

# Using a Public Record to Anchor Whole-Class Mathematical Discussions

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*If you or your students are going to talk about mathematical ideas in your class, it is critical that everyone understands the idea being discussed otherwise they are less likely to either remember it or be able to participate in the discussion.*

David Wees, *The Reflective Educator* blog entry, 2016



Mathematical  
Opportunities  
in Student  
Thinking

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# Public Record

a physical record of student thinking that is made and captured publicly for whole-class consideration.



# Overview



Mathematical  
Opportunities  
in Student  
Thinking

Public Records & Context

Watch & Discuss a Video  
Instantiation

Small Group Discussion

Whole Group Closing

# Existing Work

## related to Public Records



- Intentional use of the board to support student problem solving (TIMSS 1995 Video Study)
- Paying explicit attention to recording student thinking  
(Seago, Mumme, & Branca, 2004; Lucenta, Kelemanik, & Creighton, 2016)
- Using the board as a way to maintain continuity during whole-class collaborative inquiry (Staples, 2007)
- Public display of student work as a focal point for discussion based on the 5 Practices (Smith & Stein, 2011)
- Implicit use in examples to illustrate findings, for example: engaging with others' ideas supports student achievement (Webb et al., 2014)

# MOSTs



Mathematical  
Opportunities  
in Student  
Thinking

- High-leverage instances of student thinking (Recognizing MOSTs Framework)
- In-the-moment opportunity
- Opportunity to make the MOST the object of consideration by the class in order to engage the class in making sense of that thinking to better understand an important mathematical idea.

...the teaching practice of *building*

# Building on MOSTs



Mathematical  
Opportunities  
in Student  
Thinking

- *Establish* the student mathematics of the MOST so that the object to be discussed is clear.
- *Grapple toss* that object to the class in a way that positions them to make sense of it.
- *Orchestrate* a whole-class discussion that supports the students in making sense of the student mathematics of the MOST.
- *Make explicit* the important mathematical idea from the discussion.

# Public Record Example



Mathematical  
Opportunities  
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Classroom Context:

- Middle School Classroom
- Sarah, a 2<sup>nd</sup> year teacher
- Students responding to the following question:

**The price of a necklace was first increased 50% and later decreased 50%. Is the final price the same as the original price? Why or why not?**

In what ways does this teacher utilize the public record to support this class discussion?



# Public Record Example



Mathematical  
Opportunities  
in Student  
Thinking

In what ways does this teacher utilize the public record to support this class discussion?

Final price = original price  
Increasing by 50% (adding)  
and then you are taking  
it away (Subtracting 50%)

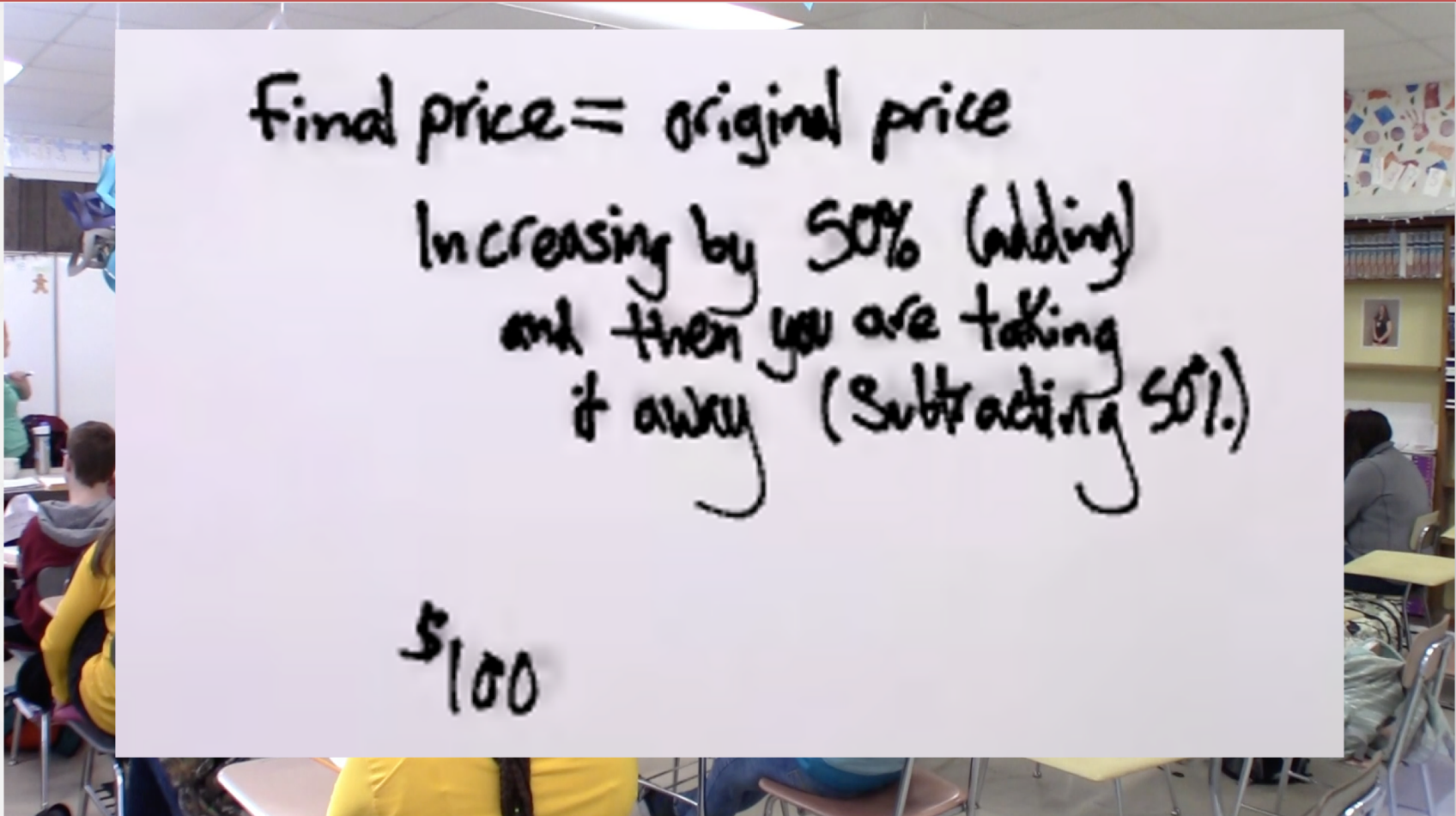
The image shows a whiteboard with handwritten text in black marker. The text is written in a casual, slightly slanted script. The first line is 'Final price = original price'. The second line is 'Increasing by 50% (adding)'. The third line is 'and then you are taking'. The fourth line is 'it away (Subtracting 50%)'. The whiteboard is mounted on a wall in a classroom setting, with some students and furniture visible in the background.

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# Public Record Example



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Increasing by 50% (adding)  
and then you are taking  
it away (Subtracting 50%)

$\$100$   
50%  
 $\$50$

$= \$150$   
50%  
 $\$75$

$\begin{array}{r} 150 \\ - 75 \\ \hline 75 \end{array}$

# Public Record Example



Mathematical  
Opportunities  
in Student  
Thinking

In what ways does this teacher utilize the public record to support this class discussion?

Final price  $\neq$  original price  
Increasing by 50% of the original price,  
and then you are taking  
it away 50% of the new price

$$\begin{array}{rcl} \$100 & \times 50 & = \$50 \\ 50\% & & 50\% \\ \$50 & & \$75 \end{array}$$
$$\begin{array}{r} 150 \\ -75 \\ \hline \$75 \end{array}$$

# Characteristics of Productive Public Records



Mathematical  
Opportunities  
in Student  
Thinking

- *Tangible* ~ accessible by the students throughout the discussion.
- *Concise* ~ includes the aspects of a student contribution that are most relevant for the discussion and minimizes extraneous words.
- *Adaptable* ~ set up to be easily revisable as the class discussion evolves.

# Small Group Discussion



Mathematical  
Opportunities  
in Student  
Thinking

- Where did you see evidence of the three characteristics of productive public records—**tangible**, **concise**, and **adaptable**—in Sarah's video?
- What are other ways in which a public record might be made of MOSTs (or any focal student thinking) that could meet those characteristics?
- Given these characteristics, what might you do to prepare (pre-service) teachers to productively use public records to anchor their whole-class mathematics discussions?



# Small Group Overview



Mathematical  
Opportunities  
in Student  
Thinking

Small Group Discussion

Takeaways on JamBoard

Return for Whole Group  
Closing

# Closing



Mathematical  
Opportunities  
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Mathematical Discussions**

*THANK YOU*