

# Tips for Math Success – An Engineering Prof & ACSD Parent's Perspective

CyMath <https://cymath.iastate.edu/>

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(everything on these slides is Namrata's personal perspective, not ISU's)*

## About Me

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- Grew up in Delhi in India
- Did K-12 and Engineering degree in India
- Came to the US (UMD) for graduate school in 1999
- Engineering (ECE) Professor at ISU since 2005
- Lived in Ames since 2005
- One child - sixth grader at AMS
- Lots of friends/colleagues with school-age kids
  - Older and younger
  - Those with older kids were our source of math info

## **Why is Early Math (grades 3-5, 6-8) Critical?**

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Math is cumulative.

Addition and subtraction lead into multiplication and division. All of these lead into fractions and decimals and doing the basic operations with them. All of this is critical for understanding pre-algebra (ratios etc) and algebra which is the basis of high school math and physics and a lot of college STEM and Engineering course-work. Algebra is also critical to understand coding for Engineering apps.

Starting in Grade 6, students who have scored highly on standardized tests get the opportunity to take accelerated math classes. These allow students to get farther along, quicker, leading to taking more advanced math courses in high school.

## How to Learn and Practice Math

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**Math requires dedicated practice. CyMath suggests 5 days a week 15-30mins each (grades 3-5), and 30-50 mins for grades 6-8**

- Free Options:
  - Khan Academy - has videos & practice problems. First starting point
  - Beestar.org - 2 free worksheets/week, no videos or learning. Good for some challenge
  - Printed workseets: K5Learning, many others
- Paid Options:
  - Beast Academy - good for challenge
  - ALEKS - CyMath uses; good to pick up missed skills
- It is okay to know one way to do arithmetic (even if it is not the “new” way)! You can teach it the way you learned it.
  - To learn later math - it doesn't matter how you learned to multiply as long as you know how to.
  - Tests - computer tests, also don't care about



# Standardized Testing

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Standardized Testing – iReady or MAP and ISASP

- **Okay to email to ask teacher and principal for dates**
  - Everyone means well – for some confusing reason teachers encouraged not to bother parents
- Happens 4 times per year: iReady (3x), ISASP (1x) – September, January, April (ISASP), May
- **Adaptive Testing – iReady n MAP tests are adaptive**
  - **Each student first gets easy problems, if they do these correctly, they are given harder problems.**
  - **Harder problems are worth more points than easy ones**
  - **If they do these easy ones wrong, they do not get harder ones – score gets capped at low value**
- How are the scores used – divide kids into compacted, regular, alternate math in middle school

# How to Use Khan Academy

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How to get started with Khan Academy.

- Sign up as Parent (can use a Google account)
- Add your student(s)
- If you don't know what your student needs:
  - Have them start one or two grade levels below (depending on level of struggles)
    - There are also "Getting Ready for (Grade)" classes
  - Take the Course Challenge (scroll to bottom of grade level page).
    - Like a final exam and will show what skills are mastered and which need work.
  - Take it from there.
    - If you do well (at least 85% or higher), go to next grade.
    - If not, review topics and take quizzes/tests on them for that grade level
      - You will be able to see which skills are mastered or not
- Important to know all past math to learn current grade math well!
- Parent tip – make sure kids aren't goofing off on the computer!

## More on Khan Academy (but not essential)

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The Extra Bits:

- Signing up as a Parent still lets you make classes and act as a teacher.
  - You can create a class if you want to give assignments
    - Student will have to have option to add coaches
    - Student will then have to use class code to join
  - Teacher accounts are geared towards monitoring multiple students
    - Gives less control over the student's account, but is a little more streamlined
- Having the Khan Academy account will let you monitor:
  - How much time they are working
  - Topics they are covering.

# Using AI to Reteach Math

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Using ChatGPT (or MetaAI) to teach you math in your own language is a great way to learn! Here's how you can make the most of it:

- **Specify Your Language:** When you ask for help, just let it know which language you'd like to use.
  - Just say: "Can you explain in Spanish?" and it will do so!
- **Set the Math Level:** Let the AI know what kind of math you are learning (e.g. arithmetic, pre-algebra, etc) and it will tailor the explanations to that level.
  - You can also ask it to simplify the explanation if you do not understand the first time.
- **Ask Questions and Practice:** You can ask specific math problems or concepts and it will provide step-by-step solutions.
- **Request Examples:** If you are learning a new topic, you can ask it to give examples of solving that type of problem.
  - Example: "Can you show me an example of solving an inequality in French?"
- **Interactive Learning:** You can ask the AI to quiz you, give you practice problems, or simplify instructions for more clarity!



All information:

<https://cymath.iastate.edu/math-for-all/>

Sign-up to learn or to tutor

<https://cymath.iastate.edu/>