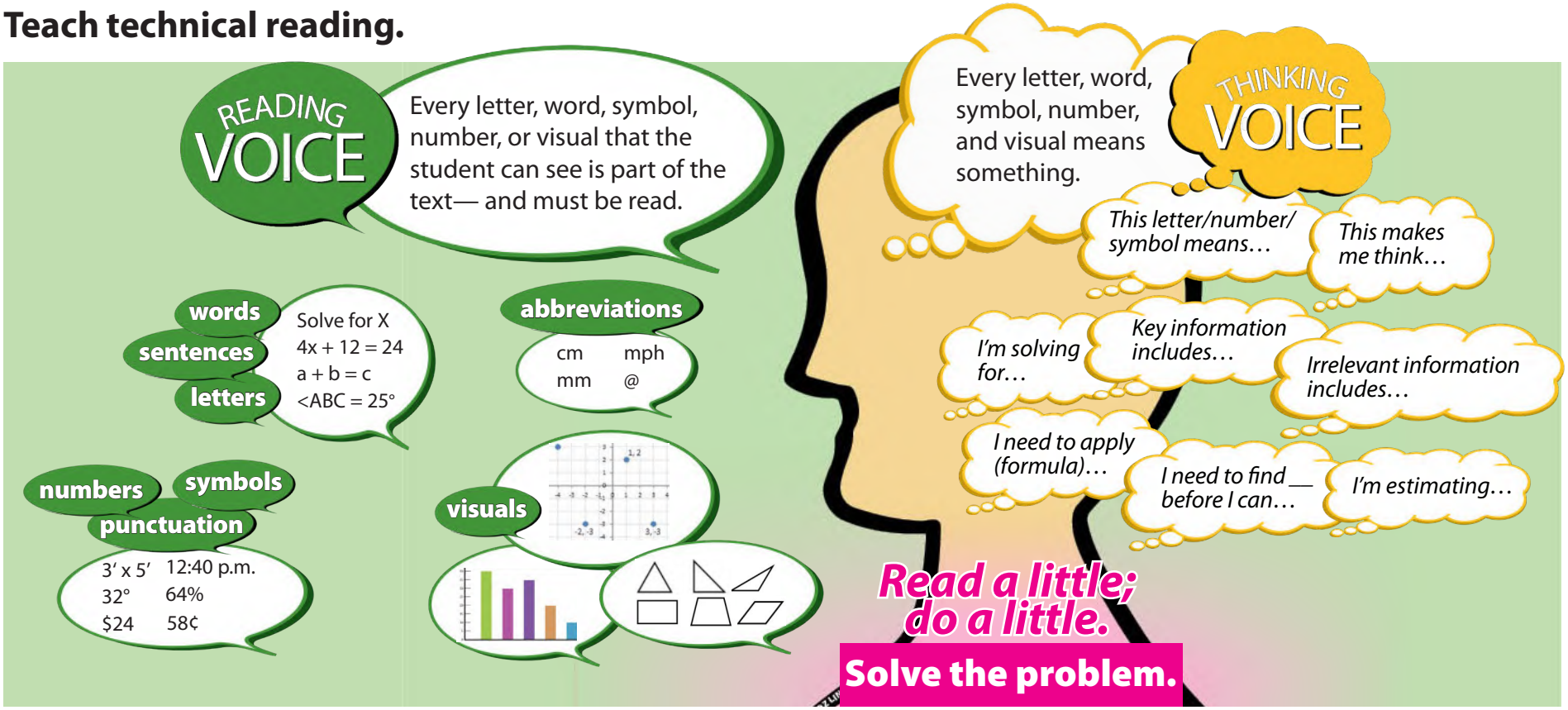
MINI-LESSONS

Improve math writing

SUPER SATURDAY WRITING CONFERENCE

BRIDGET LONGMEIER
bridget@smekenseducation.com

Teach technical reading.



Inference Poster
RELEVANT RESOURCE

Vary math writing experiences.

INFORMATIVE WRITING

1 Identify what you are solving.

2 Explain the step-by-step process you followed.

ARGUMENTATIVE WRITING

3 Prove/Justify your answer or choice.

4 Argue where a student made an error (i.e., error correction, detection, analysis).

INFORMATIVE WRITING

1 Identify what you are solving.

STRATEGY: **Find the story in the problem.**

- Identify only character(s), setting, and problem.
- Eventually identify the relevant math process or formula (e.g., *So…*).

BACKFILL: **Write your own math story problems.**

2 Explain the step-by-step process you followed.

STRATEGY: **Present multi-step math thinking sequentially.**

- Show work in a logical progression across the page.
- Introduce *Read a little, do a little, write a little.*

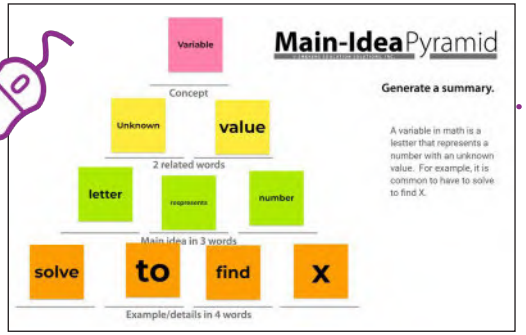
Execute the first step in the multi-step problem. Write 1 sentence, captioning what you did in that step only.	In the next box, do the next step in the math problem. Write 1 sentence, captioning what you did in that step only.	Repeat the process throughout the solving of the entire math problem.
	→	
→		In the last box, mark the answer with a label that fits what you are solving for.

ADDITIONAL SKILLS

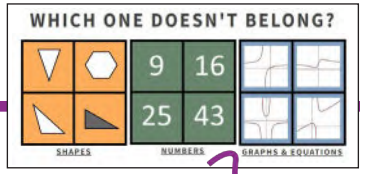
- Reread each sentence individually to check for accurate math terms (verbs, nouns, etc.).
- Add transition words.
- Stack the sentences in order to generate a thorough step-by-step explanation of the precise math thinking executed.

BACKFILL: Explain individual math concepts in writing using the *Information Pyramid* as a frame.

1. Brainstorm related words, phrases, and examples.
2. Plug them into the categories of the *Information Pyramid.*
3. Revise to strengthen the word choice and omit repetition.
4. Utilize the 10 words to write an explanation/response.



ARGUMENTATIVE WRITING



SECRET SITE RESOURCE

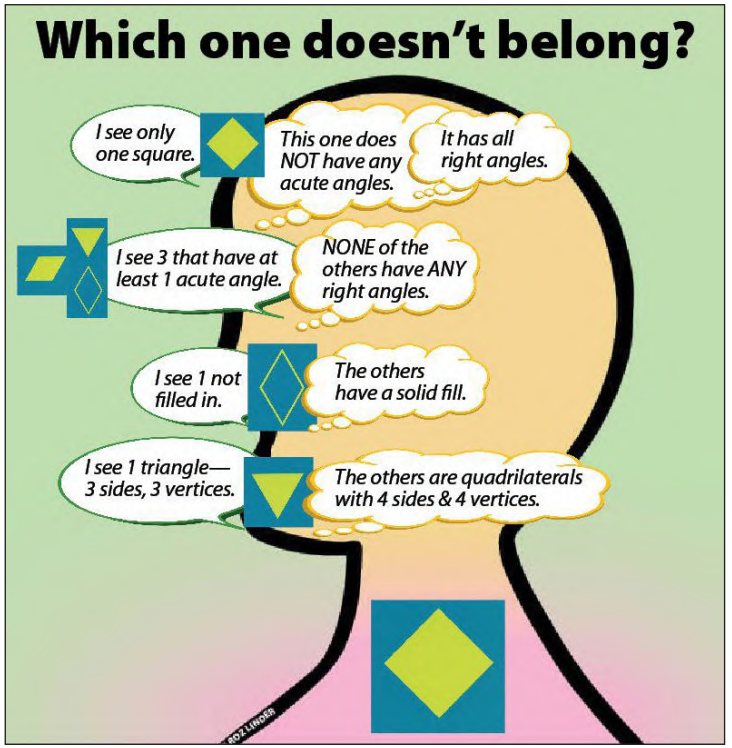
Find a mathematical reason why each one doesn't belong.

3 Prove/Justify your answer or choice.

STRATEGY: **Record more thoughts.**

- Record at least one mathematician's thought per text detail.

- *I see this…* (note *Reading-Voice* detail). *It means…* (insert *Thinking-Voice* thought).
- Strengthen arguments with more thoughts and additional reasoning.



RELEVANT RESOURCE

Which One Doesn't Belong?

SPIN-OFF SESSIONS

WRITE ABOUT READING

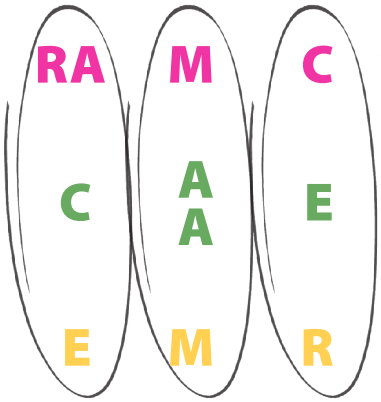
Session 1: Make inferences in 5 steps.

Session 2: Write polished constructed responses.

BACKFILL: **Provide a word bank of math vocabulary.**

polygon	quadrilateral
parallelogram	right angle
rectangle	acute angle
triangle	obtuse angle

STRATEGY: **Use a constructed-response formula.**



State your **ANSWER**.

Support with **TEXT EVIDENCE**.

EXPLAIN your mathematician's thinking.

NOW IT'S YOUR TURN

Which one doesn't belong?

State your **ANSWER**.

Support with **TEXT EVIDENCE**.

EXPLAIN your mathematician's thinking.

ARGUMENTATIVE WRITING

4 Argue where a student made an error (i.e., error correction, detection, analysis).

STRATEGY: **Provide a system for analyzing the work.**

1. Solve the problem yourself.
2. Move through the student's response compared to your own.
3. Identify where the process deviates. (Note the specific step.)
4. Determine what the student did or thought incorrectly. (Name it in mathematical terms.)
5. Compare the student's thinking/reasoning to what he should have done. (Name it in mathematical terms.)

BACKFILL: **Guide thinking with small questions.**

- *Although this student's answer is not correct, some of his thinking is correct. What parts of the thinking are correct?*
- *Which parts are incorrect?*
- *What did the student do wrong?*
- *Why do you think the student made this error?*
- *Is there an error? Correct the work— or defend it.*

SECRET SITE RESOURCE

Create group products with *Think, Ink, Pair, Square.*

ERROR ANALYSIS | A math problem is presented with a fictitious student having shown his work in solving it. In the process, he has made one or more errors.

These math questions/problems are designed to highlight common student misconceptions of grade-level principles and concepts — while simultaneously assessing a student's understanding of them.

Analyze the student's work and answer shown below. Identify the error. Then correctly solve the equation.

$$\frac{4}{6} + \frac{1}{6} = \frac{5}{12}$$

What did the student do wrong? Why do you think the student made this error?	Solve the problem correctly. Show your work.

The equation below was solved incorrectly. Study the work below. Describe the mistake in the work shown.

5x + 5 = -3(x – 1)

Step 1: 5x + 5 = -3x + 3
Step 2: 2x = -2
Step 3: x = -1

Correct Larry's work and explain his mistake. Then solve the problem correctly.

Larry's Work	Explain his mistake.	Solve the problem correctly.
$-3(2x+5)=7$ $-6x+5=7$ $-6x=2$ $x=-\frac{1}{3}$	1. What did Larry forget to do when distributing the -3? 2. Draw a diagram to help Larry see what he did wrong.	