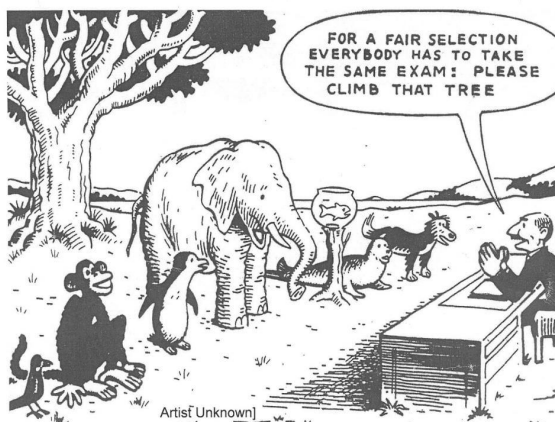


# Intervention Strategies for the Secondary Classroom



## Who Are We?



Rachel Giesmann--Math  
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## Session Outcomes



- ❑ Discuss how to structure a math intervention program at the secondary level.
- ❑ Discover techniques to provide support to reach every student.
- ❑ Recognize the power of visual models to support student understanding.
- ❑ Learn techniques to get reluctant learners talking about math.
- ❑ Understand how to effectively assess students and use that data to drive instruction.

## Math Intervention at LVHS



We are ALL  
responsible for  
intervention



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## Tier 1 Instruction

You can't  
intervention  
your way out of  
weak Tier 1  
instruction.

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## Tier 1 Instruction

- We believe Tier 1 should meet the needs of 80%-90% of our students
- Use a task-based curriculum
- Strong PLC work to develop best practices

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## Tier 2 Intervention

- Weekly referrals for additional support
- "Our students" vs. "My students" perspective
- Divide and conquer to leverage teacher strengths

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A math interventionist in high school...

What do I do all day?

1. Push-in support
2. Teach Math Lab
3. (I also teach AP Calculus on the side)



## Experimenting in the Lab

Math Lab--Our Tier 3 Line of Defense



Two Missions:

1. Build on student learning strengths to address weaknesses (about  $\frac{2}{3}$  of the time)
2. Support students with standards mastery in their grade-level math class (about  $\frac{1}{3}$  of the time)

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The most important thing I work on in math lab to ensure student success is...



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Positive relationships and classroom culture



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## How is Math Lab organized?

Two 90-minute blocks and one 50 minute block a week

### 90 Minute Block

1. Opener--Which One Doesn't Belong, Number Talk, Would You Rather, etc.
2. Station work based on skill needs

### 50 Minute Block

1. Opener
2. Class catch up if necessary
3. Math games, puzzles, etc.

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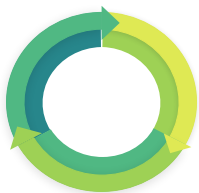


Students divide into groups based on skill deficiencies identified through assessments

Station 1--Direct instruction to meet students where they are and move them forward

Station 2--Practice to reinforce direct instruction

Station 3--Reteach/Preteach material from math class



## Leveraging Support

**Successful Math Lab is a Team Effort**

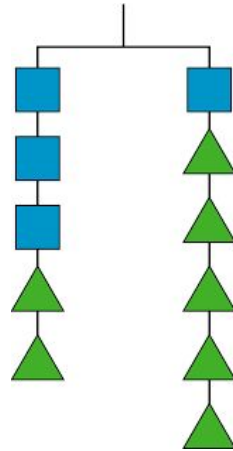
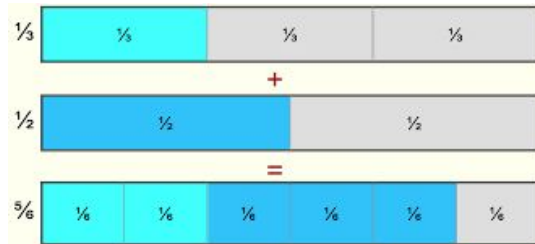
1. Special Education Inclusion Teachers
2. Paraprofessionals
3. Student Mentors



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## Effective Instructional Strategies

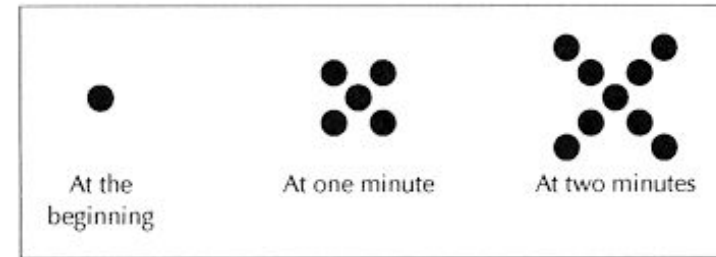
### Use Visual Representations



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## Effective Instructional Strategies

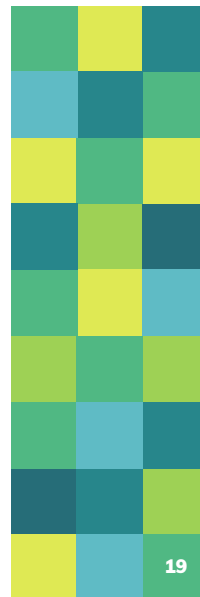
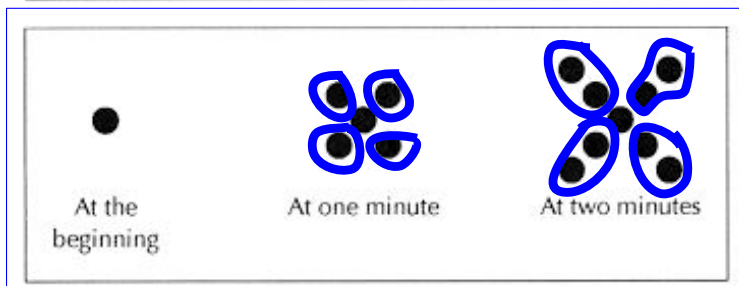
### Use Visual Representations



From: Growing Dots Task. Secondary 1 Class. Mathematics Vision Project



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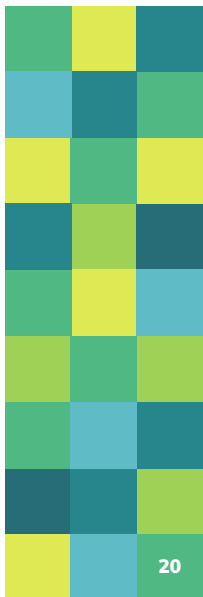


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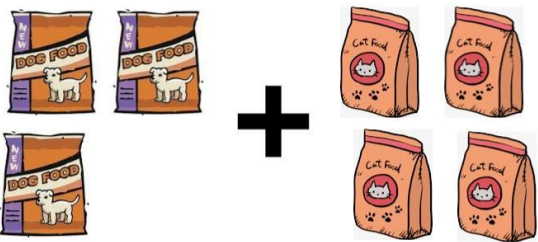
## Consider this Problem

One week Carlos bought 3 bags of *Tabitha Tidbits* and 4 bags of *Figaro Flakes* for \$43.00. The next week he bought 3 bags of *Tabitha Tidbits* and 6 bags of *Figaro Flakes* for \$54.00. Based on this information, figure out the price of one bag of each type of cat food. Explain your reasoning.

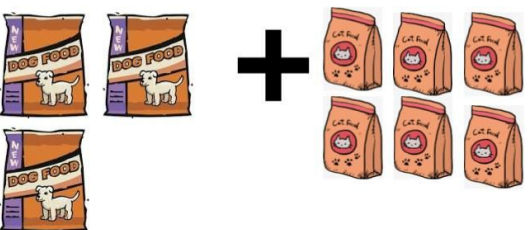
From: Mathematics Vision Project. Secondary One. Module 5 Task 8



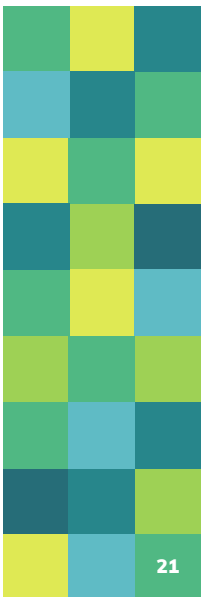
20



$$3 \text{ dog food bags} + 4 \text{ cat food bags} = 43$$



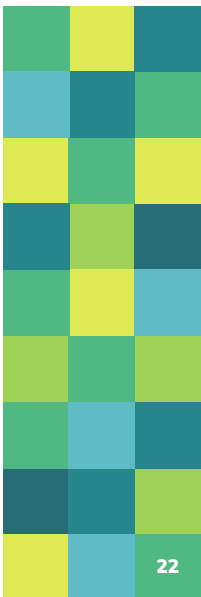
$$3 \text{ dog food bags} + 6 \text{ cat food bags} = 54$$



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## Consider this Problem

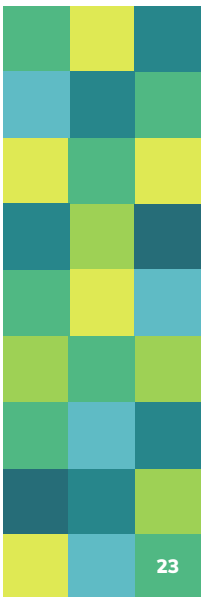
Rewrite  $f(x) = 2x^2 + 20x + 3$  in vertex form



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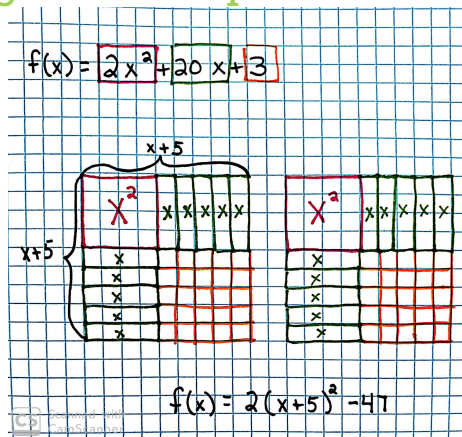
## How I Was Taught

$$\begin{aligned} f(x) &= 2x^2 + 20x + 3 \\ f(x) - 3 &= 2x^2 + 20x \\ f(x) - 3 + 50 &= 2(x^2 + 10x + 25) \\ f(x) - 3 + 50 &= 2(x + 5)^2 \\ f(x) + 47 &= 2(x + 5)^2 \\ f(x) &= 2(x + 5)^2 - 47 \end{aligned}$$

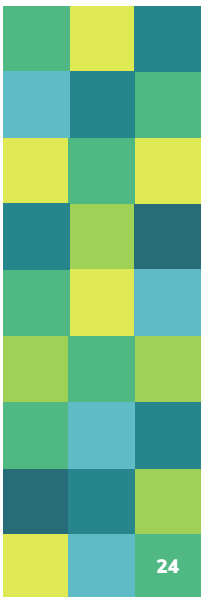


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## Using Visual Representations

$$f(x) = 2x^2 + 20x + 3$$


$$f(x) = 2(x + 5)^2 - 47$$



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## The Value of Student Talk

“Research shows that students with learning difficulties who regularly express their math reasoning verbally show increased math performance...[N]ot requiring students to, at some point communicate their mathematical ideas in clear, complete and convincing language limits their mathematical proficiency”

Kelemanik et al, Routines for Reasoning 2016 p. 15

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## Getting students talking

### Think Alouds

- ❑ Students are given time and opportunities to express their thinking (verbally or in writing)
- ❑ Several instructional routines available



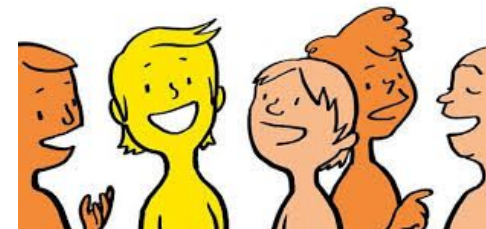
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**If you want students to talk, you need to give them something to talk about.**

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## Instructional Routines for Student Talk

1. Notice and Wonder
2. Number Talks
3. Which One Doesn't Belong
4. 3 Reads
5. Would You Rather



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## Elements of a Routine

1. Introduce the goal
2. Individual think time
3. Partner work/small group work
4. Full group discussion
5. Reflection on the math

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## Example--Would You Rather...

Pay for 3 gifts and get 1 free  
OR  
Use a coupon for 20% off?



From:: [www.wouldyourathermath.com](http://www.wouldyourathermath.com)

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## Getting Students Talking

### Structured Peer Assisted Learning

#### My Favorites

1. Rally Coach
2. Quiz-Quiz Trade
3. Student tutoring



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## Effective Instructional Strategies

### Explicit Instruction

1. Does not mean we sacrifice depth or remove opportunities for student thinking
2. Teacher models different techniques
3. Teacher models mathematical habits of mind

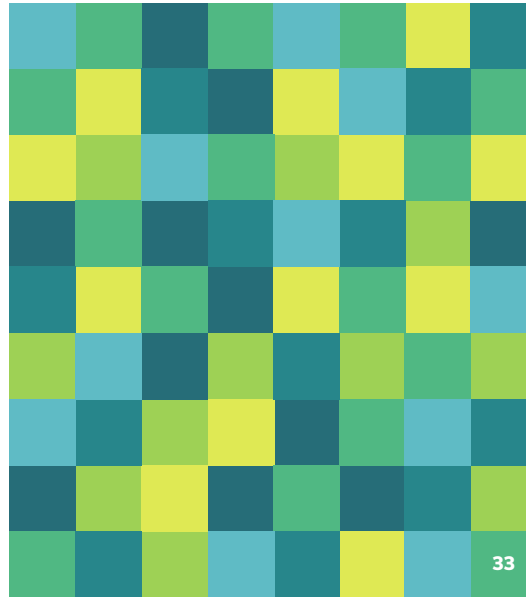
-How to attack a problem, questions we ask ourselves while solving, why we chose one method over the other, etc.

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## Using Assessment to Guide Support

### Assessments for learning

- ❑ LVHS Math Department uses Common Formative Assessments with Standards Based Grading
- ❑ Makes it easy to see what individual students need in their class



## Using Assessment to Guide Support

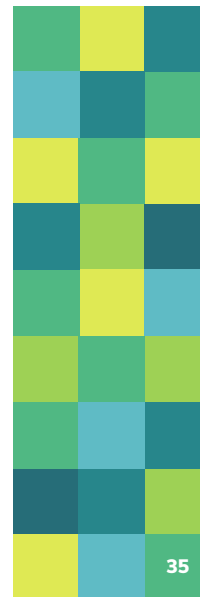
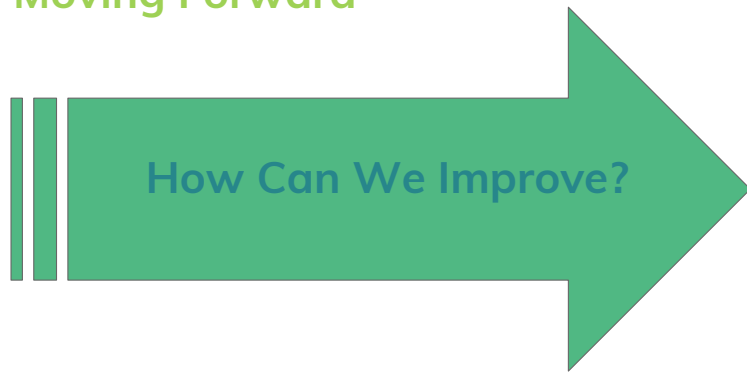
### Progress Monitoring

- ❑ What skills are students lacking?
- ❑ What skills are students ready to learn?
- ❑ What skills have students mastered
- ❑ Is the plan working? Do we need a higher goal?



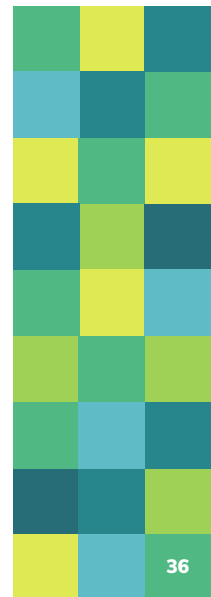
## Moving Forward

How Can We Improve?



## Moving Forward

1. Formalize our screening process for Tier 3
2. Add academic behavior and self-advocacy instruction to lab classes
3. Continue the PLC process in our department to continue to find new ways to meet all student needs



**QUESTIONS?**

**ANYONE? ANYONE?**

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## Resources

Gersten, Russell, and Benjamin S. Clark. *Effective Strategies for Teaching Students with Difficulties in Mathematics*. National Council of Teachers of Mathematic Research Brief. 2007.

Kelemanik, Grace, Amy Lucenta, and Susan Janssen Creighton. *Routines for Reasoning: Fostering the Mathematical Practices in All Students*. 2016

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**Thanks!**

**Any questions?**

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