

Saint Killian's Parish School

Welcome!

How can I help
my child with
math
homework?

What's the
same?
What's
different?

Why doesn't my
child's math
homework look
like mine did?



Why has math
education
changed?



Why has math
education
changed?

This isn't the way I learned math!

“During the past 20 years, the skills required to succeed in the economy have changed radically, but the skills taught in most schools have changed very little...Many people -- including half of recent graduates -- have an education that is no longer in demand.”

– Galvin & Bales, Motorola

The background features a gradient from dark blue on the left to light blue on the right, with several bright, curved white lines that create a sense of motion and depth.

Math Reform

(It's not a new idea!)



So What's
Different
This Time?

Research

- ✓ How we learn
- ✓ Learning styles
- ✓ High performing math classrooms
 - ✓ Pedagogy
 - ✓ Curriculum
 - ✓ Material

Schools must respond by making sure students . . .

- ✓ Can make sense of mathematical situations
- ✓ Can solve non-routine problems and then self-check
- ✓ Can communicate their answers
- ✓ Learn mathematics that is pertinent and rigorous

Learners Need . . .

- ✓ Contextual setting to connect to what they already know
- ✓ Novelty, patterns, high interest
- ✓ Communication with other “thinkers”
- ✓ Accountability
- ✓ Rigor
- ✓ A chance to be successful in higher level mathematics

St. Killian's Response . . .



Investigations

in Number, Data, and Space®

2nd edition

What informed the 2nd Edition?

- Over 10 years of implementation of the 1st edition
- *Principles and Standards for School Mathematics* (NCTM, 2000)
- Continued research in the field of math education
- 5-year development process, including 2 full years of field testing in a variety of classroom settings
- Guiding principles and goals

Guiding Principles

- ✓ Students have mathematical ideas.
- ✓ Teachers collaborate with the students and curriculum materials to create the curriculum as enacted in the classroom.
- ✓ Teachers are engaged in ongoing learning about mathematics content, pedagogy, and student learning.

Goals of *Investigations*

Support students to make sense of mathematics and learn that they can be mathematical thinkers.

Goals of *Investigations*

Focus on computational fluency with whole numbers as a major goal of the elementary grades.

Goals of *Investigations*

Provide substantive work in important areas of mathematics - rational numbers, geometry, measurement, data, and early algebra - and making connections among them.

Goals of *Investigations*

- Emphasize reasoning about math ideas.
- Communicate math content and pedagogy to teachers.
- Engage the range of learners in understanding mathematics.

What's the
same? What's
different?



You can still count on the math teachers to . . .

- ✓ Have high expectations for each student
- ✓ Help your child develop efficiency and accuracy with math operations (basic skills/facts)
- ✓ Deliver a rigorous curriculum that challenges each student to grow mathematically

Now you can **also** expect your child to . . .

- ✓ Go beyond memorization of procedures
- ✓ Understand number concepts so that he/she can better use numbers to solve problems
- ✓ Increase his/her repertoire of problem solving strategies
- ✓ Take risks!

“It must be remembered that the purpose of education is not to fill minds with facts... it is to teach them to think, and always to think for themselves.”

Robert Hutchins

Why doesn't my
child's math
homework look
like mine did?



What does math HW look like?

- Games
- Problems to Solve
- Tasks to Perform
- Facts to Practice

How can I help
my child with
math
homework?



Attitude!

- You can undermine your child's math ability and attitudes by saying things such as :
 - Math is hard.
 - I'm not surprised you don't do well in math, I didn't like math either when I was in school.
 - I wasn't very good in math and I'm a success, so don't worry about doing well.

“One of the most significant things parents can do is to help their children understand the normalcy and the value of struggle in mathematics . . . Learning math ultimately comes down to one thing: the ability, and choice, to put one’s brain around a problem - to stare past the confusion, and struggle forward rather than flee.”

Sutton, 1998

You can't **MAKE** your child like math! **BUT** you can:

- ✓ Display a positive attitude toward math - even if you find it difficult or unpleasant, or if you think you were never any good at it.
- ✓ Send the message that math is not only a practical necessity, it is something **everyone** can do and enjoy for its own sake.
- ✓ Point out how fortunate he/she is to have the opportunity to learn math today - when math knowledge can open the door to so many interesting and exciting possibilities.

When your child says, “I don’t get it at all.”

- ✓ Try to figure out where they are stuck through questioning.
 - Can you show me what you’ve done so far?
 - Can you draw a picture/table/chart?
 - Which part are you confused about?
 - What is the problem asking you to do?
 - Tell me what you do understand about the problem.
 - Do you see a pattern?

When you see that your child has the wrong answer . . .

- ✓ There's a lot to be learned from a wrong answer.
 - Instead of correcting your child, try to figure out what he/she was thinking.
 - Work together to see where things went wrong.

When your child says, “The teacher didn’t teach me how to do this kind.”

- ✓ Your child is probably right!
 - It is impossible to teach your child how to do **every** kind of problem.
 - Instead we teach strategies to solve a wide variety of problems.
- ✓ Try not to jump in with an answer.
 - Does this remind you of other problems?
 - Can I see what you worked on in math class today?

Together you come up with a solution and your child says, “That’s not the way the teacher did it.”

- ✓ Your child’s teacher will be thrilled if a child comes up with a new strategy for solving the problem. As long as . . .
 - The student’s work is documented so that the teacher can follow the thinking.
 - It demonstrates understanding of the concept.
 - It works! But - even if it doesn’t, if the teacher can follow the thinking, the teacher can determine where to go from here.

There's nothing wrong with saying . . .

- ✓ “I never learned math this way.”
 - “I’m interested in learning about this new way.”
- ➔ This makes it OK not to understand a child’s homework. It’s not related to smarts.
- ✓ “You’ve worked long enough on this problem for tonight.”
 - Attach a note on the unfinished homework with a few words about where you think your child got stuck.

**“I used to know how
to do this!”**

- ✓ Ask Dr. Math
- ✓ Internet sites
- ✓ Your child’s math notebook
- ✓ Your child’s math book
- ✓ Your child’s math teacher

More Importantly - How can you help your child become mathematically powerful?

- ✓ Explore math together as a family
- ✓ What's the math equivalent of reading aloud to your child every day?
- ✓ Involve your child in activities that encourage measurement
- ✓ Math in the car
- ✓ "Wait" math
- ✓ Let your child teach you

If we as a nation adopt the belief that all students can learn mathematics; if we act in consistent, coordinated ways to effect that goal; and if we make the requisite commitment of human and financial resources, there is a good reason to think many more students will succeed. Our children deserve nothing less than the best mathematics education in the world.

*-U.S. Department of Education
Office of Educational Research and Improvement*