

How to help your child with their MATH HOMEWORK

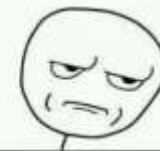


Tiffany Schroyer
Intermediate Unit 1- Math Trainer and Consultant

Math Geek 101



Math. The only place where people buy 60 watermelons and no one wonders why.



How I see math word problems:



**If you have 4 pencils and I
have 7 apples, how many
pancakes will fit on the roof?
Purple, because aliens don't
wear hats.**

COMMON CORE STATE STANDARDS



ENGLISH
LANGUAGE ARTS



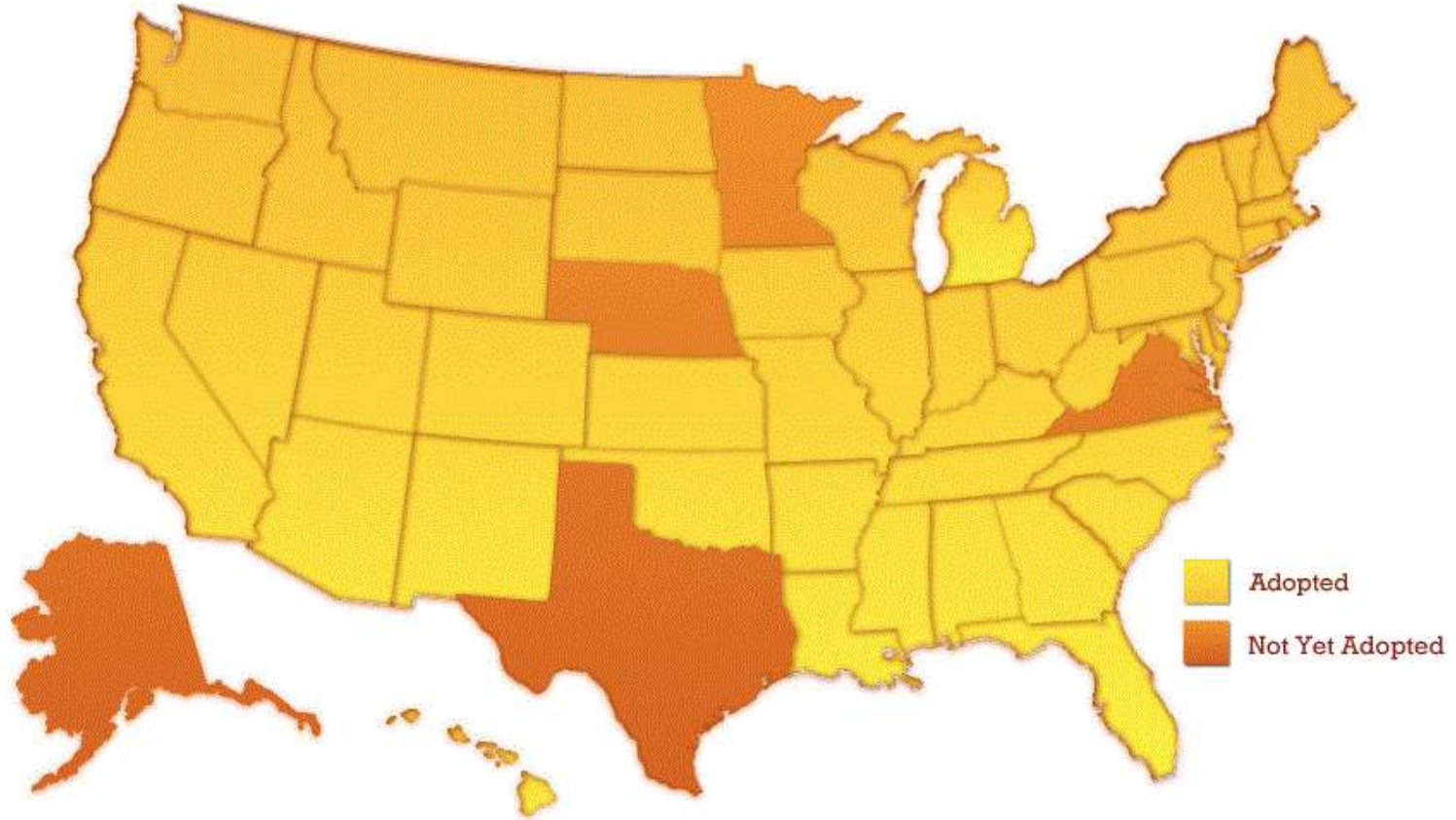
MATHEMATICS



**Three-Minute Video Explaining the Common
Core State Standards**

<http://vimeo.com/51933492>

Common Core Across the Nation



What Should I Expect with PA Core?

- * More time to **focus** on preparing students for college and career readiness.

The Shifts in Mathematics

1. **Focus:** Focus strongly where the standards focus
2. **Coherence:** Think across grades, and link to major topics
3. **Rigor:** In major topics, pursue **conceptual understanding**, procedural skill and **fluency**, and **application** with equal intensity

Let's Do Some Math!

Fractions

- What do you remember about learning fractions in elementary school?
- How would you describe your current understanding of fractions?

Comic Strip Fractions

You decide to create a comic strip for your school's newspaper. To do this, you cut strips of paper that are a little narrower than the width of a newspaper page. The strip represents one whole comic.



Comic Strip Fractions

1. For your first comic, you want to have one frame. Choose one of your strips of paper to represent one whole comic. Label this strip as **one whole**.



Comic Strip Fractions

2. Take a second strip; divide the strip into two parts of equal size by folding the strip in **half**. Do not measure the strip. Label each part of the strip with the appropriate fraction.



Comic Strip Fractions

3. Create strips to represent the each of the following:

- * **Fourths**
- * **Thirds**
- * **Sixths**



Comic Strip Fractions

$$\frac{1}{2} + \frac{1}{3}$$



Comic Strip Fractions

$$\frac{1}{2} - \frac{1}{3}$$



How can you help your child in math?

- Have children apply their math knowledge to a real-world scenario at home, such as doubling a recipe or calculating the area of a room.
- Help children practice their addition, subtraction, multiplication, and division facts.
- Encourage children not to give up while solving problems, to build stamina and develop their critical thinking skills. Don't give them the answers - ask them to think of different ways they can solve problems.
- Have children illustrate the math they were thinking in their head and discuss it out loud.
- Ask great questions to help them think deeply about their homework.

You are going to be the
questioning expert!



What kinds of questions
guide deeper thinking
about math?

Why did you decide
to use that method?

Why is that true?

Convince me!

How can you be
sure?

Can you explain that?

How do you know
that?

What would happen
if...?

How did you reach
that conclusion?

Prove it!

SHOW ME!




Can you do it another
way?

Explain that using
math terms.

How do you know
you're right?

Explain your
reasoning.

Does it always work?



Where does
questioning fall into
PA Core?

MPS

1. Make sense of problems and persevere in solving them
6. Attend to precision

2. Reason abstractly and quantitatively

3. Construct viable arguments and critique the reasoning of others

4. Model with mathematics

5. Use appropriate tools strategically

7. Look for and make use of structure.

8. Look for and express regularity in repeated reasoning.



Reasoning and explaining



Modeling and using tools



Seeing structure and generalizing



Overarching habits of mind of a productive mathematical thinker.

Math Practice Standards

Make sense of problems and persevere in solving them	Reason abstractly and quantitatively	Construct viable arguments and critique the reasoning of others	Model with mathematics
<p><i>Teachers ask:</i></p> <ul style="list-style-type: none"> • What is this problem asking? • How could you start this problem? • How could you make this problem easier to solve? • How is ___'s way of solving the problem like/different from yours? • Does your plan make sense? Why or why not? • What tools/manipulatives might help you? • What are you having trouble with? • How can you check this? 	<p><i>Teachers ask:</i></p> <ul style="list-style-type: none"> • What does the number ____ represent in the problem? • How can you represent the problem with symbols and numbers? • Create a representation of the problem. 	<p><i>Teachers ask:</i></p> <ul style="list-style-type: none"> • How is your answer different than ____'s? • How can you prove that your answer is correct? • What math language will help you prove your answer? • What examples could prove or disprove your argument? • What do you think about ____'s argument • What is wrong with ____'s thinking? • What questions do you have for ____? <p><i>*it is important that the teacher poses tasks that involve arguments or critiques</i></p>	<p><i>Teachers ask:</i></p> <ul style="list-style-type: none"> • Write a number sentence to describe this situation • What do you already know about solving this problem? • What connections do you see? • Why do the results make sense? • Is this working or do you need to change your model? <p><i>*It is important that the teacher poses tasks that involve real world situations</i></p>
Use appropriate tools strategically	Attend to precision	Look for and make use of structure	Look for and express regularity in repeated reasoning
<p><i>Teachers ask:</i></p> <ul style="list-style-type: none"> • How could you use manipulatives or a drawing to show your thinking? • Which tool/manipulative would be best for this problem? • What other resources could help you solve this problem? 	<p><i>Teachers ask:</i></p> <ul style="list-style-type: none"> • What does the word ____ mean? • Explain what you did to solve the problem. • Compare your answer to ____'s answer • What labels could you use? • How do you know your answer is accurate? • Did you use the most efficient way to solve the problem? 	<p><i>Teachers ask:</i></p> <ul style="list-style-type: none"> • Why does this happen? • How is ____ related to ____? • Why is this important to the problem? • What do you know about ____ that you can apply to this situation? • How can you use what you know to explain why this works? • What patterns do you see? <p><i>*deductive reasoning (moving from general to specific)</i></p>	<p><i>Teachers ask:</i></p> <ul style="list-style-type: none"> • What generalizations can you make? • Can you find a shortcut to solve the problem? How would your shortcut make the problem easier? • How could this problem help you solve another problem? <p><i>*inductive reasoning (moving from specific to general)</i></p>

What does this look like in the classroom?

- * Leprechaun Traps: Addition Within 100
- * CCSS: Math.1.NBT.C.4 Math.Practice.MP2
Math.Practice.MP3

What's in the folder?

- * Student tools (manipulatives)
- * Dry erase boards
- * Websites
- * Bookmarks
- * Question stems and Math Practice Standards
- * A map of what your child will learn this year
- * Parent Night Out sessions

ConnectEd

- * What resources are available with *My Math*?
- * Have you logged in at home yet?
- * Let's take a look...

YouTube?

* How can YouTube help us with homework?

www.youtube.com

Additional Resources

Council of the Great City Schools Parent Roadmaps:

- * Math

 - <http://www.commoncoreworks.org/domain/149>

- * National Parent Teachers Association (PTA)

 - <http://pta.org/parents/content.cfm?ItemNumber=2583>

- * Achieve the Core

 - www.achievethecore.org

Show what you know...

- * Solve the following math problem in any way you would like using ONLY mental math:

$$68 + 24$$

How did you solve it?

- * Tell your “shoulder partner” how you solved this problem.
- * Let them tell you how they solved it.
- * Share with me!



*Solution strategies...

Show what you know...

- * Solve the following math problem in any way you would like using ONLY mental math:

$$72 - 47$$

How did you solve it?

- *Tell your “face partner” how you solved this problem.
- *Let them tell you how they solved it.
- *Share with me!

You are the home connector between your child and their math thinking!

- * Tiffany Schroyer
- * IU1 Math Trainer and Consultant
- * tiffany.schroyer@iu1.org
- * (724) 938-7396 x711