



Making Math Engaging For All

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Practices and Standards

- When we think about implementing KCCRS in our classrooms there are two parts, practices and standards. We need to change behaviors while teaching standards.

You are the best strategy!

- Read your standards – become an expert
- Understand the standards/math at a conceptual level
- Practice the math
- Look at long term, not just day to day
- Find a book and read it

Next Best Strategy...

- Zip It, Lock It, Put It In Your Pocket!

Questioning Strategies

- Disclaimer – kids who are outliers
- Never answer a question – lead the horse to water
- Favorite Phrases
 - “I don’t know, can you?”
 - “What made you think that?”
 - “Why?”
 - “Tell me more.”
 - “Be ready to support your answer.”
 - ...because posters

Third Best Strategy

- CRA model
- Get manipulatives into the kids hands!!! Don't teach without them, no matter the level.

Top 3

- 1. You – know your craft and strive to improve upon it
- 2. Zip It, Lock It, Put It In Your Pocket – even though you are number one, you are number one in the background
- 3. CRA Model

Number Sense Routines

- "...a person's general understanding of number and operations along with the ability to use this understanding in flexible ways to make mathematical judgments and to develop useful strategies for solving complex problem"

(Burton, 1993; Reys, 1991) on NCTM's Illuminations website

Daily Oral Math

- How “oral” is it?

Math Fail

- Kids have to analyze – higher order thinking, DOK
- Fun and quick break from “regular math”

FAIL



My Favorite No

○ My Favorite No

Integration with Pictures

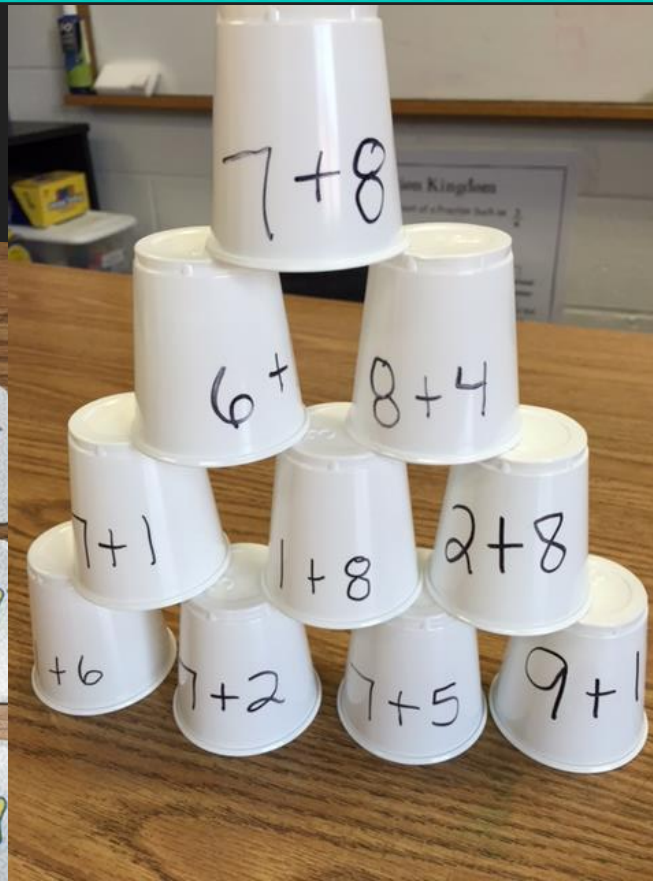
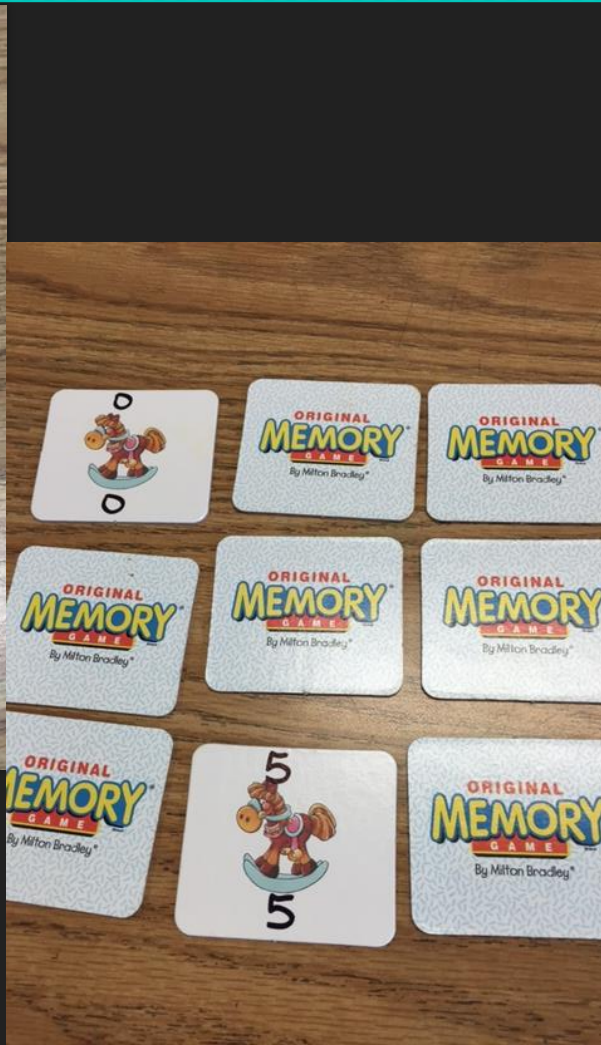
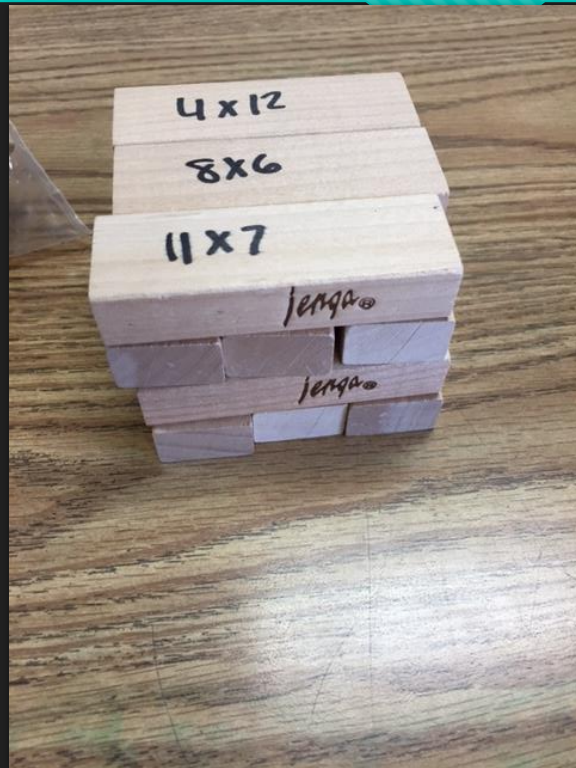
- Math Trails or single pictures
- Integrate your science, social studies, ELA and math.

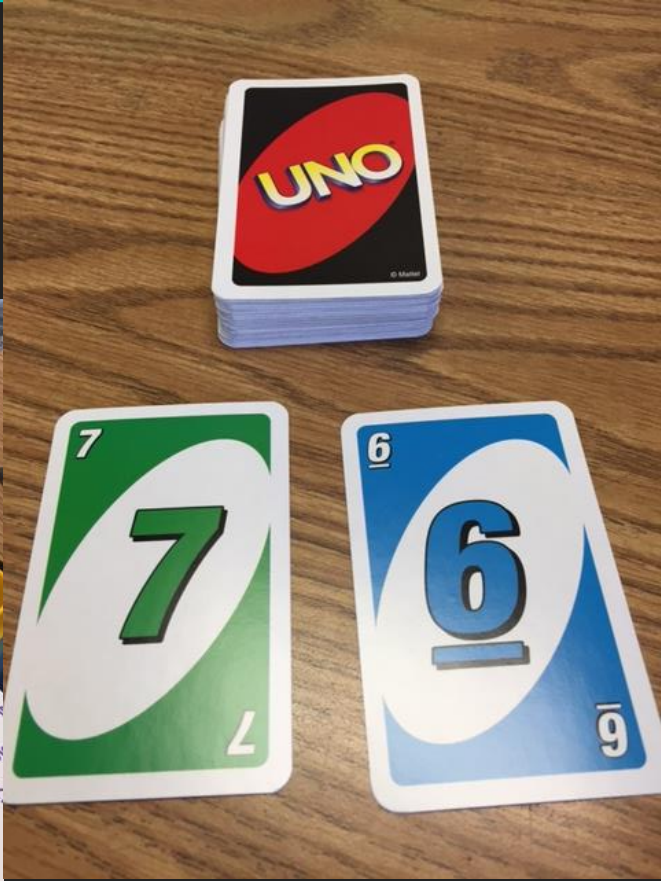
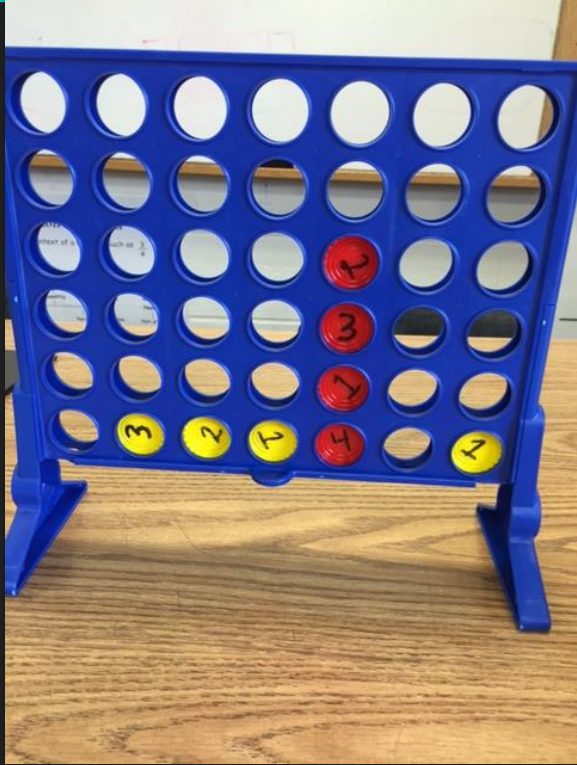


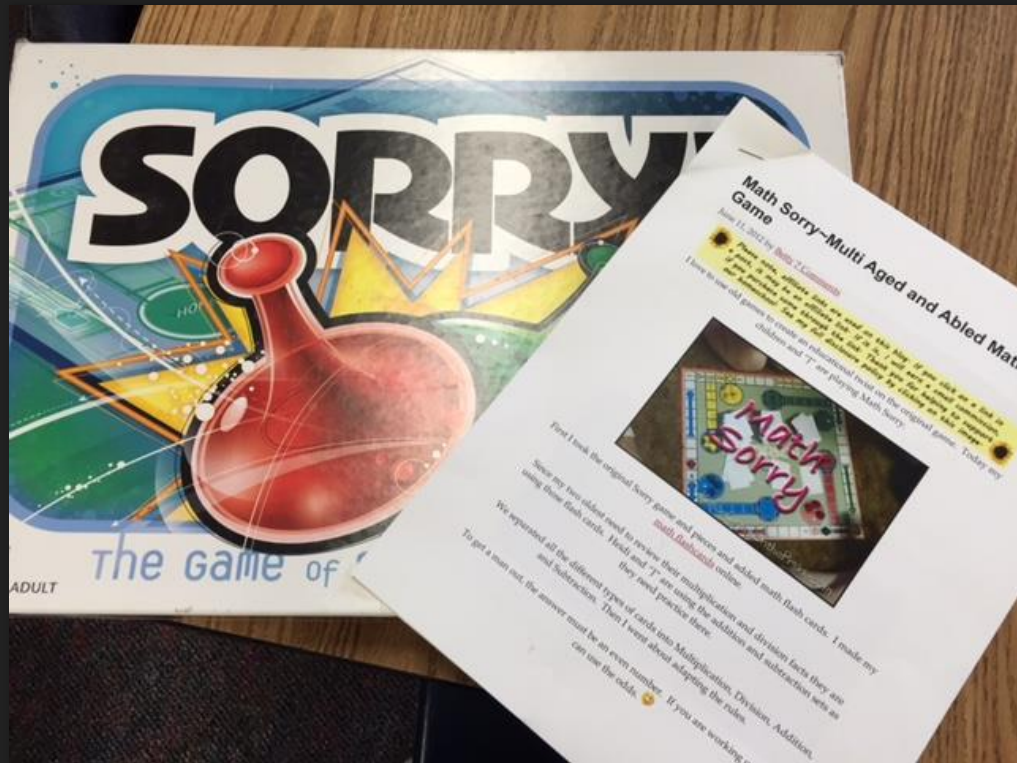
- If one oil derrick can pump 5,870 gallons per year, how many gallons would be pumped in seven years? – Izaac
- My height is $\frac{5}{8}$ of the height of an oil derrick. What would my height plus the oil derrick's height be? – Braedon
- There are five oil derricks in one country. There are ten times that many in six other countries each. Then ten broke down. How many working oil derricks is that total? – Emily
- Two thousand four hundred thirty-eight oil derricks were on a farm. Two hundred thirty of them broke down. How many are left working? - Briley

Games

- Turn regular games into new learning experiences





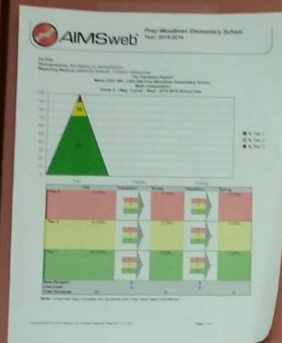


Responsibility and Ownership

- Data Binders
- Data Displays

Let's

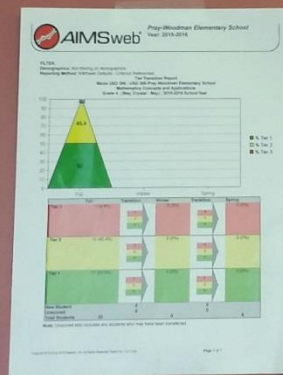
Grow



Comp.

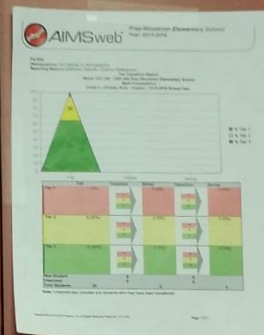
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May



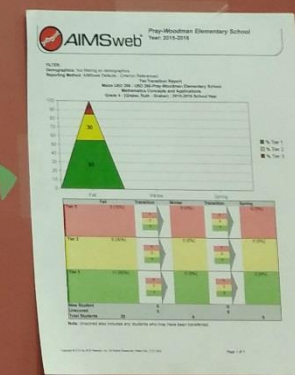
Our

Green



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CAP



Open Ended Problem Solving

- Video Clip
- What's My Rule?
- What MP does an activity like this encourage?

Quick Trip



Quick Trip Math Questions

- How far is the nearest Quik Trip from your house? school?
- What is your favorite drink? What size cup do you usually get?
- How many ounces are in a cup? ($8 \text{ fl. oz} = 1 \text{ cup}$) How many cups are in a 32 oz drink.....how many cups in a 52 oz cup?
- If I bought a drink every day, how much money would I spend in a year?
- What are some other math problems that we could solve at Quik Trip?

Resources

- [Yummymath.com](https://www.yummymath.com)
- [Robertkaplinsky.com](https://www.robertkaplinsky.com)
- [Estimation180.com](https://www.estimation180.com)
- KATM flipbooks

Key Words ... No, No

There are about fortyone thousand Asian elephants and about four hundred seventy thousand African elephants left in the world. About how many Asian and African elephants are left in total?



Key Words ... No, No

- Student misusing key words

Variety of Problem Types

- Review types of problems
- [Greg Tang Site](#)

	Unknown Product	Group Size Unknown ("How many in each group?" Division)	Number of Groups Unknown ("How many groups?" Division)
	$3 \times 6 = ?$	$3 \times ? = 18$ and $18 \div 3 = ?$	$? \times 6 = 18$ and $18 \div 6 = ?$
Equal Groups	There are 3 bags with 6 plums in each bag. How many plums are there in all? <i>Measurement example.</i> You need 3 lengths of string, each 6 inches long. How much string will you need altogether?	If 18 plums are shared equally into 3 bags, then how many plums will be in each bag? <i>Measurement example.</i> You have 18 inches of string, which you will cut into 3 equal pieces. How long will each piece of string be?	If 18 plums are to be packed 6 to a bag, then how many bags are needed? <i>Measurement example.</i> You have 18 inches of string, which you will cut into pieces that are 6 inches long. How many pieces of string will you have?
Arrays,¹⁹ Area²⁰	There are 3 rows of apples with 6 apples in each row. How many apples are there? <i>Area example.</i> What is the area of a 3 cm by 6 cm rectangle?	If 18 apples are arranged into 3 equal rows, how many apples will be in each row? <i>Area example.</i> A rectangle has area 18 square centimeters. If one side is 3 cm long, how long is a side next to it?	If 18 apples are arranged into equal rows of 6 apples, how many rows will there be? <i>Area example.</i> A rectangle has area 18 square centimeters. If one side is 6 cm long, how long is a side next to it?
Compare	A blue hat costs \$6. A red hat costs 3 times as much as the blue hat. How much does the red hat cost? <i>Measurement example.</i> A rubber band is 6 cm long. How long will the rubber band be when it is stretched to be 3 times as long?	A red hat costs \$18 and that is 3 times as much as a blue hat costs. How much does a blue hat cost? <i>Measurement example.</i> A rubber band is stretched to be 18 cm long and that is 3 times as long as it was at first. How long was the rubber band at first?	A red hat costs \$18 and a blue hat costs \$6. How many times as much does the red hat cost as the blue hat? <i>Measurement example.</i> A rubber band was 6 cm long at first. Now it is stretched to be 18 cm long. How many times as long is the rubber band now as it was at first?
General	$a \times b = ?$	$a \times ? = p$ and $p \div a = ?$	$? \times b = p$ and $p \div b = ?$

	Result Unknown	Change Unknown	Start Unknown
Add to	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? $2 + 3 = ?$	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? $2 + ? = 5$	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? $? + 3 = 5$
Take from	Five apples were on the table. I ate two apples. How many apples are on the table now? $5 - 2 = ?$	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? $5 - ? = 3$	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? $? - 2 = 3$
	Total Unknown	Addend Unknown	Both Addends Unknown ²¹
Put Together/ Take Apart²²	Three red apples and two green apples are on the table. How many apples are on the table? $3 + 2 = ?$	Five apples are on the table. Three are red and the rest are green. How many apples are green? $3 + ? = 5$, $5 - 3 = ?$	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? $5 = 0 + 5$, $5 = 5 + 0$ $5 = 1 + 4$, $5 = 4 + 1$ $5 = 2 + 3$, $5 = 3 + 2$
	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare²³	("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? ("How many fewer?" version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? $2 + ? = 5$, $5 - 2 = ?$	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? $2 + 3 = ?$, $3 + 2 = ?$	(Version with "more"): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have? $5 - 3 = ?$, $? + 3 = 5$

Our Final Thoughts....

- 1. You – know your craft and strive to improve upon it
- 2. Zip It, Lock It, Put It In Your Pocket – even though you are number one, you are number one in the background
- 3. CRA Model
- 4. Foster Number Sense
- 5. Celebrate the Mistakes
- 6. Integrate curriculum
- 7. Bring in games to engage learners
- 8. Open-Ended Problem Solving – Be less helpful and make it personable
- 9. Show a variety of story problems and have a rich discussion about the story

Needs...?

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