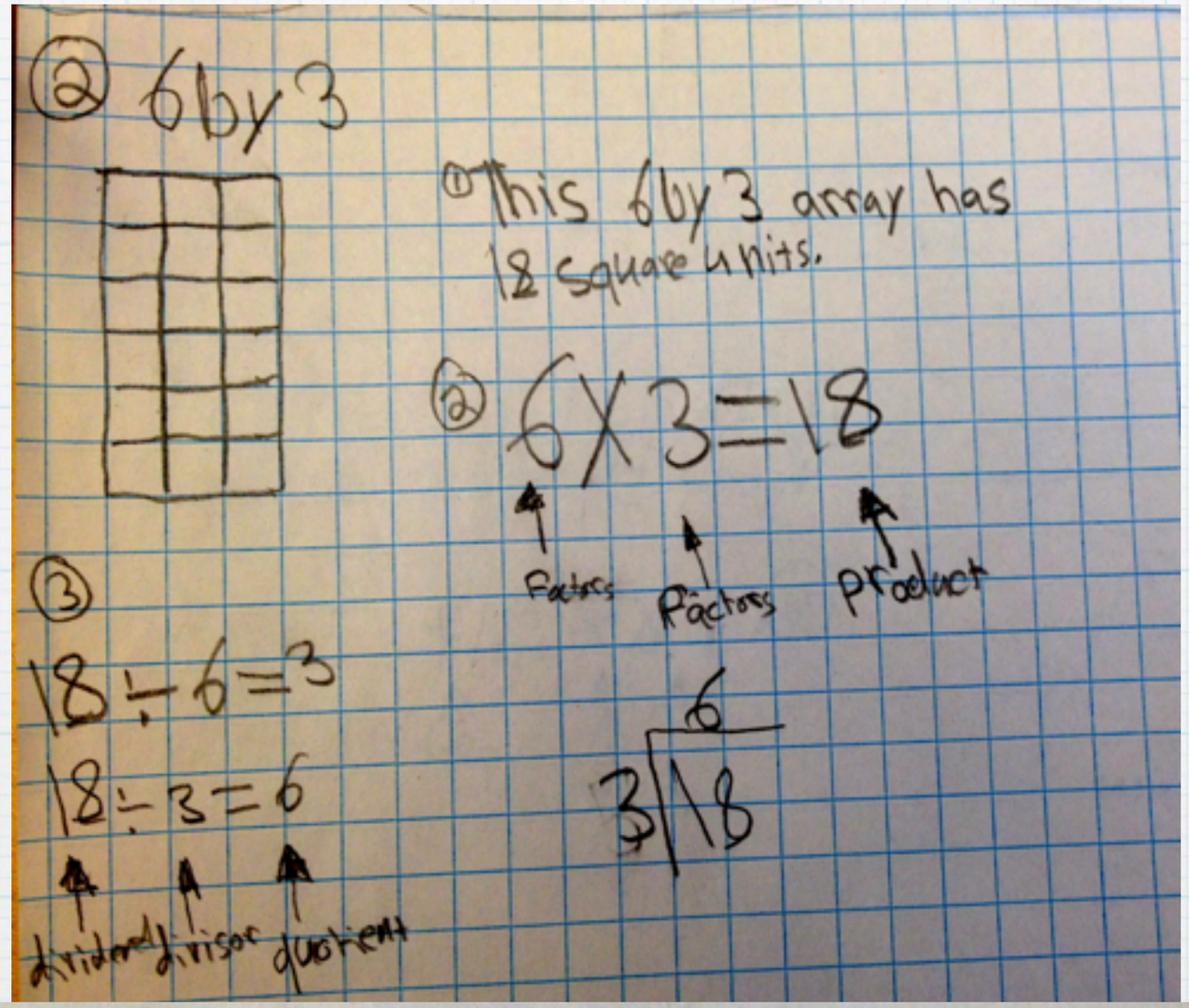

We DO
Ms. Weinberg
Monday, February 24, 2014
2/24/14
Angelina planted 2 lemon trees.
One tree had 46 lemons, the other tree
had 31 lemons. How many lemons
were there in all?
tens | ones

You Do


Dominic took 23 books from the library on Monday. On Tuesday he got 18 more. Then on Wednesday he returned 21 books. How many books did he still have?
TENS
ONES
ANSWER
20
23
+18
41
41
-21
20
Dominic has 20 books
LIBRARY SCAN


Use CUBES to solve and check your answer:
SHOW YOUR WORK!
Ms. Weinberg brought a lot of fruit to school one day. She brought 36 apples and 28 oranges. How much fruit did she bring altogether?
36
+ 28
64
T
O
64
- 28
36
6 4
First I drawed the +. Then I put 3 tens and 6 ones and 2 tens and 8 ones. Then I counted the ones altogether and it was more then 9 it was 14. so I took 10 ones and replaced it with 1 ten. Now I add so we have 4 ones and 6 tens.
THE END
3/3

Students write their own math word problems

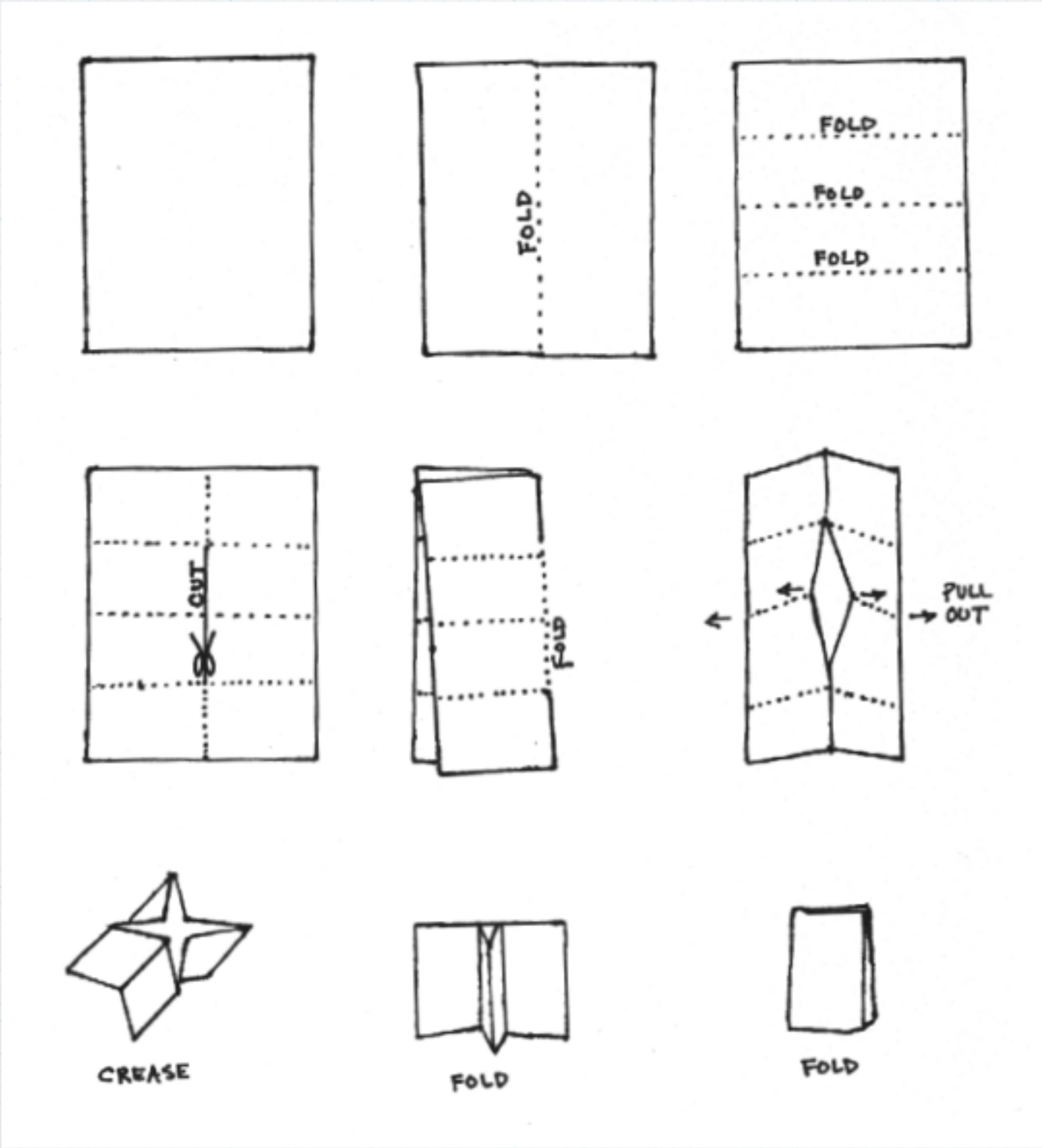


② Stacy has 6 cookies and each cookie has 3 chocolate chips on it. How many chocolate chips do stacy have in all?

Scaffolding techniques for ELLs

_____ (Name) has _____ cookies. Each cookie has _____ chocolate chips. How many chocolate chips does _____ (Name) have in all?

Magic Foldable Book



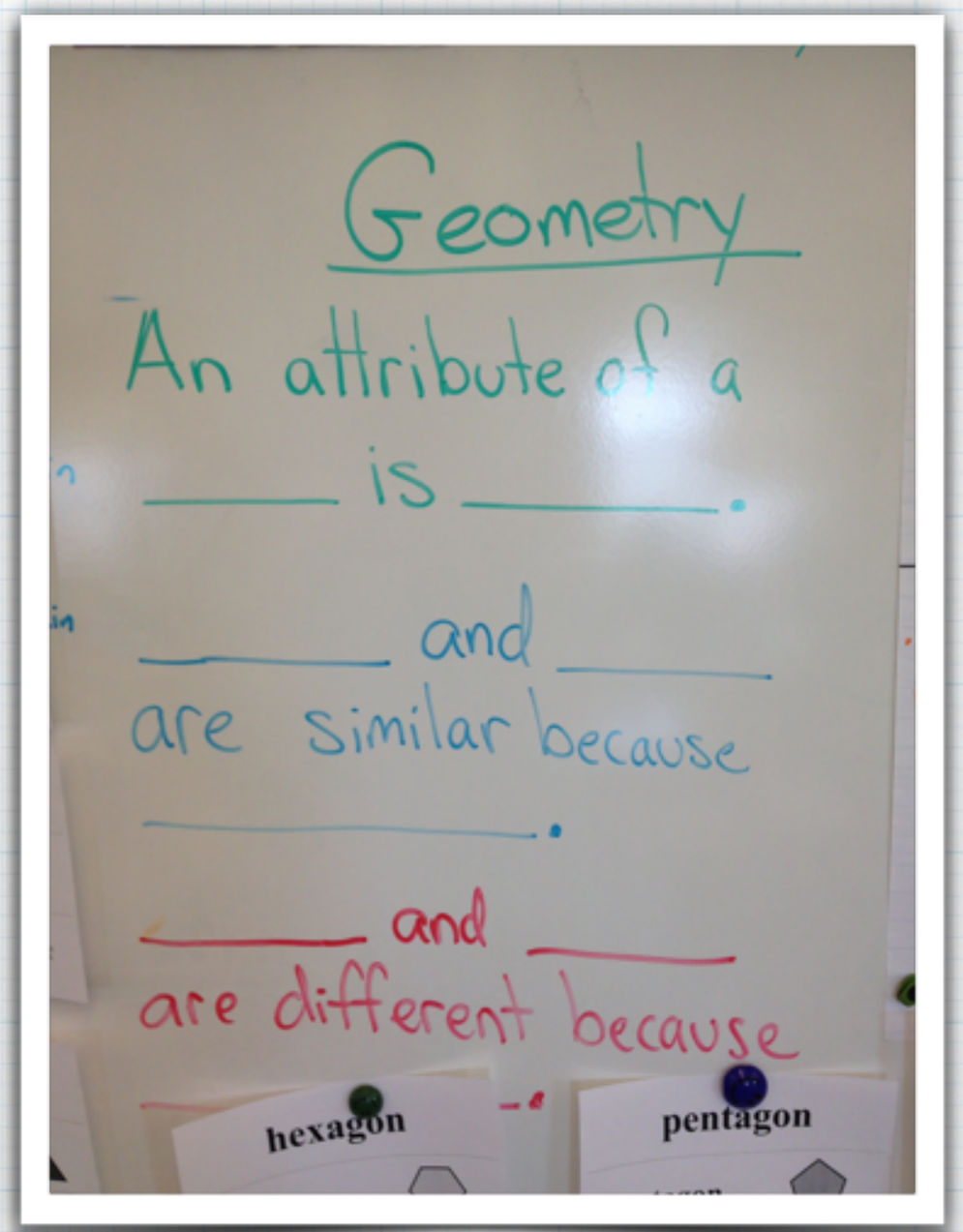
Guiding Questions

* What is the question asking?
* What information is given to help solve the problem?
* What strategy will help you solve the problem?
* How can you check your answer?
* Can you explain the steps you took to find the answer?

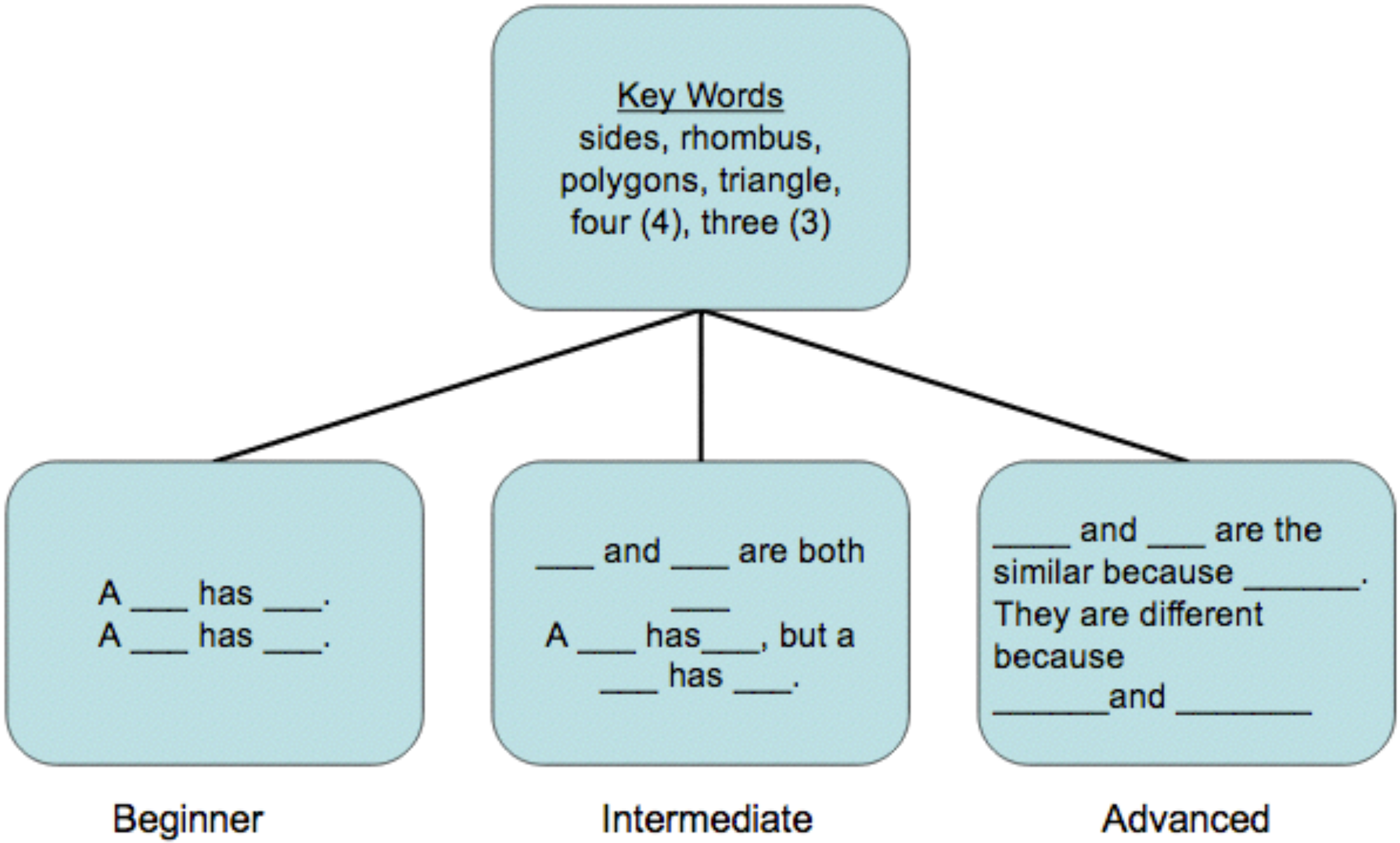
Developing Academic Language

Sentence Frames

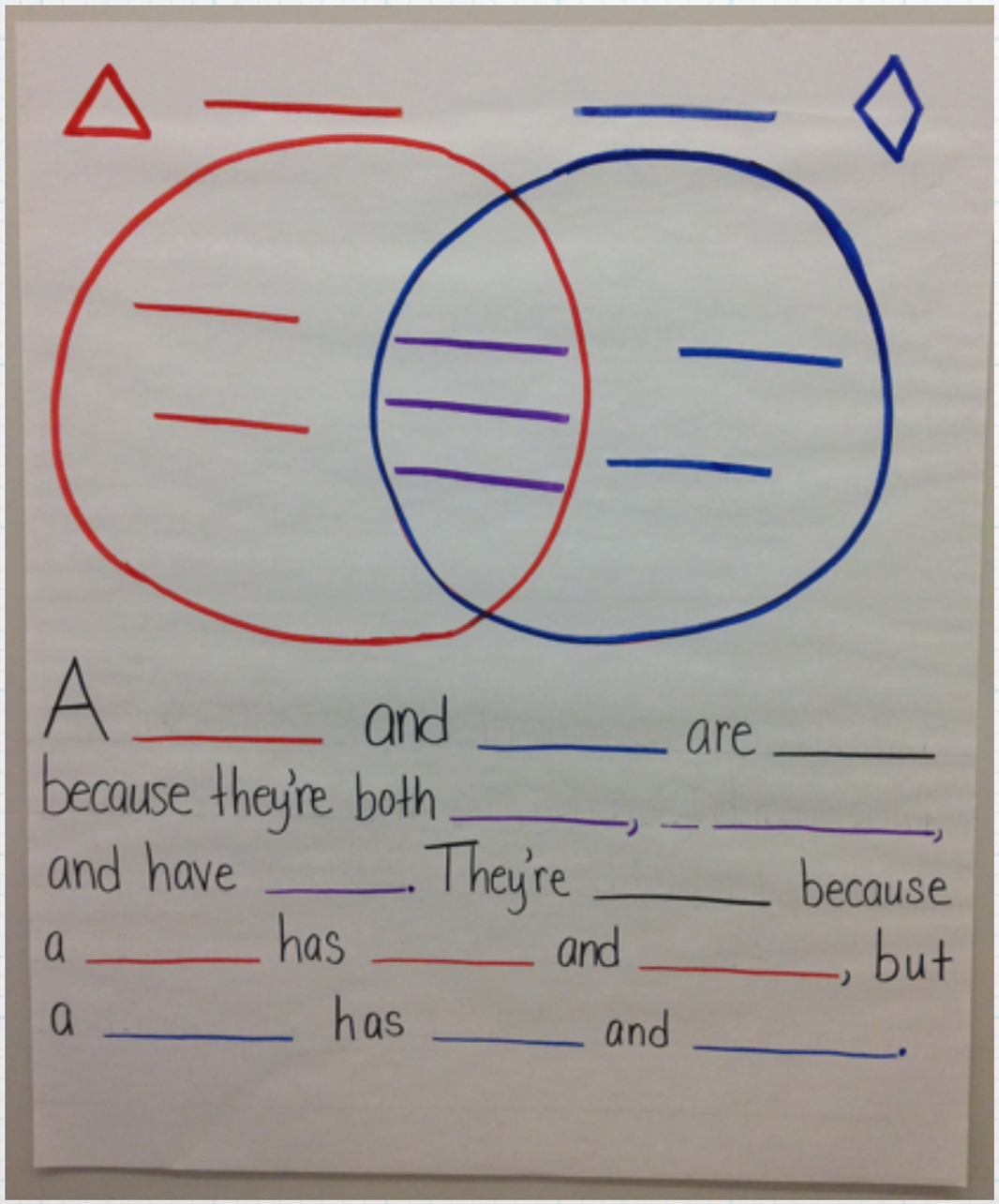
- I Do: Model sentence frames
- We Do: Practice together
- You Do: Turn and Talk using sentence frames
- Journal Writing



Language Functions & Sentence Frames



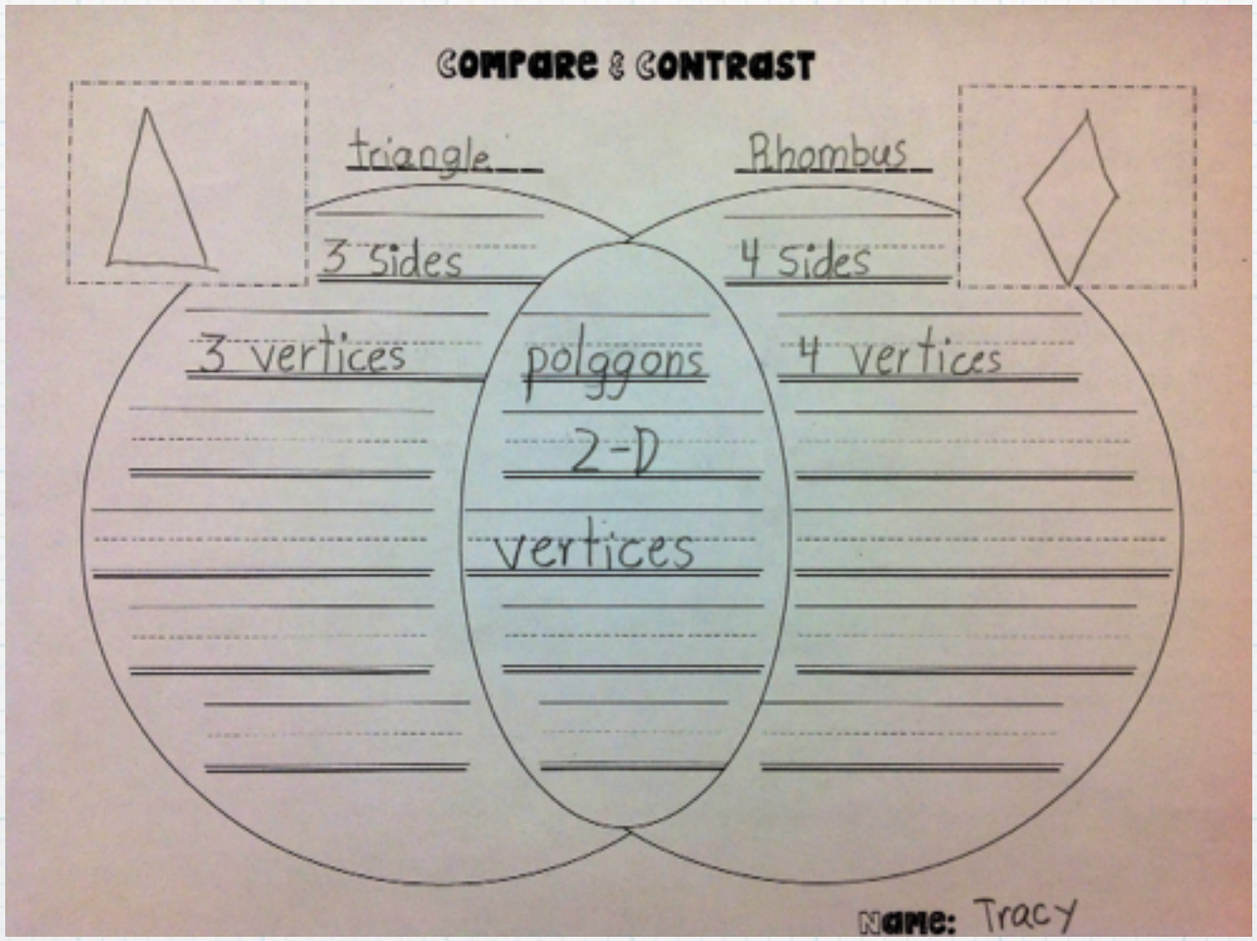
Graphic Organizers

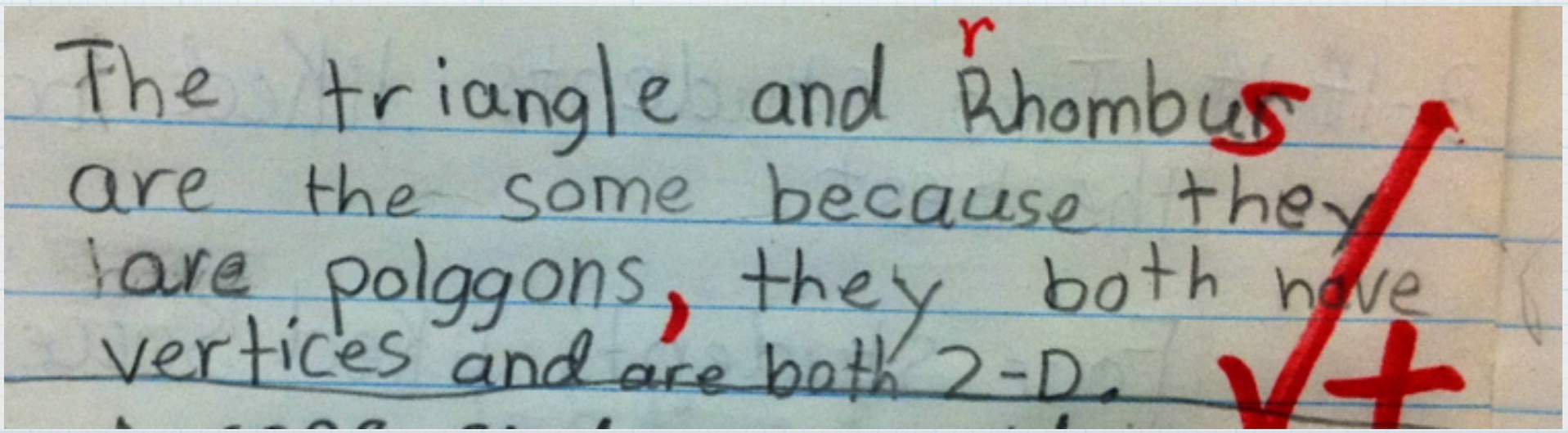


Using graphic organizers help students organize information

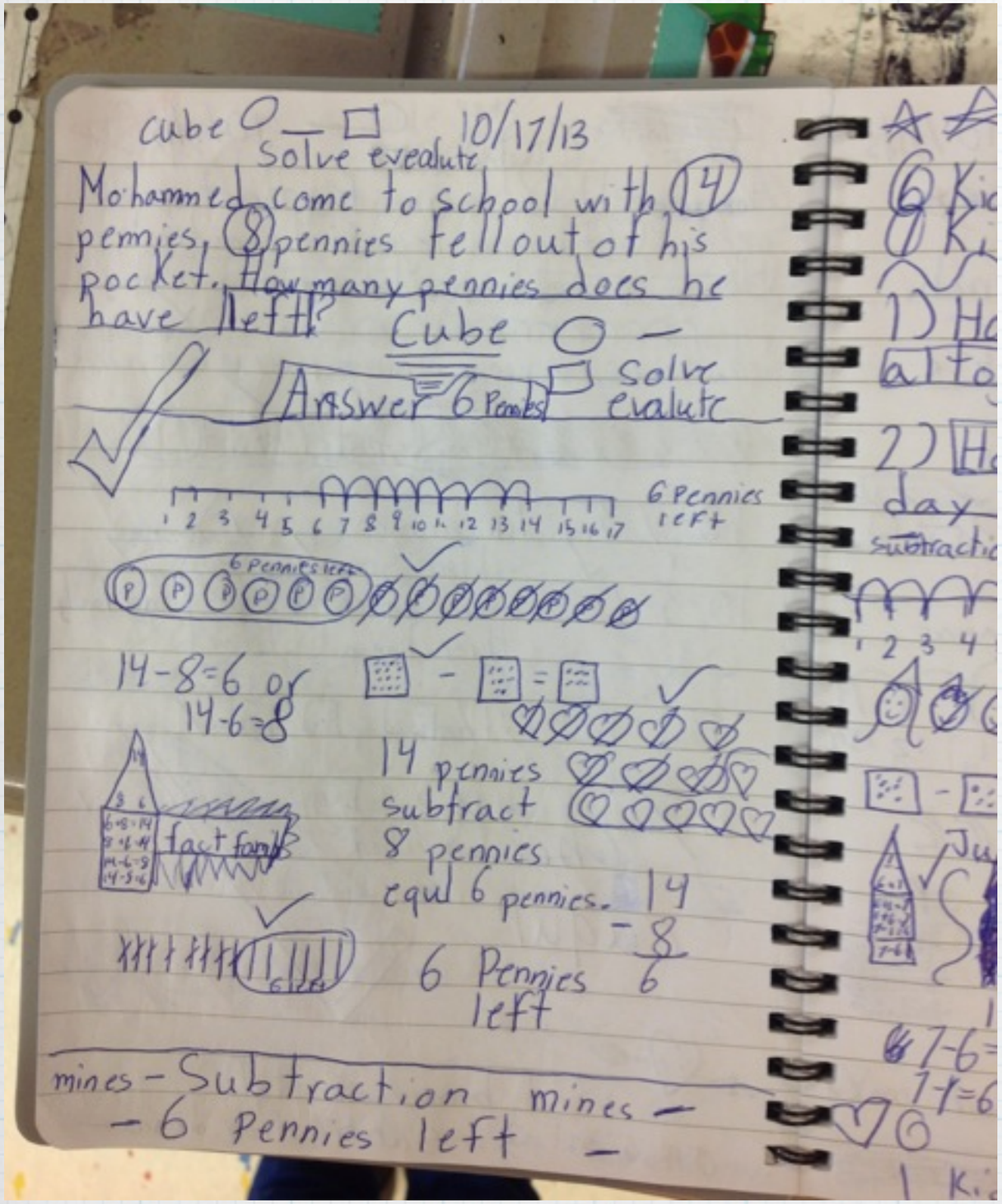
Sentence frames help students organize the format of their writing

Writing in Math





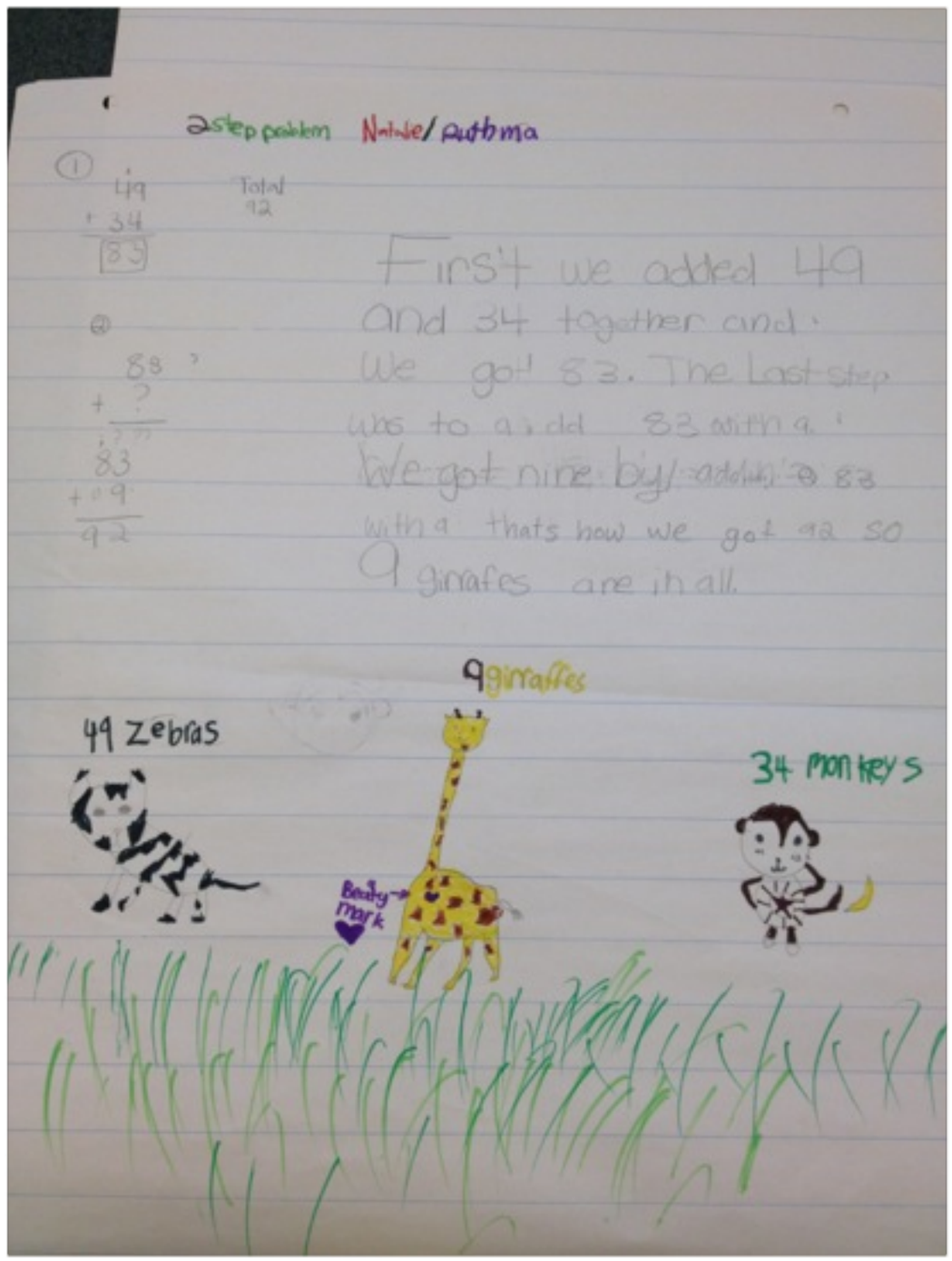
Journals



Math journals provide students the opportunity to experiment with, and apply various strategies to show their understanding.

Group/ Partner Work

- Students practice academic language
- Heterogeneous grouping
- Each group member has a job: Reporter, Problem Solver, Recorder, Time Keeper



Musical Math

There are 18 desks in a classroom. If the teacher puts 6 desks in each row, how many rows are there?

Questions?

Resource Page

Links:

http://teachelemmath.weebly.com/english-language-learners.html

http://www.corestandards.org/Math/

http://www.literacycoachingonline.org/briefs/reading_coach_for_math.pdf

www.malden.wikispaces.com