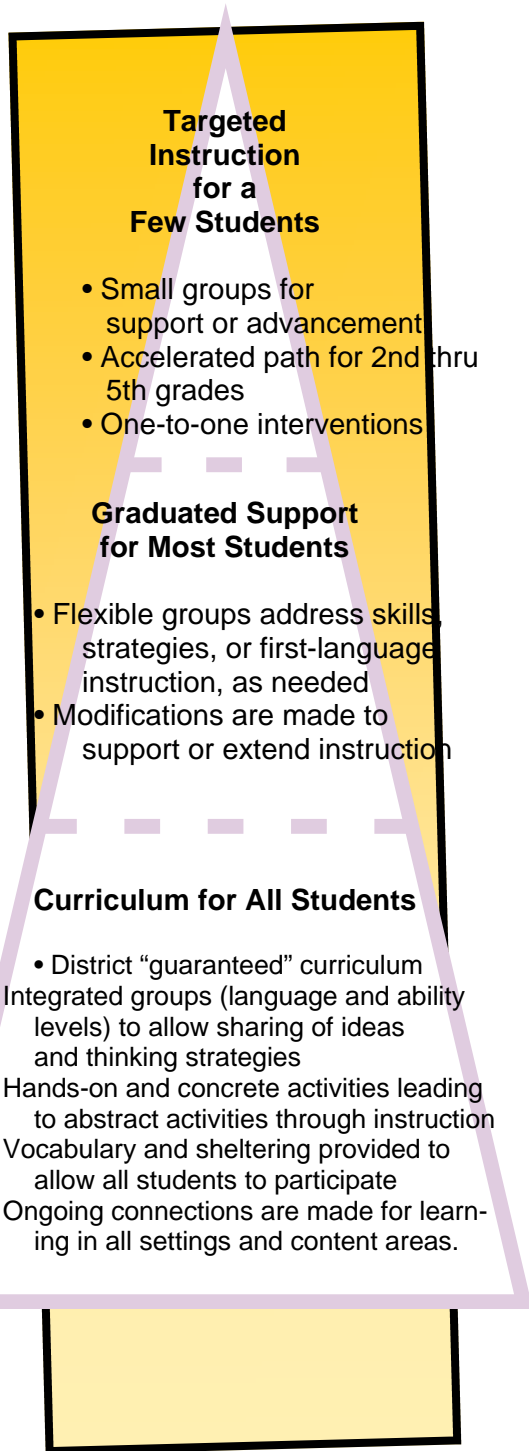


## Grouping and Instructional Strategies for Mathematics



## What Can Parents Do?

### Before Children Enter School\*

Just as parents can help their children be ready to learn to read, they can give children a good start in learning math by helping them develop proficiency with informal math concepts and skills.

- Play games such as dominoes and board games.
- Find natural opportunities to count, to sort objects, to match collections of objects, to identify shapes (while reading bedtime stories, going up stairs, setting the table, etc.).
- Count a collection of objects and use number words to identify relationships (first/third; greater than/less than).
- Talk with your child about simple math problems and ideas. (“How many spoons do we need to set the table?” “Find the other circle on this page.” “Sort the blocks by shape.”)

### After Children Enter School\*

- Have high expectations. Children's math achievement is shaped - and limited - by what is expected of them.
- Expect some confusion to be part of the learning process but emphasize that effort is what counts. Math is understandable and can be figured out.
- Avoid conveying negative attitudes toward math. Never tell children to not worry about a certain kind of math because it will never be used.
- Ask your child what he or she did in math class today. Ask him or her to give details and to explain.
- Expect your child's homework to include more than simple computation worksheets.
- Give your child meaningful problems that use numbers or shapes while you are going about everyday life. Ask the child to explain what he or she did. Share how you got the answer and explain that there is more than one way to get the answer.

\*National Research Council



## Math Instruction @ Columbine Elementary



“I like math because there is more than one way to get the answer.”

-Columbine Student

▶ **Your best choice is your neighborhood school.**

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## Specific Guiding Principles for Mathematics Instruction at Columbine

- Students are actively engaged in constructing their own mathematical knowledge through meaningful, contextually based learning activities.  
*Teachers are guides and instructors. They provide students with specific tasks which lead to discoveries, and deeper understandings.*
- Students are specifically led through the steps from concrete materials to abstract reasoning over time.



- Students are encouraged to use multiple, flexible approaches to problem solving.

• Language sensitive instructional strategies are an integral part of planning for mathematics instruction.

*Language is critical for mathematical understanding. Math learning is not language independent.*

- Students have opportunities to explain, justify, ask questions, and reflect on their own mathematical thinking and the thinking of others.
- Mathematical thinking and language structures are practiced across content areas.  
*Math is used throughout our lives. It is not a set of abstract concepts that never leave the classroom.*

## Elements of our Balanced\* Math Program

Columbine uses the district-adopted Investigations Math Program that focuses on mathematical reasoning as the foundation for our math instruction. We supplement with Count Me In Too/Advantage Math. This program provides tools to analyze students' number sense and address their needs with targeted instructional methods.



Overall our math program includes:

- Mental math to develop number sense and fluency
- Guided opportunities to advance skills and strategies
- Open-ended problem solving
- Models for communicating mathematical thinking in oral and written forms
- A variety of materials at appropriate developmental levels
- Assessments that guide instruction and demonstrate learning

*\*Balanced math indicates students will be exposed to all aspects of mathematical competence - computation, reasoning, problem solving and communicating.*



## Questions and Answers

- Q: What is wrong with how we were taught math?**  
**A:** Most of us were taught math as a series of rules and facts to learn, rather than relationships to be understood. Rules alone foster memorization often times at the expense of deeper understanding which is key to grasping more difficult math concepts. In addition, students in today's world need much more focus on critical thinking and analysis.
- Q: What should I expect from the program?**  
**A:** All students will be taught the district *Guaranteed Curriculum*. Students will be expected to not only provide an answer, but also be able to explain and defend that answer.
- Q: What about the *Math Facts*?**  
**A:** Fluency with math facts is important for efficient computation. Research has shown that learning through consistent practice and games is more effective than straight flash card practice.
- Q: How does this type of instruction transfer to a more traditional environment?**  
**A:** With a deep understanding of mathematical concepts, transfer to a traditional environment is not difficult. Former Columbine students have made easy and quick transitions to advanced middle school math.
- Q: What does your math acceleration look like in the different grades?**  
**A:** As in all areas of instruction at Columbine, instruction is differentiated, providing students what they need, where they are. In addition, students in grades 2 to 5 who would benefit from acceleration are placed in *Challenge Math* groups and receive advanced instruction as their daily math class (minimum 1 hour/day).