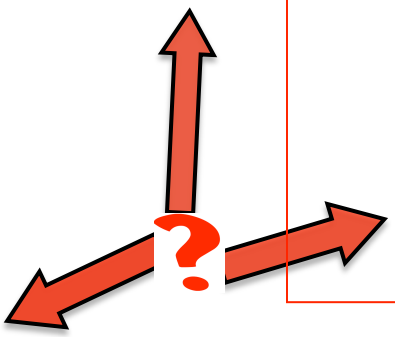
How do our Instructional Decisions influence student learning and student beliefs about what math is?

OAME Leadership

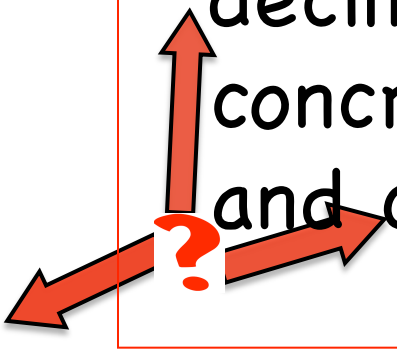
February, 2010



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What would you ask?

- I am a teacher you might be working with. I am seeking your input on a lesson I'm planning.
- Suppose the lesson were related to the Grade 6 expectation: add and subtract decimal numbers to thousandths, using concrete materials, estimation, algorithms and calculators

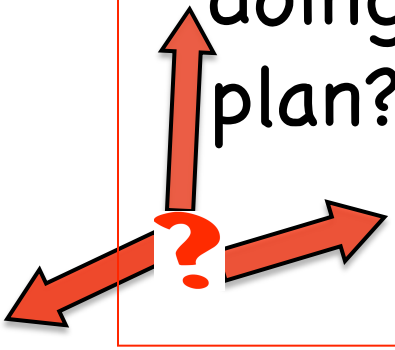


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One Two

Suppose

- Grade 6 expectation: add and subtract decimal numbers to thousands, using concrete materials, estimation, algorithms and calculators
- Other than the specifics of what I am doing, what would you ask me about my plan?

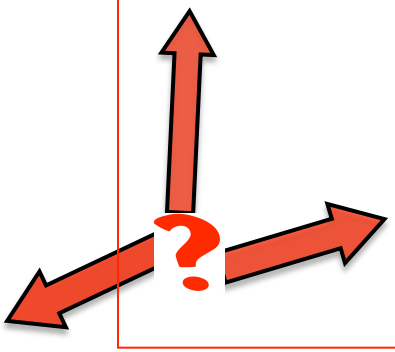


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Let's think...

What types of instructional decisions do we make anyway?

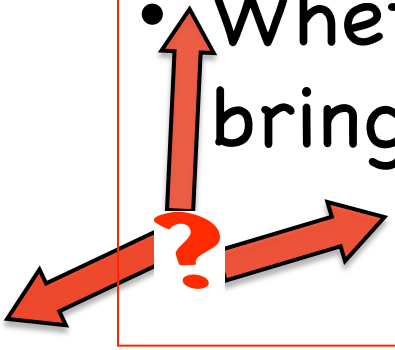
- Content
- Pedagogical
- Logistical



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Content decisions

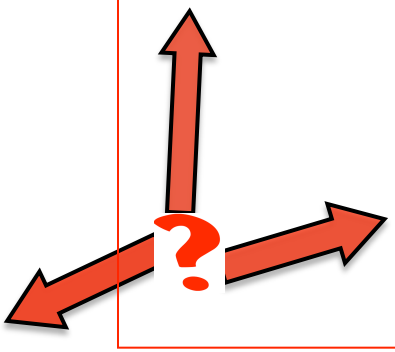
- What expectation I am covering; is it really at my grade level? if it's review, is it worth the period?
- What the focus is- what one thing I want students to walk away with
- Whether the activities proposed actually bring that focus out



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Content decisions

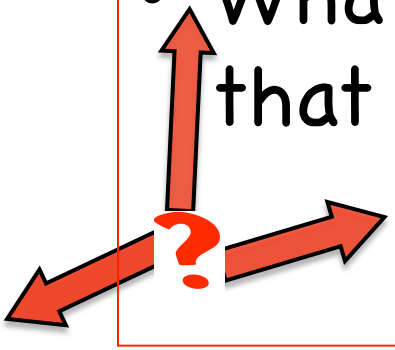
- Whether I am helping students see "why"
- Whether I am helping student to build mathematical connections



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Content decisions

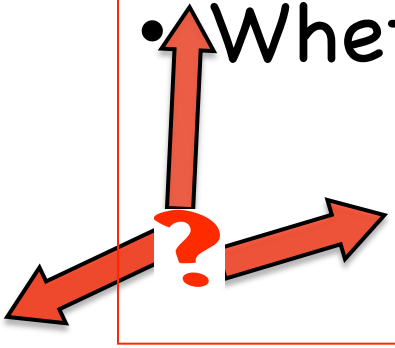
- Whether the lesson supports the premise that mathematics is useful, accessible, and/or interesting or whether it's a set of rules that only "weird" kids understand
- What I should be assessing and why that



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Pedagogical decisions

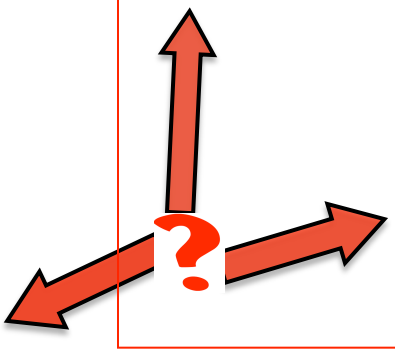
- Whether to model or teach through problem solving
- Whether to appeal to personal interests in the chosen context
- How much to scaffold
- Whether kids work alone or together



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Pedagogical decisions

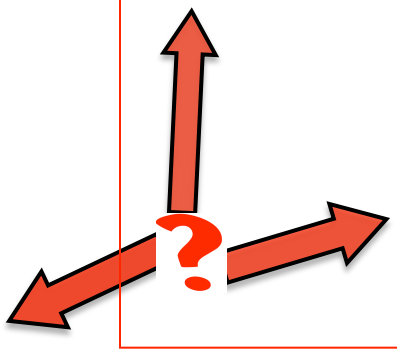
- Whether technology and/or manipulatives are used and to what extent
- How to handle multiple strategies
- How to handle kids who balk at alternate strategies



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Pedagogical decisions

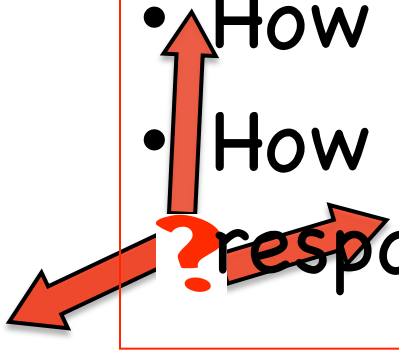
- Whether the challenge is appropriate for all students, and, if not, how that can be handled (open and parallel ideas might come up here)



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Logistical decisions

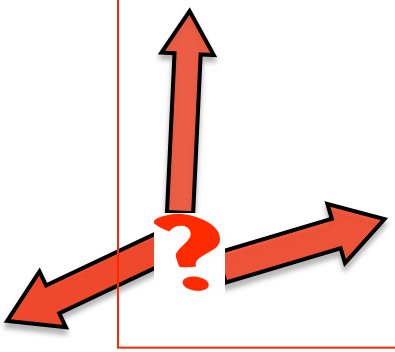
- How to break up the lesson to make the time work
- If I am using a source, how how much of the source and what parts of it I choose to use
- How I can manage the materials
- How to deal with all of the student responses

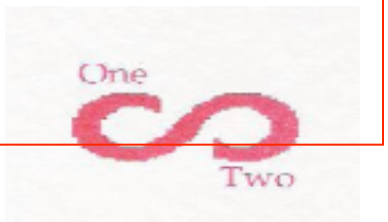


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Let's look at an example

- Here is an example of a math video I took off YouTube.
- It is meant for very young children.
- What instructional decisions do you think the designer made?

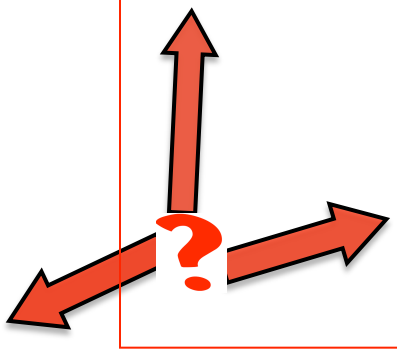




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Bubble gum math

- http://k12wiki.wikispaces.com/Effective+Math+Videos
- You tube- sesame streeet- gum balls

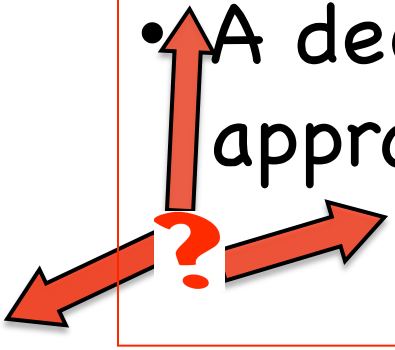


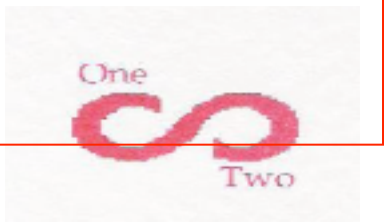
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What did you see?

I saw—

- A decision to count up from 1 rather than count back from 11 (or 4 or 3…) to see what's left
- A decision to count by 1s….
- A decision to use oral and "kinesthetic" approaches

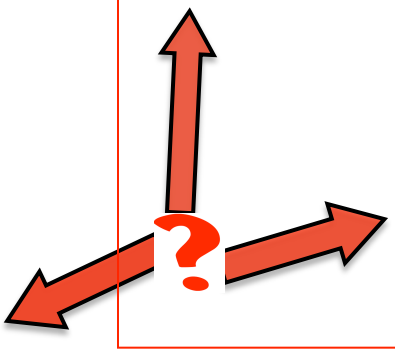




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What did you see?

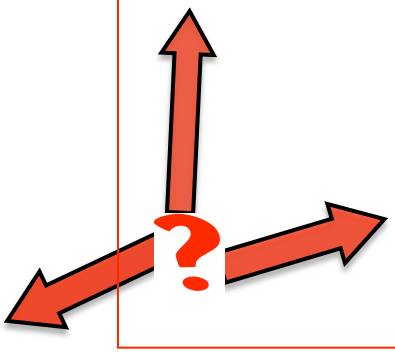
- A decision to use "take away", not "minus" or "subtract"
- A decision to use a "comfortable" approach, presuming kids are quite familiar with the Sesame Street style



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So what does this say about math?

- Math is about real things.
- Math is about patterns (hear the 1,2,3… chant over and over).



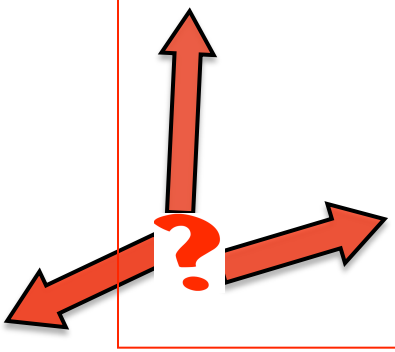


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What about this one?

- http://www.learner.org/resources/series33.html?pop=yes&pid=920

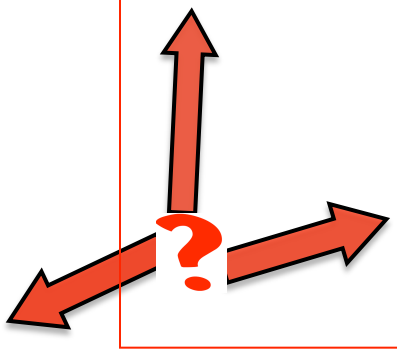
Largest container problem



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What decisions do I see?

- Expects students to say l, w, h and didn't ask for alternatives.
- Expects them to just know why she said factors were needed.

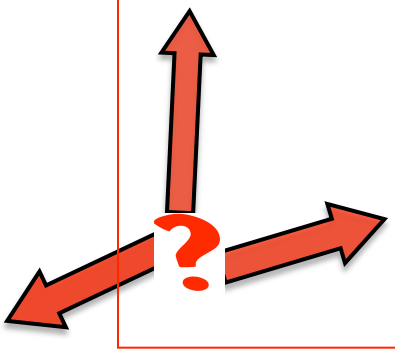


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One ∞ Two

What decisions do I see?

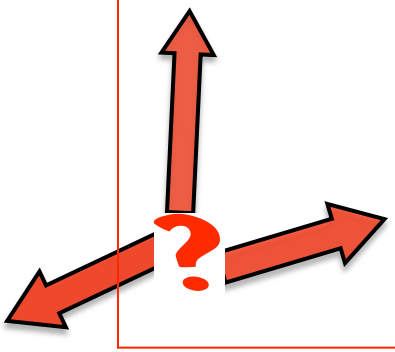
- Saw value in pointing out how to get an infinite number of possibilities(for our purposes?)
- "moving through space" lingo never explained



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What decisions do I see?

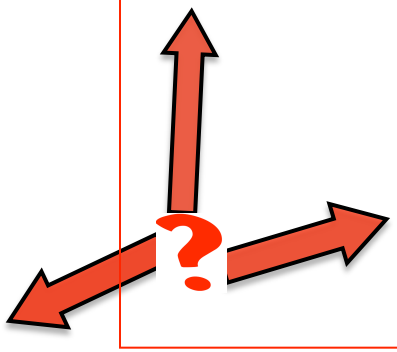
- Expects them to know why she wants the area of the circle as opposed to some other measure of the circle
- Doesn't explain why what is generated is volume and not surface area



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What decisions do I see?

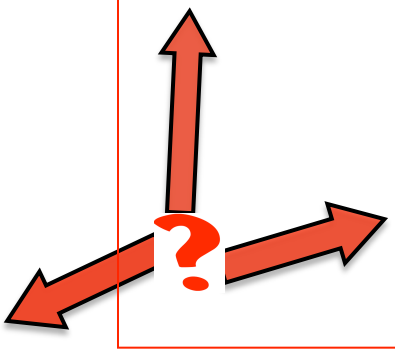
- Felt that the visual prop helped
- Felt that she should review first before presenting problem, but then wanted independent work



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What view of math did you see?

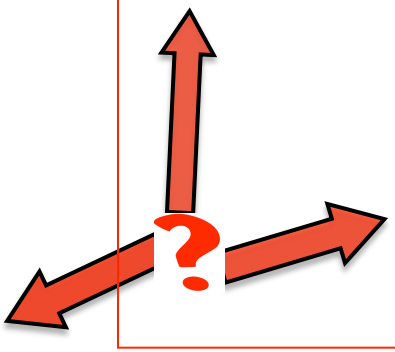
- How do you think students in this classroom would perceive math?



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Different approach

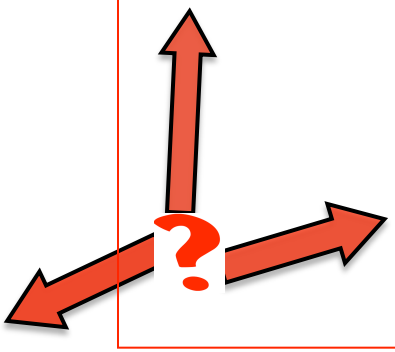
- http://www.youtube.com/mathwithlarry#p/u/5/B66CJrV4JVM



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What do you see?

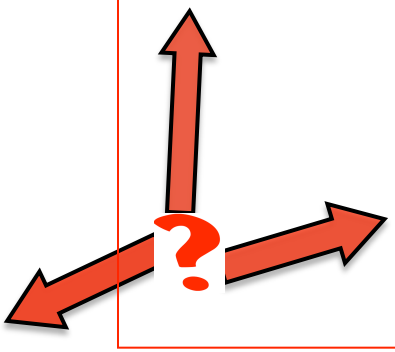
- "The best way"
- Lots of telling
- Can just write 1x as x
- Lots of language with no explanation, e.g. gcf of 12 and 3 is 3



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View of math

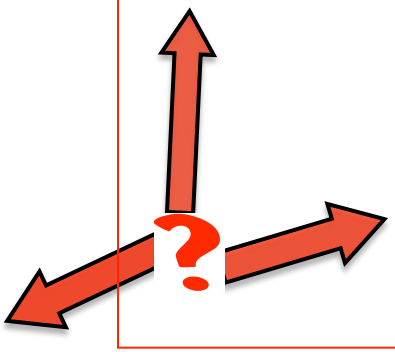
- Hard not to see math as a bunch of rules you have to remember in this situation



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One more

- http://www.learner.org/resources/series34.html
- Staircase problem



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What IDs???

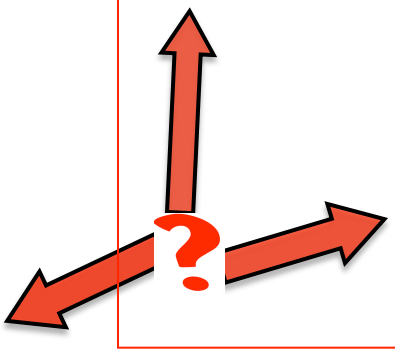
- Decided need to explain what a generalization or rule really is
- Asked student what she meant and didn't answer directly – put it back to the student
- Work/questions approach- wants kids to write down questions



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What IDs???

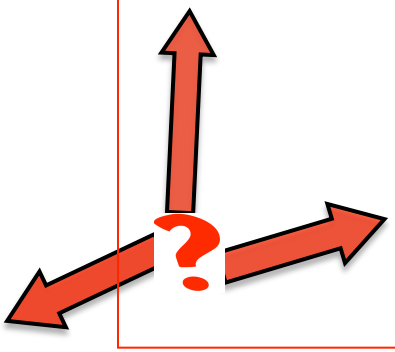
- Asks them "why would it be 100?"
- Scaffolds by telling how to test but not saying yes or no
- Kids working together



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View of math

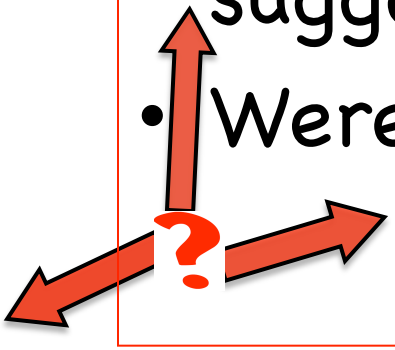
- What view of math do you think his students are likely to hold?



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Talk at the table

- Could two of you volunteer a lesson you recently saw and deconstruct what decisions you saw teachers make that you think mattered?
- What evidence do you have that suggested they made those decisions?
- Were they consciously made?

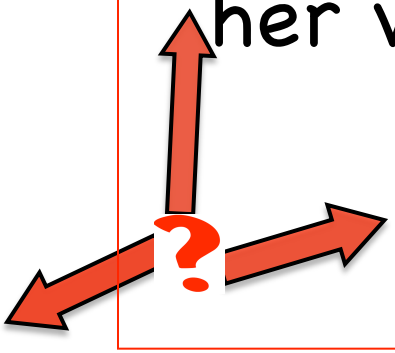


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One ∞ Two

Lesson plans

- Often you will be coaching a teacher who has not yet taught a lesson.
- All you might have is a plan.
- The plan will reveal many decisions the teacher has made and probably his or her view of what math really is.

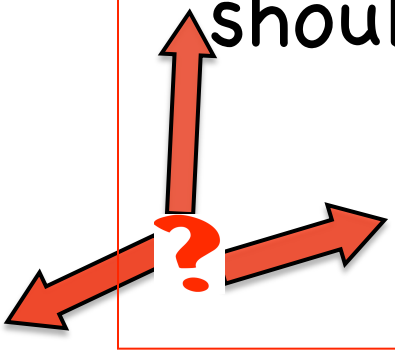


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Maybe our job is to

Help teachers focus on decisions so kids see that:

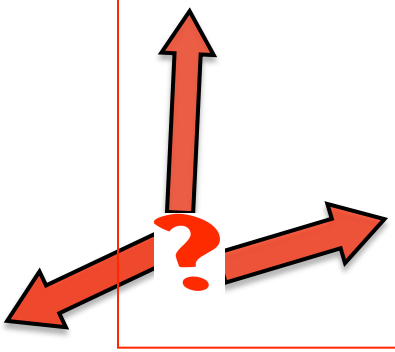
- math is about better understanding or dealing with real life situations
- math is understandable; you can and should know why



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Or ..

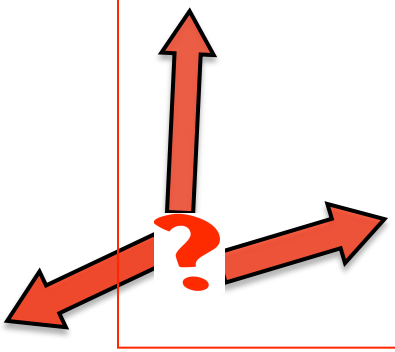
- math is interesting/puzzley
- math is something you do, not copy
- math allows for creativity
- math can be cool



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Tomorrow

- Tomorrow, in our alternate ways, we will pursue these ideas in our various breakouts.



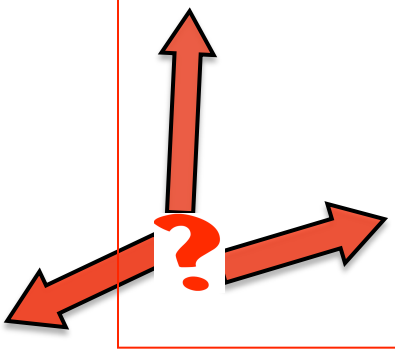
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