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# Math Talks

— Discourse to Support Academic Language —

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# Resources

**Mathematical Mindsets** by Jo Boaler

**Classroom Discussions: Using math talk to help students learn** by Chapin, O'Connor and Anderson

**Making Number Talks Matter** by Humphreys and Parker (50 pages available online)

## Also visit

<https://www.youcubed.org/>

<http://www.kenkenpuzzle.com/>

<https://elemath.hallco.org/web/number-talks/>

# Background

Research based:

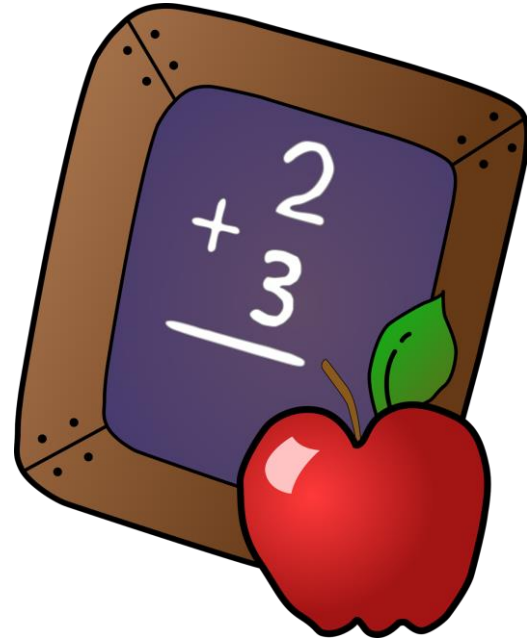
- **Knowledge is tied to language**
- **Many students know HOW to do the algorithm but don't know WHEN to use it**
- **Many students and parents do NOT like math**
- **Math is tied to many high paying careers**
- **Mathematical Practices call of communication**

# **The eight Standards for Mathematical Practice are:**

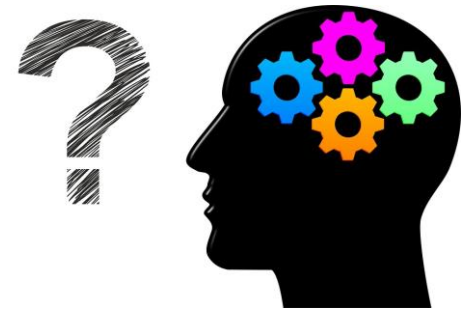
1. Make sense of problems and persevere in solving them
2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others
4. Model with mathematics
5. Use appropriate tools strategically
6. Attend to precision
7. Look for and make use of structure
8. Look for and express regularity in repeated reasoning

# Overview

- Teacher led--MENTAL MATH
- 10-15 minutes 3-5 times a week
- Whole-group, small-group, partner talk
- Includes
  - computation,
  - problem solving,
  - Procedural,
  - reasoning,
  - vocabulary



# Students



Think deeply and make sense of math

Then they verbalize their thinking--they use WORDS

Once they can verbalize their thoughts, they can write about their thinking. (Remember language acquisition)

# Advantages

- Student misconceptions are identified
- Students use the language
- Students learn that making mistakes is part of learning
- Emphasis is on understanding---NOT MEMORIZATION





# Getting Started

<https://www.youtube.com/watch?v=PADjdEeeNTw> Kindergarten

<http://www.insidemathematics.org/classroom-videos/public-lessons/5th-grade-math-proportions-ratios/problem-1> Fifth Grade



# Let's do one

No pencils or pens

No paper

Thumbs up on chest

$$36 + 18 =$$



## Note

**When volunteers begin to share their strategies, they first identify which answer (assuming different answers have been offered) they are defending. Teacher records their thinking.**

**After a student shares a strategy, there are several things a teacher might ask in order to work with that student's thinking. There is not just one right way...**

- Does anyone have a question for.....**
- Can you say more about....**
- Can someone explain \_\_\_\_\_'s strategy in your own words?**
- What connections do you notice among the strategies we've discussed?**

# My Favorite NO--- learning takes mistakes

<https://www.youtube.com/watch?v=uuDjke-p4Co>

Multiply and/or  
Combine like terms

$$1) \quad 4x(2x-9) - 2(5x-6)$$

# Pairs Check



# Kenken

<http://www.kenkenpuzzle.com/>

**DAILY CHALLENGE** OR SELECT PUZZLE TYPE AND DIFFICULTY  
Puzzles update at midnight EST

Rules

9x9 3x3 8x8 4x4 7x7 5x5 6x6

Click any button to play

Rules

20	20	13	20					
8	7	12						14
		5	20	7	5	5		
10							7	
7	1	10	1	5	20			
30	5							8
		17		14	14	14		
5		40						

Example Only

FAQ/Troubleshooting Tips and Tricks

**PLAY KENKEN**  
**NO-OP PUZZLES** **Go!**

neat

This year, say hello to a better expense management system, and goodbye to that stack of receipts and paper!

TRY FREE

2	4	8	2
2048			
2	4	2	8

New Puzzle Sensation!  
Play 2048 on kenken.com **Play Now**

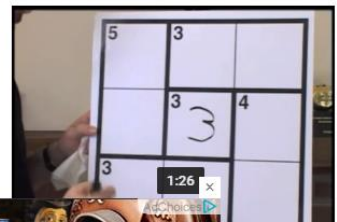
**KENKEN for your Mobile**

Fun, addicting, yet educational. The KenKen iOS and Android apps are perfect for the whole family!



**KENKEN in the Classroom**

Calling all educators! Join our FREE program to use KenKen puzzles with your students.



# Chalk Board Splash

What are you going to take back to your school?

Write it on one sticky note and place that note on the designated table or wall.

Form groups of three--no one from the same table.

Gallery Walk around to look for one thing that you agree with and one thing that surprises you.