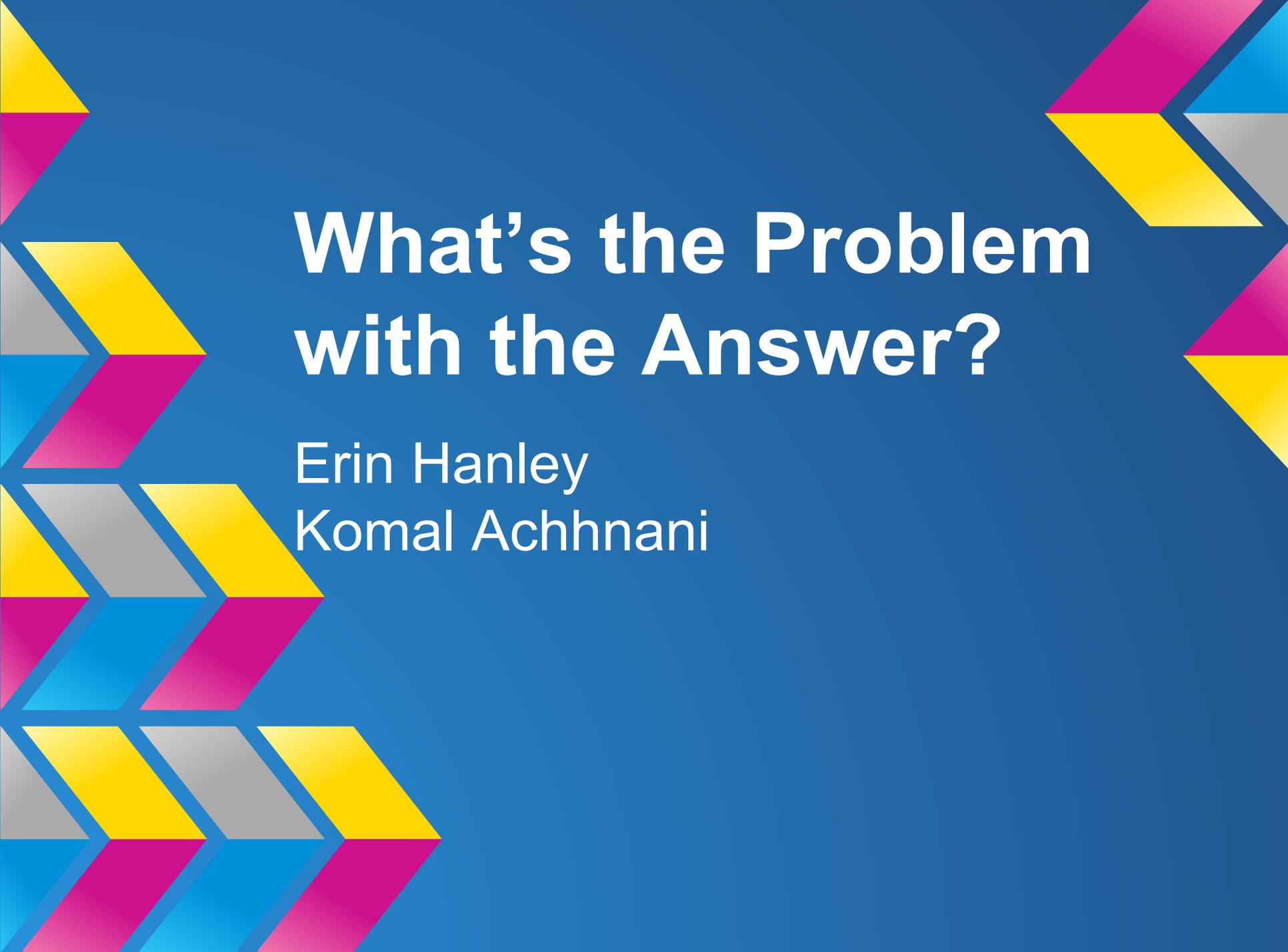


OPENER

Solve the four math problems *incorrectly* committing the most typical student errors.

- ★ Share your errors with the other teachers at your table and select your “favorite” incorrect solutions.



What's the Problem with the Answer?

Erin Hanley
Komal Achhnani

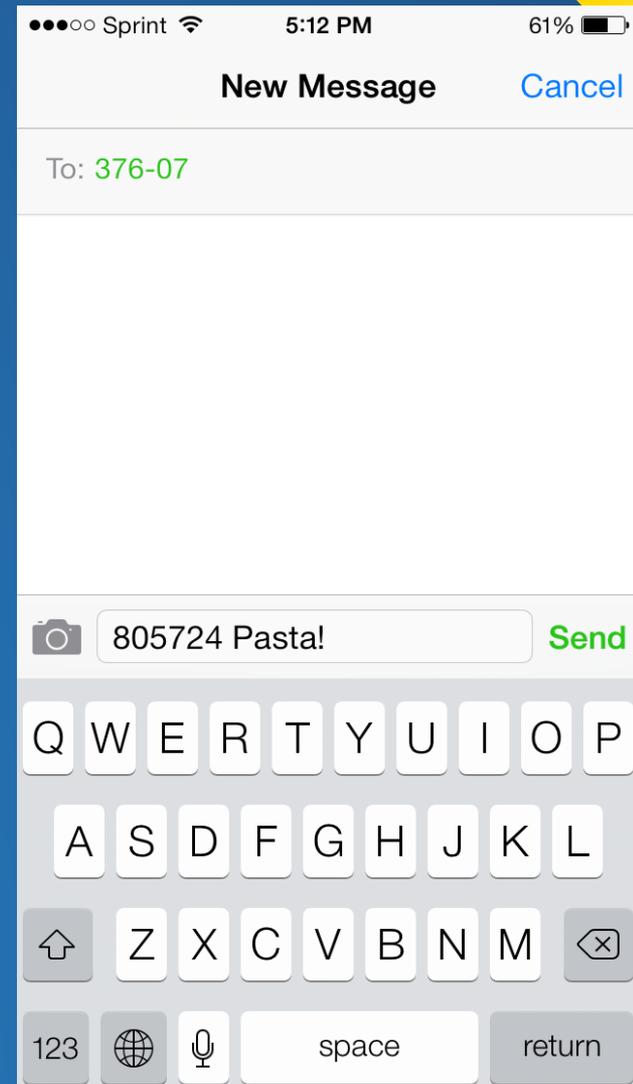
Poll Everywhere

- Text the number 37607
- Text your feedback, questions, and comments with the number 805724, in the message box.

Text your answer for the following question:

What did you eat for lunch today?

805724 Pasta!



My Favorite No

- Pick your favorite incorrect answer from student responses.
 - Display to students in your own handwriting.
- Focus on the positive first.
- Ask the following questions:
 - What was the student thinking?
 - Where was their error?

My Favorite No



Introduction

★ Background Information

- Komal Achhnani
 - Aveson Global Leadership Academy
 - Algebra 1
- Erin Hanley
 - Mesa Union Elementary School
 - Grades 7 and 8

★ Grading System

- Mastery Learning
- Standards Based Grading

Math Practice Standard 6

Mathematically proficient students try to:

- ★ Calculate accurately and efficiently
 - specify units of measure
 - label axes to clarify the correspondence with quantities in a problem
- ★ Communicate precisely to others and in their own reasoning
 - use clear definitions
 - state the meaning of the symbols they choose
 - examine claims and make explicit use of definitions

Precise Calculations



What do I want my students to do?

★ Self-Regulate

- set goals
- self-monitor progress
- self-evaluate

★ Self-Reflect

- The process of self-evaluating progress and making plans for future progress

★ Fix Errors

- Error analysis is a form of self-reflection that involves finding and fixing mistakes

Self-Reflection

Error Analysis Form (EAF)

ERROR-ANALYSIS FORM

Skill: Multiplying and Dividing Integers

Error Types	
1	<i>Multiplication Error</i>
2	<i>Division Error</i>
3	<i>Negative multiplied or divided by a negative</i>
4	<i>Negative multiplied or divided by a Positive</i>
5	<i>Other error not listed above:</i>

If you missed a problem, place the problem number in the STUDENT column next to the error-type. I will comment in TEACHER column.

Homework	Error	Student	Teacher Comments
	1		
	2		
	3		
	4		
	5		
Quiz	1		
	2		
SCORE: -----	3		
	4		
	5		

Self Reflection and Error Analysis Form (SREA)

Name: _____
Date: _____ Period: _____

Self-Reflection and Error-Analysis Form

Copy incorrect solution here:

Identify what was right as well as where you went wrong in your solution.

What type of error did you make? (Circle one)

Simple Procedural Conceptual

What is the correct solution?

State your plan for ensuring that you do not make this mistake again.

Error Analysis Form (EAF)

- ★ Students complete the EAF twice for each ***significant skill***
 - *Homework*: use EAF to identify the types of problems answered incorrectly
 - *Quiz*: use EAF to identify the types of problems answered incorrectly
- ★ Goal
 - Students should be able to fix errors and work toward precision.

Self Reflection and Error Analysis Form (SREA)

- ★ Component 1:
 - Identify error in the solution.
- ★ Component 2:
 - Identify error as simple, procedural, or conceptual.
- ★ Component 3:
 - Correct the error.
- ★ Component 4:
 - State a plan.

Name: _____
Date: _____ Period: _____

Self-Reflection and Error-Analysis Form

Copy incorrect solution here:

Identify what was right as well as where you went wrong in your solution.

What type of error did you make? (Circle one)

Simple Procedural Conceptual

What is the correct solution?

State your plan for ensuring that you do not make this mistake again.

Adapted from Laud, L. (2011). *Using formative assessment to differentiate mathematics instruction: Seven practice to maximize learning*. Thousand Oaks, CA: Sage Publications

Taking Error-Analysis One Step Further

Self-Reflection Form

- ★ Part One: Finding and Fixing Errors
 - Locate incorrect solutions on assessment and categorize by “Problem Type”
 - Find the error in the solution
 - Correct the error
 - Explain what went wrong

Problem Type	Your Incorrect Solution	Correct Solution	Explain Your Error
<i>Adding Integers:</i> EX. $8 + (-4)$			

Taking Error-Analysis One Step Further

★ Part Two: Plan

- Create a plan for avoiding these errors.

State your plan for ensuring that you do not make this mistake again:

- Note: the back of the self-reflection form has sample plans for students to reference.

Precise Communication



Roman Mosaic

★ Partner-up

- One of you will be the “drawer” and one will be the “describer”
- Put up the manilla folder as a partition between you and your partner

★ Describer

- Do NOT show the drawer your worksheet
- Describe in great detail the Roman Mosaic

★ Drawer

- Do NOT show the describer your drawing
- Follow the describer’s directions and draw the Roman Mosaic as precisely as possible

Roman Mosaic

RULES:

- ★ You may communicate with each other as much as you want
- ★ You may use a ruler and compass if necessary
- ★ DO NOT let your partner see your paper
- ★ NO hand gestures

Wrap-up

Roman Mosaic

- ★ What went wrong?
- ★ How does this help students communicate precisely?
- ★ How can you adapt this for your subject?

Thank you!

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 - **California State University, Northridge**
 - **CSUN and National Science Foundation Teaching Fellowship**
 - achhnanik@gmail.com

Math Taboo

★ Partner-up

- One of you will be the “giver” and one will be the “guesser”

★ Giver

- Prompt your partner to guess as many math vocabulary words as possible in the allotted time
- Do not say any of the “taboo” words

★ Guesser

- Guess the math vocabulary word your partner is describing

Math Taboo

RULES

- ★ No penalty for incorrect guesses.
- ★ If the “giver” uses a “taboo” word or part of a “taboo” word, that vocabulary word is out of play.
- ★ “Guesser” must guess the word exactly as it is written on the card.
- ★ Hand gestures are allowed.

Wrap-up

Math Taboo

- ★ How does this help students communicate precisely?
- ★ How can you adapt this for your subject?