Common Core Math at Bel Aire School

How do you support children's mathematical thinking at home?

This booklet contains key ideas and information about the new Common Core Standards for Mathematics, including questioning strategies and "I can" statements for parents.

COMMON CORE
STATE STANDARDS INITIATIVE
PREPARING AMERICA'S STUDENTS FOR COLLEGE & CAREER

For more information about the Common Core Math Standards at Bel Aire and today's presentation, please go to:
http://belairemediacenter.weebly.com/common-core-math.html

Credits: WCSA, San Diego COE, Math Solutions, Modesto CS, CCSS, MBAMP, UCSC

Introduction

PARENT INVOLVEMENT AND STUDENT ACHIEVEMENT

The research is overwhelmingly clear: When parents play a positive role in their children's education, children do better in school.

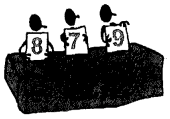
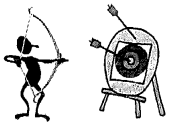
Parents must assure their children that mistakes are perfect opportunities for growth. What counts is that parents help their children gain the confidence that they can learn.

Major benefits of parent involvement include increased mathematical understanding, positive attitudes and behavior, more successful academic programs and more effective schools.

Try to use these questions to help students "think" about their math.

1. How would you describe the problem in your own words? What Information do you have?
2. What do you need to find out?
3. Can you explain what you have done so far? What else is there to do?
4. Why is that true?
5. How did you reach that conclusion? Does that make sense?
6. How would you prove that?
7. Can you convince the rest of us that your answer makes sense?
8. Do you see a pattern? Can you explain the pattern?
9. Can you guess and check?
10. What would happen if... What if not?
11. What tools will help you? ...a hundreds chart? ...blocks?
12. Would it help to create a diagram? Make a table? Draw a picture?
13. Tell me how you got your answer?

The 8 Mathematical Practices

Standard for Mathematical Practice	Student Friendly Language
1. Make sense of problems and persevere in solving them. 	• I can try many times to understand and solve a math problem.
2. Reason abstractly and quantitatively. 	• I can think about the math problem in my head, first.
3. Construct viable arguments and critique the reasoning of others. 	• I can make a plan, called a strategy, to solve the problem and discuss other students' strategies too.
4. Model with mathematics. 	• I can use math symbols and numbers to solve the problem.
5. Use appropriate tools strategically. 	• I can use math tools, pictures, drawings, and objects to solve the problem.
6. Attend to precision. 	• I can check to see if my strategy and calculations are correct.
7. Look for and make use of structure 	• I can use what I already know about math to solve the problem.
8. Look for and express regularity in repeated reasoning. 	• I can use a strategy that I used to solve another math problem.

HELPING AT HOME

Parents ask how they can help their children with mathematics at home.

You can help by asking questions that guide your children without telling them what to do. Good questions will help build your children's confidence and encourage mathematical thinking and communication.

Here are some you might try; notice that none of them can be answered with a simple "yes" or "no."

Getting Started

What do you know?
What do you need to find out?
How might you begin? What do you think you should do first?

While Working

How can you organize your information?
Can you make a drawing (model) to explain your thinking?
What would happen if«?
What do you need to do next?
Do you see any patterns?....Relationships?
Can you predict what the answer might be?
Does this remind you of any other problem you have done before?

Reflecting about the Solution

Is your solution (conclusion) reasonable?
How did you arrive at your answer?
Can you convince me your solution makes sense?
What did you try that didn't work?

Responding

Your response is as important as you initial questions. Continue discussing even after your children have the correct answer. This will give your children a chance to clarify their thinking:
How do you know the answer makes sense?
Do you know another way to solve it?

HOW PARENTS CAN HELP

Listed below are some activities that parents can do over and over again with children of all ages.

Children learn what they live…

☐ Let your children in on your thinking. It will help your children explain their own thinking as they see and hear you do math when it comes up during the day. (Example: count out loud when digging in a pocket for change at the cash register.)

☐ Look for mathematical experiences in your children's real world (geometry, measurement, number, patterns, statistics, probability, algebra).

☐ Share an enjoyment of math. Do not pass on any negative attitude to your children. Avoid talking about math in a negative way or letting them know if you did poorly in math. It simply won't help. Instead, show an attitude of curiosity toward the math your child is learning.

☐ Involve your child in doing math. If you enjoy the closeness of cuddling up and reading with your children, imagine the same sort of closeness with doing math.

☐ Play strategy games.

☐ Be patient with your children. Mathematical understanding develops over time. Watch for and enjoy your children's progress.

Third Grade

What Students Need to Know by the End of Third Grade

1. They can multiply using single digit numbers
2. They can divide two and three digit numbers by a single divisor (number)
3. They can solve word problems using four operations (+, -, x and ÷)
4. They can find patterns with numbers
5. They can tell the difference between ones place, tens place, hundreds place and thousands place and use this information to help me round to nearest 10 or 100.
6. They can understand that a fraction is a part of a whole
7. They can compare fractions on a number line
8. They can identify, create and compare equivalent fractions
9. They can tell time on a clock to the nearest minute
10. They can know ways to measure liquids
11. They can draw a picture graph and a bar graph to represent data
12. They can find the Area and Perimeter of various polygons
13. They can name different kinds of shapes and describe what's the same and what's different

How Parents Can Help

- I can practice mental math and math facts with my child (without paper, pencil or calculator) Example: If there were three nests and three eggs in each nest, how many eggs? There are twenty kids. There are 60 candies. How many candies would each kid get?
- I can create word problems for kids to solve using vocabulary like more, less, fewer, How many more __ than __? How many less __ than __?
- I can skip count with my kids to reinforce number patterns
- We can estimate prices at the store by rounding up to the nearest dime or nearest dollar
- I can practice fractions with food
- I can ask my child what time it is
- I can have child help cook by adding accurate measure of liquids

Third Grade Math
Important Mathematics Vocabulary

Multiply, multiples, base 10
Data
Patterns
Divide, divisor, equal groups
Volume
Numerator
Denominator
Triangle (scalene, isosceles, equilateral)
Quadrilateral (rhombus, square, parallelogram, rectangle)
Angle (acute, obtuse, right)
Sides
Adjacent
Sum, total, all together
Difference, less than
Greater than
Equal to

Fourth Grade

What Students Need to Know by the End of Fourth Grade

1. They can read, write, estimate, and round whole numbers up to one million, 1,000,000.
2. They can multiply using double-digit multipliers.
3. They can divide numbers and use single digit divisors in long division problems.
4. They can add and subtract whole numbers up to one million, 1,000,000.
5. They can factor all the numbers from 1 to 100.
6. They can find all the prime numbers from 1 to 100.
7. They can read write, estimate, and round whole numbers up to the hundredths place – 0.01
8. They can order and compare decimal numbers.
9. They can place decimal numbers on a number line.
10. They can add, subtract, decimal numbers.
11. They can read and write fractions.
12. They can understand that fractions are numbers seen as part of a whole or part of a set.
13. They can order and compare fractions.
14. They can place fractions on a number line.
15. They can compare fractions and decimals using a money system.
16. They can see a relationship between fractions, decimals, and percents (example ½ = .50 = 50%).
17. They can recognize that rectangles with the same area can have a different perimeter.
18. They can use formulas to determine area and perimeter.
19. They know the different types of angles.
20. They know the definition of different quadrilaterals.
21. They can apply the order of operations to evaluate numerical expressions.
22. They can decide when and how to break a problem into smaller parts.
23. They can use estimation to prove if an answer is reasonable.
24. They can use strategies from simple problems to help solve more difficult problems.
25. They can explain my math thinking in different ways (numbers, symbols, graphs, etc.).
26. They can calculate carefully and check my answers.
27. They can recognize a line of symmetry
28. They can draw points, lines, line segments, rays, angles, perpendicular lines, and parallel lines.
29. They can classify triangles.

How Parents Can Help

- I can provide opportunities for my child to manage money (example: budget an allowance, discuss use of checkbooks, ATM recording).
- I can provide opportunities for my child to use measurements (carpentry, sewing, exact time, cooking).
- I can grocery shop with my child and estimate the total cost of all groceries prior to checkout.
- I can ask my child mathematical questions and look for reasonable answers (examples: How many miles is it from our house to the mall? How long will it take us to travel from our house to the grocery store?).
- I can practice mental mathematics and mathematical facts (without paper, pencil, calculators or materials) with my child. Example: How many eggs are in 3-dozen?
- I can find the perimeter and area of the outside of my house using appropriate units of measure with my child.
- I can estimate with my child the amount of time spent on a family event daily, weekly and monthly (watching TV, eating dinner, sleeping).
- We can then record the actual amount of time and compare the results.
- I can read and interpret graphs in the newspaper with my child.
- I can encourage my child to play games involving mathematics.
- I can provide an analog, as well as a digital clock, and talk about time lapsed with my child.
- I can use mathematical vocabulary in discussions with my child.
- I can think out loud with my child as I do things during my day to show my thinking process and encourage my child to do the same.
- I can tell my child I have confidence in his or her ability to accomplish math skills by saying, “I know you can do this…”

Fifth Grade

What Students Need to Know by the End of Fifth Grade

1. They can interpret percents as part of a hundred (using fractions and decimals).
2. They can visualize, describe and represent geometric solids
3. They can determine prime factors for numbers through 50.
4. They can read a number line.
5. They can add, subtract, multiply and divide with decimals.
6. They can find the sum of like and unlike fractions and mixed numbers.
7. They can find the difference of like and unlike fractions and mixed numbers.
8. They can substitute given numbers for variables (letters or symbols).
9. They can identify and graph ordered pairs of numbers in quadrants.
10. They can understand place value and round to any place.
11. They understand the concept of volume and use appropriate units.
12. They can find and use the formula for the area of a triangle and parallelogram as compared to a rectangle.
13. They can compute the surface area of rectangular boxes and cubes.
14. They can measure, identify, and draw angles, perpendicular/parallel lines, and triangles.
15. They know that the sum of angles of a triangle is 180° and the sum of quadrilateral angles is 360°.
16. They can identify ordered pairs of data from a graph and interpret the meaning of the data.
17. They know how to write ordered pairs correctly using four quadrants.
18. They can apply the order of operations to evaluate numerical expressions.
19. They can decide when and how to break a problem into smaller parts.
20. They can use estimation to prove if an answer is reasonable.
21. They can use strategies from simple problems to help solve more difficult problems.
22. They can use a variety of methods such as words, numbers, symbols, charts, graphs tables, diagrams, and models to explain my mathematical thinking.
23. They can calculate carefully and check my answers.

How Parents Can Help

- I can budget money for allowance, clothing and entertainment with my child.
- I can find examples of fractions, decimals, and percents in everyday life and explain to my child what they mean (such as buying gas, newspaper ads, shopping, sports).
- I can draw or build a model of one room in my home with my child. We can plan a room addition and be very exact with out measurements to include windows, doors, carpet, etc.
- I can build a structure with 4 to 6 blocks with my child. We can draw the top, side and front views and then find out if someone else in the family can rebuild the structure from the drawings.
- I can play mathematical board and computer games with my child.
- I can create estimation problems for every day events to ask my child.
- I can practice mental math and math facts with my child.
- I can use the newspaper to gather data for decisions (example: compare car loan rates).
- I can chart a daily event for two weeks (such as the length of time it takes the family to eat dinner) and determine the family's averages. We can calculate the mean, median, and mode and discuss the differences.
- I can look for examples of tessellations, regular and irregular three-dimensional shapes in the environment.
- I can do "Today's Date" Activities with my child.
- I can use mathematical vocabulary in discussions with my child.
- I can think out loud with my child as I do things during my day to show my thinking process and encourage my child to do the same.
- I can tell my child I have confidence in his or her ability to accomplish math skills by saying, "I know you can do this…"