

**KANSAS LEARNING FIRST ALLIANCE SURVEY OF
SCHOOLS WITH HIGH ACHIEVEMENT OR
SIGNIFICANTLY IMPROVING ACHIEVEMENT IN
MATHEMATICS**

MARCH 2004

INTRODUCTION

Over the last year, the Kauffman Foundation has funded activities to improve mathematics instruction in Kansas schools. The activities have been conducted by the Kansas State Department of Education (KSDE), Kansas Learning First Alliance (KLFA), and Kansas Association of Teachers of Mathematics (KATM) and have included a mathematics alignment study, a mathematics workshop to digest the results of the study, and an online survey of high performing schools. Results of the online survey are summarized in this document and will be used at a second mathematics workshop.

In the spring of 2004, 152 Kansas principals were selected, based on their schools' state mathematics assessment score trends, to complete an online survey related to their current practices in mathematics instruction. Each of the schools has been a Challenge Award or Standard of Excellence school in mathematics. Some have been both, and most have received awards for more than one year. Sixty-one of the principals completed the survey.

Questions on the survey came from mathematics educators who attended the first state mathematics workshop in November of 2003. These educators, who had taken part in the alignment study, wanted specific information about what high performing schools are doing to obtain such excellent results. Question developers wanted information from schools of various sizes and with various types of school populations. The schools selected met these criteria. Many of the questions on the survey were open-ended due to the type of information needed. The open-ended responses have been summarized and/or grouped as much as possible for this document.

Respondents were asked if they and/or members of their staff were willing to participate on panels at the second mathematics workshop. They were told that panel members would describe their mathematics program and to answer questions. Many volunteered to be on panels, if needed.

QUESTION 2: WHAT TEXT SERIES DO YOU USE? (PLEASE INCLUDE PUBLISHER, TITLE, AND EDITION.)

No.	Name of Series
1	Accelerated Math
1	Addison Wesley, Calculus, 1999
1	Addison Wesley, Pre Calculus, 2001
1	Addison Wesley, Secondary Math, 1996
1	Addison Wesley, UCSMP, 2 nd
1	Britannica, Math in Context (MIC), 1988
1	Center for Occupational Research and Development, Applied Mathematics
2	Chicago Series
1	DC Heath, Algebra
1	DC Heath, Algebra I: An Integrated Approach
1	DC Heath, Algebra II: An Integrated Approach, 1997
1	Everyday Learning, Everyday Mathematics, 2002
1	Geometry Tools for a Changing World
1	Glencoe McGraw Hill, Advanced Mathematical Concepts, 1997
1	Glencoe McGraw Hill, Advanced Mathematical Concepts, 2001
1	Glencoe McGraw Hill, Algebra
2	Glencoe McGraw Hill, Algebra 2-Integration Application Concepts, 2001
1	Glencoe McGraw Hill, Algebra I, 1 st
1	Glencoe McGraw Hill, Course 2
1	Glencoe McGraw Hill, Course 3
1	Glencoe McGraw Hill, Math in My World, 1999
1	Glencoe McGraw Hill, Pre Algebra
3	Glencoe McGraw Hill, Pre-Algebra An Integrated Transition to Algebra and Geometry
1	Glencoe, Advanced Math Concepts, 2002
3	Glencoe, Algebra 1: Integration, Application, Connection (Books 1&2), 1998
1	Glencoe, Algebra I, 1998
1	Glencoe, Algebra II, 1998
1	Glencoe, Geometry, 1998
2	Glencoe, Math with Business Applications, 2004
1	Glencoe, Mathematics Applications and Connections, 2001
1	Glencoe, Mathematics Applications and Connections, Course 2
1	Glencoe, Merrill Geometry, 1 st
1	Glencoe, Merrill Adv. Math Concepts, 1 st Ed
1	Glencoe, Merrill Advanced Math Concepts 1994
1	Glencoe, Merrill Geometry, 1995
2	Globe Fearon, Cord Algebra, 1 st Ed.
1	Globe Fearon, Cord Bridges, 1 st Ed.
2	Globe Fearon, Cord Geometry, 1 st
2	Harcourt Brace, Math Advantage, 1999
3	Harcourt Math, 2002
1	Heath, Accelerated Math, 1992
1	Heath, Calculus, 5 th Ed
1	Heath, Drops in a Bucket, 1992
1	Holt Rinehart, Winston, Algebra II
1	Holt, Rinehart, Winston, Algebra I
1	Holt, Rinehart, Winston, Geometry

No.	Name of Series
1	Houghton Mifflin, Advanced Mathematics, 1994
1	Houghton Mifflin, Algebra I, 2002
1	Houghton Mifflin, Algebra II, 2002
1	Houghton Mifflin, Applied Math I
1	Houghton Mifflin, Applied Math II
1	Houghton Mifflin, Calculus with Analytic Geometry, 7 th Ed.
1	Houghton Mifflin, Calculus,
1	Houghton Mifflin, Geometry, 2002
2	Houghton Mifflin, Houghton Mifflin Math Central, 1999
1	Houghton Mifflin, Math To Know, 2000
1	Houghton Mifflin, Mathematics, 2002
2	Houghton Mifflin, Pre calculus,
1	Houghton Mifflin, Trig,
1	International Baccalaureate Texts
1	Key Curriculum, Discovering Geometry, An Inductive Approach, 1997
1	McDougal Littell Algebra
2	McDougal Littell Geometry
1	McDougal Littell Passport to Algebra/Geometry, 2002
1	McDougal Littell Passport to Mathematics 2, 2002
1	McDougal Littell, Algebra 1, 2001
1	McDougal Littell, Algebra 2, 2001
1	McDougal Littell, Algebra I Explorations and Applications, 1998
1	McDougal Littell, Algebra II, 1 st Ed
1	McDougal Littell, Algebra Method and Structure and Method, (Book 1 & 2)
1	McDougal Littell, Math Thematics, 1998
1	McDougal Littell, The Classic Geometry, 2000
1	McDougal, Littell, Advanced Math, 2000
2	McGraw Hill, Everyday Mathematics, 2002
1	McGraw Hill, Mathematics, 2002
1	McGraw Hill, SRA Explorations and Applications, 1999
2	Prentice Hall, Algebra 1, 2004
1	Prentice Hall, Algebra 2, 2004
1	Prentice Hall, Consumer Mathematics, 1991
1	Prentice Hall, Middle Grades Math Tools for Success, 2001
1	Prentice Hall, Tools for a Changing World, 1 st
1	Prentice Hall, University of Chicago School Mathematics Project, 1996
1	Renaissance Learning, Accelerated Math
1	Saxon Algebra ½, 3 rd Ed
2	Saxon Algebra 1 3 rd Ed.
1	Saxon Algebra II, 3 rd Ed.
2	Saxon Math 54, 2 nd Ed
1	Saxon Math 76, 3 rd Ed
1	Saxon Math 87, 2 nd Ed
2	Saxon Math, 2 nd Ed.
1	Saxon Math, Grades 1 and 2
2	Saxon Math, Grades 7-8
1	Saxon Math, Math 4, 2001
1	Saxon, 1-4

No.	Name of Series
1	Saxon, Advanced Math (1998), Algebra I(1992), Algebra II 1998), 7 th (1999) and 8 th Math (1999)
1	Scott Foresman (Grade School Books)
1	Scott Foresman 2003
1	Scott Foresman Addison Wesley, Math, 1999
2	Scott Foresman Addison Wesley, Math-The Millennium Edition
1	Scott Foresman, 1999
2	Scott Foresman, Exploring Mathematics, 1991
1	Scott Foresman, Trig/Pre-Calc
1	Scott Foresman, UCSMP
1	Scott Foresman, UCSMP, 2 nd Ed.
1	Scott Foresman, UCSMP, Transitional Math
1	Scott Foresman/Addison Wesley, UCSMP Functions, Statistics, and Trigonometry
1	University of Chicago Math Project, Geometry, 2001
1	University of Chicago School Mathematics Project, 1996
1	University of Chicago, 2 nd Ed (Used for Geometry and Advanced Math)
3	Wright Group McGraw Hill, Everyday Mathematics, 2001

A variety of texts are being used in these high performing schools. None are used by more than three schools.

3. How long have you used your text series?

	Elementary		Middle		High		Multiple Levels		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
This is first year	2	7.7%	1	7.1%	0		1	25.0%	4	6.7%
2-3 years	10	38.5%	3	21.4%	3	18.8%	0		16	26.7%
4-5 years	8	30.8%	7	50.0%	6	37.5%	1	25.0%	22	36.7%
More than 5 years	6	23.1%	3	21.4%	7	43.8%	2	50.0%	18	30.0%
Total	26		14		16		4		60	

High schools and multiple level schools have used their text series the longest. Four schools are using their series for the first time this year and eighteen schools have used their texts for more than five years.

4. On average, how much time do your teachers spend teaching mathematics each day? (problematic wording for secondary schools)

	Elementary		Middle		High		Multiple Levels		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
30-45 minutes	3	11.1%	2	14.3%	1	6.3%	1	25.0%	7	11.5%
46-60 minutes	12	44.4%	5	35.7%	3	18.8%	0		20	32.8%
61-75 minutes	8	29.6%	1	7.1%	0		0		9	14.8%
76-90 minutes	2	7.4%	1	7.1%	0		1	25.0%	4	6.6%
More than 90 minutes	2	7.4%	5	35.7%	12	75.0%	2	50.0%	21	34.4%
Total	27		14		16		4		61	

This question was worded incorrectly for secondary teachers. It should have read, 'On average, how much math instruction do students receive each week'. Almost all elementary teachers teach mathematics for 46-75 minutes each day. Other results should be viewed with caution.

5. IF THE MAJORITY OF YOUR TEACHERS INCORPORATE OTHER RESOURCES, IN ADDITION TO YOUR TEXT SERIES, INTO THEIR INSTRUCTION, BRIEFLY DESCRIBE WHAT KINDS OF THINGS THEY INCORPORATE.

No.	Name of Other Resources
4	Accelerated Math
4	ACE Assessment Conditioning Exercise
1	ACE in Geometry
1	Active Learning Opportunities
5	ADD
1	Algebra Worksheets, Warm-ups and Board Work
1	AR
1	Area Math Contests
1	Assessment Warm-ups from ESSDAK
1	Basic Time Test
1	Brainchild.com
1	Building Math Resource Materials
2	CBL Labs
1	CCC
1	Comprehensive Math Grade 4
1	Computation Worksheets
1	Computer Assisted Math Instruction
1	Computers
1	Consumer Math
1	Consumer Related Topics
1	Cooperative Learning Structures
1	Daily Problem Solving
1	Discovery Activities
1	District Created Materials
1	Drill and Practice
1	Drops in the Bucket
1	Everyday Math
1	Fact Practice
1	Geometer Sketchpad
1	Geometry Worksheets
6	Graphing Calculators
2	Green Globes
1	Guerilla Math
1	Hands on Activities
1	Hands On Equations
1	Individual Learning System (ILS)
1	Instructional Fair, Inc.
6	Internet
1	KS Math Assessment Practice Materials
1	Lab Activities
1	Larson Math
1	LCD Projector
1	Mad Minute Practice
5	Manipulatives

No.	Name of Other Resources
1	MAPS
1	Mark Twain Media/Carson Dellosa Publishing Co
1	Mastering Math Facts
1	Math 4 Today
2	Math Facts in a Flash
1	Math Games
1	Math Graphic Organizers
1	Math journals
1	Math Teacher Magazine
1	Math Their Way
1	Math Wizards
1	Mathematics Handbook, Great Source Publishers (Houghton Mifflin)
1	McGraw Hill Activity Books
1	Mechanical Instruction
1	Mountain Math
1	Muggins Math
1	National Contests
1	Old Texts
1	Paper Folding
1	Pass Plan Program
1	Passkey Program
1	PowerPoint
1	Practice Workbooks
1	Problem of the Day
6	Problem Solver Series
1	Problem Solving Activities
1	Problem Solving Model
1	Problem Solving Worksheets
1	Real Life Applications
1	State Assessment Overhead Practice
6	Teacher Designed Activities
1	Test Taking Strategies
1	Touch Math
1	Transparencies
1	Trig Worksheets
1	Varied (Each teacher chooses his or her own resources)
1	Vocabulary
1	Warm-ups Based on Test Outcomes
1	Wild West Math

Nearly all of the schools incorporate supplemental materials into their mathematics instruction. Internet, graphing calculator, problem solving, and teacher-designed activities are most common.

6. Does your school participate in block scheduling?

	Elementary		Middle		High		Multiple		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Yes	1	3.7%	2	14.3%	7	43.8%	1	25.0%	11	18.0%
No	26	96.3%	12	85.7%	9	56.3%	3	75.0%	50	82.0%
Total	27		14		16		4		61	

Block scheduling is used in a little over 40 percent of the high schools. It is not common at other educational levels.

QUESTION 7: IF YOUR SCHOOL DOES PARTICIPATE IN BLOCK SCHEDULING, BRIEFLY DESCRIBE THE MODEL BEING USED.

Students are scheduled in 7 periods. Three classes meet on Wednesday and Friday, Four on Tuesday and Thursday. One seminar period each week. On Monday, traditional 7 period day.

90 minute blocks every other day.

50 minute class three times a week and one 90 minute class per week.

Our schedule is broken down into core classes (math, lang. Arts, soc. Studies, and science) and encore classes (PE, vocal music, instrumental music, art, tech. ed. and health/fitness). In the core classes, the largest amount of time scheduled is for LA and math. SS and science is taught only half the time of the other two. We have the opportunity to see students again for learning support on a daily basis in our schedule. We have also incorporated an After School Tutoring Program from 3:15-4:00 for students/teachers to utilize as needed. In our schedule we have built in team planning time so we can meet on a weekly basis to discuss/collaborate about any student improvement strategies needing to be tweaked or implemented for any student.

Eight period modified block. Monday all classes are scheduled; first and last period classes meet every day. Tuesday and Thursday (even days) are block periods for 2nd, 4th and 6th periods. Wednesday and Friday (odd days) are block periods for 3rd, 5th, and 7th periods.

Our schedule is a modified block schedule using alternating odd/even days of classes that last 90 minutes. We have 7 academic blocks and the 8th block is a Seminar. On Fridays all classes meet for about 45 minutes each.

We have 4-6 teachers at each grade level. Each grade level has core subjects/lunch and an activity period at the same time. The activity period is sixty minutes at which time all teachers at that grade level have professional planning/development.

4x4 Block Math is used and all students are required to enroll all four years in a math course, most math classes are everyday all year for a ½ credit a semester, we do have what we call quick start and restart classes, the beginning class is Algebra I, and the goal of NEM is for all students to graduate with at least Algebra II.

A-B block, class meets every other day for 85 minutes.

4 ½ hour periods plus a ½ hour seminar/reading period each day. This is based on an 8 hour class schedule.

We use a modified 4x4 block, with classes 95 minutes. Students in regular classes meet everyday each semester. In select classes (Algebra II quick start) meet every day for only one semester. Restart algebra is for students who failed Algebra I first semester.

4x4 block. We see the student everyday for 90 minutes. One credit is earned at the end of 18 weeks.

8. Is block scheduling helping or impeding student progress in mathematics?

	Elementary		Middle		High		Multiple		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Helping	1	100.0%	2	100.0%	4	57.1%	0		7	63.6%
Impeding	0		0		2	28.6%	0		2	18.2%
Too early to tell	0		0		1	14.3%	1	100.0%	2	18.2%
Total	1		2		7		1		11	

In schools where block scheduling is used, almost two-thirds feel that it has helped student progress in mathematics.

9. PLEASE EXPLAIN YOUR ANSWER TO QUESTION 8.

Impedes the progress of lower level students.

The math teachers feel strongly that it impedes progress for lower level students. They say that struggling math students need to do math daily. We do have several sections of Algebra that we double up. They meet each day for 90 minutes and are enrolled in two sections of math.

For the upper level students and classes the instructors feel that it has helped. For middle of the road and lower level students and the younger students it has probably not been beneficial.

Impedes the progress of all students.

As math teachers we feel that the block hampers the retention our students have and limits the amount of material we are able to cover throughout the school term. We would rather have an increased number of contact days with our students.

Block scheduling works well.

We have used the block schedule format for almost 10 years now and math achievement scores on the KS assessments as well as our standardized testing continue to be strong. It appears that quality instructors who maximize learning time and focus on essential math skills can effectively teach math in a block schedule.

Block scheduling is the only method we can use to group students according to need and for teachers to have adequate group professional development time.

Students have the opportunity to learn new material and reinforce learning from prior experiences, as well as focus on specific weaknesses or enrichment as needed.

More time to absorb information and receive help. Although, it is sometimes too much info for kids to have at once.

Students are provided increased opportunities to learn, practice, and review. Teachers do not have to hurry; they can individualize lessons and references prior to learning.

Students are able to take more than 1 math class per year. If a student is not successful in a math class, they are able to start again that same year and not have to wait one full year.

Cannot determine if block scheduling has an effect.

We cannot determine if our students are doing better because of block scheduling. However, block scheduling does allow teachers a concentrated 85 minute block every day for planning.

I have not taught by block scheduling; thus, I am not qualified to answer.

10. Has your school or district done anything to formally align your math curriculum and/or math text to state standards?

	Elementary		Middle		High		Multiple Levels		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Alignment at school and district	23	88.5%	13	92.9%	14	87.5%	3	75.0%	53	88.3%
Alignment at district	2	7.7%	0		0		0		2	3.3%
Alignment at school	0		1	7.1%	1	6.3%	0		2	3.3%
No alignment done	1	3.8%	0		1	6.3%	1	25.0%	3	5.0%
Total	26		14		16		4		60	

Nearly 90 percent of the schools have completed formal alignment activities at both the school and district levels.

11: Briefly describe the alignment process that was used.

Alignment was done by district and/or school staff using own model.

We aligned our district standards with the state standards. We also met in teams and established our district essential skills.

We spent many in-services working on this. Each individual teacher went through the indicators to compare them with what they teach through the textbooks. After that we combine grades to see what indicators are overlapped or indicators that are not taught at all. We then decide what should be supplemental to help bridge the gaps.

The alignment is the result of the C&I dept. They have used state benchmarks and indicators as the basis for alignment. Also, the use of our district created “curriculum monitoring charts” have kept teachers on track and increased accountability.

Our curriculum department leads teachers and other specialists through the process.

Representatives from each building along with district staff met on a regular basis and reviewed different math series and compared them to the State Standards to ensure the series aligned with the standards.

Were given an opportunity to work and communicate with other instructors about material and strategies to be taught. Teachers listed goals and objectives that they use. Matched to state standards and filled holes in our curriculum.

Matching the state standards to the appropriate grade level. Determined the most important standards that all children in our district should master and at which grade level. Use the math glossary at each grade that is appropriate. Mastery of the math vocabulary for accountability.

We have studied the state standards and made sure that we are teaching them. We have checked our textbooks against the standards before selecting our text. We are currently looking at new textbooks.

We have aligned our math curriculum to the State Standards.

We are using the Kansas State Standards. Every teacher has a copy of these standards.

We have a district wide curriculum team that aligns our local curriculum and CRT’s to the state standards. We meet every month. Our first step is to review, update, and approve curriculum. During this process we acquire sample textbooks. Once the curriculum is 90% done we start reviewing textbooks and see which one matches the state standards. We have the publishing companies do this for us. We narrow down our choices to the top three and submit the books for review and approval to the curriculum council.

Our BOE adopted the national and state math standards. Our math Subject Area Committees (SAC) met to find materials that supported these standards. After considerable research, our math SAC adopted the Math in Context for the middle school. Math SAC met to align the curriculum with the BOE adopted standards.

Spring 2001 curriculum alignment teams completed alignment of local curriculum to the state standards. Currently in the process of a rewrite using the new edition of the state standards.

District personnel have aligned curriculum and basic skills tests with the standards.

When our local curriculum was developed a copy of the state standards was used to check that all aspects of the state standards were incorporated into our local curriculum at the specific grade levels (K-12). All K-12 Teachers were present, when it was discovered that any state standard had not been covered, teachers volunteered to present it at the grade appropriate level and it was adopted in to the local curriculum.

District objectives were aligned with state standards by the district math committee. Building math plan and curriculum was aligned by the staff and school improvement team.

The state standards were used as the source of reference to align each grade level. Meetings were then held between the grade levels to ensure that all standards were covered.

We wrote our district standards to follow the state's standards.

Last year we started the realignment of our math curriculum. We used the State standards to write our curriculum. All teachers were involved in reviewing the curriculum and then writing interventions to meet each standard. The high school math teachers are working with the elementary school teachers on how to teach some of the standards. We have an early dismissal or late start once a month where we meet to work on the State Standards.

We rewrote all our district curriculum to align exactly to the state standards. We spent in-service days working in grade levels to rewrite the curriculum for each grade.

Typical process involving review of the KS Math standards and connecting that to known instructional sequences. Further review of yearly math data serves to reinforce/refine this effort.

We mapped the curriculum using the standards as a guide. This was done at an in-service and individually. Grade levels met and decided upon a district map.

Summer curriculum work and on-going monthly professional development at the building.

All mathematics teachers met and reviewed the current Kansas Standards. They chose to focus the curriculum on those grade level standards that were items of emphasis on the Kansas Math Assessment. This session was led by a staff member who had been trained in curriculum alignment.

We made sure that everything that was in the state standards was in our curriculum.

We are a small school with only 2 math teachers for the junior high through high school. This process was more of a discussion of what should be taught to the junior high students so that they are prepared for the high school courses. The high school sequence is up to my discretion.

Each teacher wrote on a different colored slips of paper what they taught, then placed them under the standards that were written as headings on a wall. At that time, when we saw 2nd grade colored slips widely spread, we realized that 2nd grade was teaching a majority of the material, so we realigned in the lower elementary. High school had good alignment.

Our district hired a curriculum director who put together a written curriculum. Teachers met with the director during the process. After the curriculum was completed, teachers teamed to map out the scope and sequence and determine who taught specific indicators.

We will be aligning district-wide this summer.

Studied state standards and compared state standards with the text. The alignment between the textbook and state standards were parallel.

We teach to the district standards regardless of textbook content.

The staff of each school participated in rewriting the curriculum to align with state standards.

Standards were reviewed and elements of the curriculum were identified as meeting the standards.

Our curriculum has been written based on the Kansas Standards and National Standards.

Each teacher K-12 sat down together and aligned curriculum to state and to each other.

Our district has a Math curriculum director that studies standards and benchmarks for each grade level. The district curriculum is then written to match those standards and benchmarks. We look at the scores on the state assessments in each area and target which areas we need to improve on.

District level committees have met frequently to be sure curriculum is aligned with state outcomes. Curriculum mapping is also being done for next year.

All math teachers teaching the same subject got together and aligned their particular classes together. The next year the district aligned the Algebra I classes. These alignments were based upon district and state standards. Currently, all of our math classes are aligned to each other and to the district and state standards. We are in the process of developing common end-of-course exams.

District level alignment done first. Then, school level alignment completed by the department.

Selected teachers from the district were asked to work with the Director of Elementary Education to align the district outcomes with state standards. Once alignment was completed, the teachers went through the grade level textbooks and indicated which lessons matched district and state standards.

We have always kept up on the alignment. We just completed alignment with the latest standards. We have a district math committee that works on this. We then show it to our teachers for any other input. We take it to our steering committee for approval, then the board of education. Reviewed state standard and wrote our curriculum to closely match the standards (included what to teach month to month). Found a textbook that aligns as close to possible with our curriculum.

Side by side, bit by bit. Teachers were responsible for everything, except the typing of the drafts and final copy.

Used service center and other models to align.

Summer academy with teachers to align the curriculum with standards using the Greenbush model.

Southwest Plains Regional Service Center helped us write down our curriculum on a K-12 basis. They provided support and guidance through the process. We have recently worked on putting the curriculum online at SWPRSC.

The district used the CLI approach that was presented by Emporia State. Committees were formed to develop a district curriculum. It is very important to see where overlap of concepts were occurring or if

concepts were not presented at the grade level where they would be tested as provided through the state standards. The state standards were used to complete the alignment.

We worked with SWPRSC in Sublette with their process of curriculum writing and alignment.

We recently participated in an in-service on On-Line curriculum through SWPRSC. Our district curriculum is now online and aligned with the state standards.

Curriculum Leadership Institute. Monthly subject area committees met to begin the process. It is ongoing with validation annually.

We developed a curriculum with help from Emporia State U. Aligning to state standards was our main purpose.

SWPRSC helped us with the alignment. We began with the elementary and worked our way through the high school.

A curriculum person from ESSDACK service center was used to help our staff align the curriculum.

During the course of the school year, math teachers representing each grade level met to write indicators that were aligned with the state standards. These were reviewed by all teachers at each grade level before being adopted. Once adopted, local assessments were written for each quarter. Assistance in this process was given by Toni Prickett, ESSDACK math specialist.

Worked through the Ness County Curriculum Council, which is comprised of Ness City, Ransom and Bazine. ESU and Fort Hays Development Center provided the assistance needed to assure we were in alignment.

We used ESSDACK specialist Toni Prickett to help the teacher groups align the district's curriculum to state standards. Our teachers then created district assessments that all schools give every quarter. Our alignment process is ongoing. Presently we are using grade level meetings to keep our alignment current. As a district we are scheduled to review our alignment and textbook selection in 2004-05.

We hired SWPRSC to help us in aligning our curriculum.

Aligned to other standards or models.

We actually align with the International Baccalaureate Curriculum. Then the department goes back and fills in whatever is in the state standards that is not covered in the Pre-IB and IB curriculum.

12. FOR YOUR SCHOOL STAFF, WHAT HAS BEEN THE MOST EFFECTIVE PROFESSIONAL DEVELOPMENT OPPORTUNITY FOR IMPROVING INSTRUCTION IN MATHEMATICS?

Use of state standards & test scores for alignment of curriculum.

Going over and breaking down test scores has been a big help. We also have team brainstorming sessions on how to achieve these goals. We are currently spending a lot of time looking for engaging math opportunities for students.

Alignment process from #11. Opportunity to work and communicate with fellow math teachers about strategies and materials.

We have reviewed the testing results with the lower grades to determine if the same vocabulary is being used throughout the grade levels. We checked to make sure the concepts that are required are being taught in the lower grades so the grades being tested can concentrate on their required standards. The grade level teachers throughout the district have been meeting monthly to discuss strategies and share materials they have found successful for teaching the standards. A timeline was developed so all the tested standards would be taught before the assessments are given. The teachers in the buildings aligned the lessons presented in the textbook with the standards so teachers were well aware of what was essential.

Going through the on-line process and talking through each of the standards and indicators with grades 4-8 was very beneficial for the rest of us to see what needs to be taught at each grade level. That was the most beneficial for me. However, I'm sure that the upper grade teachers have gone to other professional development in-services that were also very helpful.

Mucking with our data and identifying which indicators we are low on and adapting strategies to meet those indicators.

Analysis of data from state assessments, diagnosing needs and developing plans in the classroom to meet needs of all students. This ranges from strategies teachers use in the classrooms, to tutoring after school, to parent involvement math programs (Math Masters) that help with remediation.

Quarterly formative assessment use and data review.

Curriculum alignment and mapping professional development.

Inservice--identifying indicators of low performance, mucking the data to determine areas to focus on and developing our strategies based on the areas identified as our weak areas.

District in-services for 4th grade teachers specifically for State Assessment

We did bring in an outside consultant to help us address test-taking strategies. She also worked with the teachers on what was the most important information our students needed in order to be successful on the state assessments.

The staff participated in a regional review of the draft of the Kansas Math Standards. As a result, the staff returned with a renewed ability to provide teaching examples that were aligned with the standards.

Attendance at state standards workshop for mathematics.

Hands on teaching and teaching for the standards

District in-services covering the benchmarks that need more emphasis.

All algebra I teachers have been trained in the use of classroom manipulatives. We have also been trained in different techniques for teaching Algebra. Aligned to State & District Standards.

USD 306 developed a list of essential math competencies that ALL students must show mastery of for graduation. These competencies were then aligned directly to both KS Math standards and also to grade level curriculum expectations so that every competency was taught multiple times in grades 7-10 (those grade levels where students must take a math course). Continual review and professional discussions of these competencies and the best way to present and reinforce student learning of them has been an extremely effective tool.

The discussion that is evoked by aligning curriculum.

Other in-services/workshops

Attendance at 2-3 self-selected in-services, conferences, workshops per year.

The training that we received when we adopted the series and ongoing training for new staff members. The district also offers math training every summer for teachers.

The AIMS Workshop that Smoky Hill had was well worth it

We have attended workshops at our Regional Service Center in Greenbush

Going to the KATM conference curriculum work

Cooperative learning training, ESSDACK training specific to MIC, study groups focusing on MIC implementation at Hesston Middle School.

Training on using the new (at that time) Applied Mathematics materials on site in Waco TX.

Several mathematics staff attended a workshop in Hays, KS called "Gearing Up for Math Instruction". This workshop was presented by the FHEDC and Lisa Colwell. It was an excellent workshop.

We have attended numerous effective professional development opportunities: State Math conferences, Kim Sutton, Marilyn Burns, Greenbush Consortium, AIMS, and school-wide curriculum meetings.

Workshop on problem solving Training in the problem-solving model

Problem solving strategies and techniques acquired through ESSDAC workshops.

Graphing Calculator Workshop

Southwestern Regional Service Center

Attendance at ESSDACK math workshops, specifically MIC instruction; classes in Kagen cooperative learning; grade level meetings with other teachers in our district where collaboration occurs.

Training and support was provided throughout the first year when the math series was adopted. Since that time, new teachers to the district each year are provided that same opportunity. The district also provides the opportunity to work with Kim Sutton each year. Last, the teachers continue to reflect on their formative assessment data as to what worked and didn't work during collaborative planning times.

District in-services lead by quality staff members

An NCTM conference where one of the presentations specifically targeted improving assessment scores.

State NCTM meetings where ideas are exchanged

This year we will update the CRTs in math, reading, and writing. Our reading teachers attended a CRT writing workshop and will apply and share the information with our math teachers. All math teachers attend an assessment workshop during the first semester.

Workshops, seminars, in-services, summer school, attendance at NCTM and KATM meetings, professional journals.

Accelerated math training and state standards workshops

Time to work/access to other teachers

It has not been bringing in guests speakers to tell them how but rather providing time on school improvement days and staff meetings to work with the curriculum. alignment and collaborate.

Teachers have several blocks of time throughout the year in which they meet as a department: at least twice a month when students are dismissed early. In addition, teachers meet in smaller collaborative teams each week to work on math instruction.

Alignment process from #11. Opportunity to work and communicate with fellow math teachers about strategies and materials.

Time for the staff to understand what needs to be mastered at each grade level and a perspective of the end goal or big picture.

Continually meeting with the building staff, going over testing scores to see what areas we lack. Going over students' scores pulling out low scores and working extra time with just those students. Our staff is real good about sharing their ideas with other teachers. We are all in this together and want to succeed. I've been to many of the KSDE Math conferences.

We have had a few opportunities to do grade level sharing. This has been a great asset to my math program. I find different ways to teach the same concept, which helps reach students in non-traditional ways.

Sharing ideas with other math teachers especially those in our high school.

Time for grade level meetings to make sure our district alignment remains current with the state's standards.

We have brought in many specialists and sent teachers to national presentations. These are helpful but we believe that collaboration with fellow teachers is extremely beneficial.

You know, we just need "time" to work on our math curriculum. We do use the 4-step problem solving method, and the data/graphing/interpreting model is also district wide. I think the most important professional development a school can give is the time to work on their curriculum.

Trainer of trainer model that allows for teaching staff to collaborate as needed

Other

Locally our CRTs are administered first of the year, second and third weeks, and as a final at the end of the year. These CRTs are aligned with the assessment standards.

Mapping

Manipulative training Use of time tests to gain the best results for all children. Time management = time on task for mathematics

Convincing teachers we need to use more than a basal text. It takes many resources for a complete curriculum.

The purchase of mobile computer lab with a video projector and necessary training and back up for its use.

Difficult question. The improvement in instruction comes more internally from each teacher, reading new material, going to a few conferences, but mostly from innate sound instruction ability. I know myself that I am continually learning, but I cannot name the most EFFECTIVE professional development opportunity. We tend to pick up a little new stuff here and there. I find that my success is in stumbling on better ways to explain content to students. A better handout, a better activity for them, more drive from a certain combination of students, etc. Hmmm. . .

Developing the knowledge was only the beginning. When teachers applied mapping skills to their classroom as directed through teaming, we were able to apply what we learned

I think we are still searching for that answer.

N/A We just keep working at it. We've probably been lucky.

13. HOW DO YOU STRUCTURE YOUR SCHOOL CALENDAR (THIS WOULD INCLUDE STRUCTURING YOUR SCHOOL DAY) TO ALLOW FOR "SHARING" TIME NEEDED AMONG STAFF, CONTENT RELATED DISCUSSIONS IN MATHEMATICS, AND MORE FORMAL PROFESSIONAL DEVELOPMENT ACTIVITIES?

Time not given or only given on a few in-service days.

Our schedule does not allow for teaming time. Our district calendar has added more building in-service days that allow some time for team sharing.

Nothing special is done.

Not done

Through staff meetings and school improvement days

Very little done

We don't have much flexibility in a small district.

Traditional day with no special accommodations

Standard calendar with in-service days built in. 4 1/2 in-service 1/2-teacher workdays.

We have a few half days a year--but not much time for our staff to meet. Some teachers didn't know the concepts that are stressed in fourth grade. We need to share much much more just to reiterate the concepts that need to be introduced BEFORE fourth grade.

We do not have built-in time in our school day to allow for "sharing" among staff.

Formal professional development occurs mostly at in-service. We have no daily sharing time among teachers other than discussion in the hallway between classes between myself and two of the science teachers. This actually does help us to say concepts the same and use parallel instruction when teaching parallel concepts.

We have staff development days throughout the school year.

What time? Seriously we're pretty small, so we don't have time to team with our curricular areas during the school day. When we do meet, it is after school. We did hire subs for the math curriculum team to work on our alignment for one day. Next year we have implemented a 2-hour delay for the first Friday of every month. This will hopefully include time for our curricular meetings.

In-service & staff meetings.

We just use the available in-service and workdays.

Meet before and after school as well as on in-service days.

We have some meetings before the school day. We meet a lot after the school day has ended. We do have district in-service days. We have released all district grade level teachers toward the end of the day and had other teachers cover classes or hired subs. We have had some special programs where teachers not involved in the math assessment supervised the students while the rest received the training.

We have curriculum meetings after school.

Our "sharing" time is mostly done outside of the school day on our own time. We have had QPA days when our committee is able to discuss related math issues at that time.

Usually done on in-service days or when teachers can get together after school.

There is not set aside time designated for discussions among staff members in the normal school day. Most of these occur on an as needed basis during planning times or outside of the time of the school day. The school district allows each teacher to spend up to 2 days away from school engaging in professional development activities.

Have tried to be creative.

We have only four in-service days a year so we come up alternative ways for our teachers to meet. Each grade level has a daily 40-minute common planning period, substitutes are brought in to give staff time off, and we pay for after school meetings.

Typically a "data review" day or other type of professional development meeting involving a specific group of teachers will occur on a school day and the district places substitute teachers in the classrooms. We have very few formalized staff development days and instead use this more flexible model as a means to accomplish this work.

We have utilized after school meetings, placed subs in class and had meetings, had special lunches and planning time meetings by course and grade level.

Meet consistently because we are small.

We are a small district and we "share" on a consistent basis day in and day out.

We're a small district with one person doing almost all of the high school math classes.

Due to the fact that there are only two staff members, they have an ongoing peer review that allows them to vent ideas and concerns with each other. At this time our staff requires no additional time other than the already planned in-services required by our NCLB grant.

Since I am the 7th through 12th grade math teacher, there is no need to collaborate content areas with other math teachers. But, the science teacher and I do work together in areas that are concentrated in both subjects. I also attend various student math competitions and enjoy discussing with other math teachers some of their activities, concerns, and successes. Southwest Regional Service Center is also a good resource.

In a small school with only one math teacher, neither the calendar or the schedule is an issue. Working with the Ness County Curriculum Council gives teachers and opportunity to interact with others in their areas.

We don't. This is a small school and teachers are able to collaborate normally.

Our school is small enough the teachers do this as needed outside of regular class time.

We are a small school, thereby making it very easy for staff to visit about curriculum. District grade level meetings are held 2-3 times per year where curriculum is often the primary agenda item. These meetings also allow for sharing of lesson plans. For math teachers, grade level meetings include review of curriculum and assessments. When a new curriculum is adopted, staff development time is given at the beginning of the year to orientate staff to the new curriculum.

Time given one or more times per week

We have staff meeting every Tuesday. Some but not all address math concerns.

District-wide, students are dismissed two hours early on Wednesdays to allow for professional development. About a third of this time is used as Department time in our building. In addition, there are 4 half-day in-services that our teachers use to meet together. Finally, they meet during common planning time once a week with their smaller collaborative team.

Our district provides many opportunities for district and building in-services. We have eight staff development days throughout the year. Each individual building determines additional meeting dates either before or after school. Our school meets twice a month as a staff for school improvement meetings and once a month for grade level focus meetings. We also have staff meetings every Thursday morning with 10/20 minutes devoted toward a curriculum topic.

Each Tuesday of the year is faculty meeting at 7:30 to 8:00 A.M. Each Thursday of the year our faculty K-6 meet at 7:30 to 8:00 A.M. to discuss mathematics goals and other subject matter goals. Last year our goal was to compile a mathematic dictionary for our parents to use at home with their children. This was a highly successful goal and our parents were very pleased with the dictionary.

We have weekly grade level meetings, quarterly math committee meetings, and district wide curriculum meetings.

As I stated earlier, we have an early dismissal and late start day once a month where we address curriculum development activities. The elementary teachers have an hour common planning time each day where they are able to collaborate. We also have days built into the calendar to address curriculum.

Every Wednesday morning for 1 hour we have collaboration time. Some Wednesdays this time is spent cross curriculum and some days with the department.

Sixty minutes a week of professional development. Eight professional development days a year. Nine early release days a year.

Junior high core area teachers have common plan time. We have 5 late start in-services for teachers to have two hours for in-services or curriculum work.

8 district level staff development days, though not all are devoted to math; building level staff development time on the above days to meet the needs of the building staff; grade level teachers have daily collaboration time.

Junior high core area teachers have common plan time. We have 5 late start in-services for teachers to have two hours for in-services or curriculum work.

Our two math teachers share prep time, and both are able to communicate with the After School Assistance Program leader, who is used during the day as a learning assistant in the library primarily in math.

All staff has a 95-minute plan block. Some have shared time others do not. We have used subs to cover classes which allow all staff to meet and for staff development.

We have "collaboration" times set up during the day that teachers can talk with colleagues about student concerns, curriculum issues or planning. Staff meetings are all geared toward staff development and the plan is aligned to the school improvement plan. Needs assessment with staff was done, and is done, every spring, to prepare for the new school year. Summer Academy usually hosts Kim Sutton and many of our teachers attend that.

Math teachers have planning periods on the same day.

We use shared planning periods. Some of our most productive work comes at lunchtime. Teachers do not have lunch or recess duty. Besides the normal lunchroom discussions, many days the discussion revolves around our curriculum.

Our grade level teachers have an hour planning time each day where they meet with the teachers in their grade level and plan instruction. There are inservice days about each quarter where the day is spent on inservice, and other in-services throughout the year after school covering areas teachers request more information about.

Time given once or twice a month

We have monthly 'late starts'. Teachers come in a little early and we do not bring students in until an hour late. We often use this time for curriculum work. We have also just hired someone to help with curriculum work. I also think aligning our math curriculum will be helpful.

We have early dismissal on the 1st Wednesday of every month to meet with the staff. We also have sharing time from a workshop the 3rd Wednesday after school.

Every month on the third Friday we dismiss at 12:35 for staff development or workday. Workday at the end of the nine weeks. Staff development days are usually over school improvement strategies and reviewing data. Next year we're trying to align with other districts on this release time. This would open up sharing staff development opportunities with other districts, using the IDL system.

Days for professional development are allotted in the schedule. Site council meetings and faculty meetings are used to address and discuss student improvement issues.

Our district emphasizes professional development, although our annual calendar is adopted by our BOE. Approximately one in-service training day per month (seven total on the school year). Our building schedule has built into it individual and team planning/collaborating time for all staff members, daily learning support time for those students needing more time and/or reteaching, and a philosophy where students are scheduled for our Extended School Year (ESY) where they get individual instruction during the summer months.

We have six early release days each year. We use some of this time to discuss results and ways to improve. We also use staff meetings as a time to share. We have also devoted inservice days to math.

Teaming is formalized and teachers meet for an hour once every two weeks. We started this last year.

We have a once a month math department meeting.

Early release of students about every other Wednesday

Time given per quarter or semester, but not weekly or monthly

Currently at the end of every nine weeks we send students home at 12:15 to give the staff time to work together on curriculum.

Our school sets aside workdays each year for teachers to get together and discuss curriculum, student progress and enrollment, discipline or classroom management procedures, etc. The junior high and high school teachers also meet frequently before school or after school throughout the year to discuss particular needs at that time. There is no time set-aside during the regular school day for teachers to meet.

District scheduled inservice days, common planning times, and district grade level meetings

New teachers have 4 preservice days before the school year begins. Curriculum expectations are addressed. There are 4 inservice days during the year. We have district "pick your own sessions" and curriculum is a main topic. Next year sessions will be built in for grade level collaboration. Building level inservice days and after school session focus on the school improvement goals - one of the three is mathematics.

The district has a team of educators from the K - 12 buildings plan the school calendar. In the calendar, the district provides 8 inservice days. A couple of days are used for district inservice while the others ones are planned for the building level. Teachers review assessment scores and help plan the various

inservice days for staff. Also, the teachers use focus groups, faculty meetings, QPA meetings and Principal/Teacher conferences to share among one another.

Collaborative time has been embedded into the regular school calendar. The building schedule has been designed to provide additional time for grade level planning. Staff development days are designed to support our school improvement plan.

Other

In-service time is provided for preparation for NCA in our targeted areas.

I have benefited immensely from Southwest Regional Service Center.

14. PLEASE DESCRIBE YOUR METHODS FOR ASSESSING THE EFFECTIVENESS OF MATHEMATICS INSTRUCTION AT YOUR SCHOOL AND THE FREQUENCY WITH WHICH YOU ASSESS EFFECTIVENESS.

No.	Assessment
12	CTBS; Terra Nova; ITBS; other NRT
8	ACT Scores; PSAT Tests; Pass/Plan assessments
25	State Assessment Scores
17	District basic skills exam; District generated assessments (Quarterly); CRT tests
17	Classroom grading/assessment/testing; Classroom work (Daily)
7	Teacher made tests; Vocabulary checklists; Time tests; Skill tests; Fact tests; Pop quizzes
9	Chapter tests; Unit tests (pre and post); Finals (Semester or Yearly)
9	Formative assessment (quarterly); Math assessments (Quarterly); Problem Solver Assessments (Quarterly)
1	Computer assessments
3	STAR Math Tests
1	Collaboration within the Department
2	Curriculum review; District level curriculum meetings
2	District and building level surveys; Graduate surveys
1	C&I department feedback
1	Textbook review
1	Math journals
5	Data collection and analysis; Classroom data use; Enrollment data (analysis)
1	Tracking F and D rates
5	School improvement goals
1	IB Scores
1	Standard of Excellence
1	NCA data
1	Target area committees
1	Standards based progress report
1	Varied teaching styles
8	Teacher evaluation and observation; Walkthrough observation
1	Remedial lessons during seminar periods for people who have not made adequate progress.
1	Summer Math Packets
1	Rocket Math Graphs
1	ADD

No.	Assessment
1	Enrichment Activities
1	Essential Math Competency Matrix

As can be seen from the table, staff use a variety of assessment and other data to measure the effectiveness of their instruction. Actual comments are given in Appendix A.

15. WHAT ARE THE KEY STRATEGIES AND OTHER INGREDIENTS THAT YOU KNOW ARE HELPING YOUR STUDENTS REALIZE HIGH MATHEMATICS ACHIEVEMENT?

No.	Strategy
2	4 years of math
1	7 th Grade Pre-algebra
3	8 th Grade algebra
1	Increased teaching of algebra and geometry
7	Scheduling enough time for math/to learn math; Summer school
1	Time and scheduling changes
13	Tutoring ; Title I
3	Ability grouping; Differentiating instruction; Class placement
3	Small class size; student-teacher ratio
1	Adequate resources
3	At risk aides; Resource teacher instruction
1	Professional development
6	Motivated, determined, consistent, work hard
8	Parental involvement and communication
16	Well educated/quality teachers; Experienced teachers
5	Alignment of math curriculum; Alignment of text
3	Cooperative learning
1	Building-wide strategies
2	At risk identification; Early identification of at risk
2	Review of concepts frequently; Repetition
2	School improvement strategies, including setting goals
6	Standard of Excellence; Incentives
1	Standards emphasis
2	Cumulative review; Data analysis
4	Varied teaching techniques
6	Consistent teaching of vocabulary
2	Teaching test taking skills
1	SWPRSC reviews
1	Technology
2	Basic skills testing; Continued assessment
2	ACT scores; AP calculus scores
7	KS math assessment and assessment warm ups; Practice opportunities; Review for State Assessments starting in Feb.; Assessment exposure
1	Focus on all students
1	Focus on math, including problem solving
2	Good students
1	Graduate feedback
17	High expectations
1	Immediate feedback to students
1	Indicators: Focus on the weakest after data analysis
2	Integration into other areas (PE, Music, Library)
1	ESSDACK
1	Everyday Math Curriculum
1	Enrichment activities

6	Graphic organizers; Graphing & other calculators; Manipulatives
1	Guided discovery
1	IDEA Model
1	Larson Math
5	Math contests/clubs; Student Hall of Fame
3	Math journals; metacognition
1	Math on Call
1	Math word walls
1	Mental models
6	Problem solving techniques
1	CCC program
1	SMSD curriculum
1	Accelerated Math
1	ACE Material
3	Saxon Text

Quality teachers, more time for students to learn, high expectations for all students, and frequent analysis of assessment and other data are the strategies most frequently mentioned. Complete responses are shown in Appendix A.

APPENDIX A

QUESTION 14: METHODS FOR ASSESSING EFFECTIVENESS OF MATHEMATICS INSTRUCTION

Teachers are evaluated according to our evaluation schedule. Walkthroughs several times per week provide much needed information as to what is going on within the class.

Each section/chapter we study in math classes has 2 quizzes that I use to measure Student understanding on the material we are currently studying. Additionally, each Lesson also incorporates review problems covering material previously covered. I think This helps the students retain information longer and maybe even apply to the current Material. Outside of the book, I will engage the students in some enrichment activities where the lesson will be expanded upon. For example, in geometry, the students will be divided into different teams in which they will design a water tower that satisfies certain requirements, but also keeps the cost at a minimum. By engaging students in non-traditional problems, I am able to see how they will apply what they have learned.

We assess through teacher evaluations, outcomes from state and local assessments, and student assessments in daily classroom activities.

Teachers are checking student understanding of the standards to determine at what level the students are demonstrating understanding of the concept. If the student understanding is not at a place where it can be applied in other situations, the concept is retaught. We check each 9 weeks to determine the progress being made on math facts.

Fact Tests everyday, Skill Test every five days, Retake tests when score is below 70%

We look at test scores on our achievement tests, assessment tests, chapter tests, and our grades.

Chapter Tests every two to three weeks, Time tests progress reports –weekly, Checklist of mathematic vocabulary for each grade- as applied to chapter, Summer Math Packets K-6 - Each child receives a summer packet. We have had a, 98% return. The children are rewarded with a swimming party and watermelon feed at the beginning of the school year if the goal is reached.

CRT tests to test our actual curriculum STAR Math tests State Math Assessment Saxon tests after every five lessons

Regular evaluations

Daily lessons and assignments, criterion reference tests, Star math tests, and teacher observation.

Daily teacher observation, star testing, standardized testing; criterion referenced testing (locally developed to align with state standards), state assessments

Walkthroughs with Reflective Feedback is the method I use most often. I am a trainer for 24/7 Learning Corporation who sponsors this tremendous training. After analyzing scores on CRT's (not norm referenced tests) I use that data, walkthrough the room to identify objectives being taught and how they are taught. Those two pieces of data then provide me with enough information to determine if the teacher is addressing what needs to be addressed with the math curriculum and if it's appropriate at that level. In addition, it provides teachers the opportunity to reflect on their teaching of math.

Math assessments are done in a variety of ways: traditional written tests, activities applying the learning, verbal presentations, written projects that apply the concepts Learned. We believe that if students are

making progress on the material at high levels That our instruction methods must be effective. A variety of instruction methods are used By every teacher to help all students, regardless of learning style, to learn.

The Saxon math program has an assessment process where the students are tested about every other week.

In the accelerated math program students can be tested weekly or even twice a week. I Use observation checklists. I also check understanding of concepts in the math journals weekly. We check and do ADD daily.

Close collaboration within the department helps set a standard of expectation. We meet On a regular basis to discuss classroom and assessment issues.

We have a structured Formative Assessment Plan in place which involves quarterly assessment of student performance. However, teachers informally assess students daily/weekly and adjust their instruction accordingly.

Quarterly formative assessments at each grade level.

Tracking student formative assessments, district final in Algebra I, F and D rates, local benchmark assessments,

Total school analysis is comprised of data analysis on all formal assessment. Quarterly assessments on problem solver.

We utilize formative assessments designed by the teachers or departments track these results. State and local benchmarks are used. For seniors we utilize the ACT. Our school Also utilizes a Standards Based Progress Report.

The staff has created a formative assessment plan for each grade level. The teachers use quarterly problem solving questions along with a rubric to score, unit math tests (pre and post), quarterly math assessments and student daily work.

Pre-and post unit tests formative assessment of the above and other data quarterly

We visit our School Improvement Goals frequently. We meet as a staff to break down state assessment scores.

District wide curriculum is reviewed every five years. New textbooks are also bought at this time. Local CRTs are reviewed on an annual basis for alignment with state assessment material.

Our School Improvement Committee meets monthly to review all components of our school improvement plan and organize necessary activities to support the plan.

Our steering committee meets monthly to review and evaluate the effectiveness of the Entire school improvement process.

ITBS testing KS assessments Data Collections every 9 weeks, K-8: Problem Solving and data/graphing/analyzing

We give quarterly district generated assessments. Students that do not reach the proficient level are given the chance to work after school with teacher tutors until the proficiency level is reached. All students take advantage of that opportunity.

We give a district- made assessment (either performance or CRT) for each benchmark Covered in each grade level. It is up to the discretion of the teacher when each assessment is given.

Check CTBS and Kansas Assessment scores and items missed and compare with students missing each item to determine where we can best improve instruction.

Kansas Math Assessment - spring of each year District Basic Skill Exams - one a trimester Teacher made tests - about every 2 weeks

Monitoring of computer assessments, quick check assessments @ grade levels, state assessments

The primary method of assessing our math is through the use of district wide assessments given at the end of each quarter. These assessments were written locally and are aligned with state standards. Individual classes also give chapter assessments, "pop" tests, and unit tests.

We review our state assessment results yearly along with other assessments and at the End of the year we have students give us feedback via survey. We also talk to our Students who are in college and get feedback. We also survey graduates.

Do a lot of work with the data from state assessments, ITBS, local assessments to determine our areas of weakness. We focus on the indicators from the state assessment that are below state average and the lowest ones for our building.

State assessments and school improvement interventions

Our best indicator would be the state assessments.

The math department uses several forms of data as feedback on their effectiveness. They look at IB scores, KS Assessment scores; ACT scores, local assessment scores and classroom data. They take this as feedback and adjust their instruction on an as-needed basis.

We give the ITBS in the fall and our student improvement team evaluates low scoring Students. These students are recommended for after school programs. Because the textbook is aligned with state standards, students not performing well in class are also not meeting state standards. Students not meeting state standards or proficient on state assessments are required to go to mandatory summer school. We have a final test that can be given near the end of the year that that indicates. This test is used to confirm student performance on standards.

Math assessment, semester tests, chapter tests

Assessments on the local level is weekly tests provided by the textbook. Act Tests, P-Sat Tests, Iowa Basic Skills Tests, and Kansas Math Assessment Tests provide data to see how our students compare to peers in the state and in the nation. Check data compiled for NCA.

State Assessments, ITBS, and District Basic skills test scores.

We use the state math assessment test results, Terra Nova testing, and classroom grading to monitor our effectiveness.

State assessment results, Daily work is tied to assessment outcomes, as part of our accreditation process

Annually with our state and local assessments. Our administrative team is also working to implement walk-through observations throughout our three buildings in the district. In doing so, we are in the classrooms on a regular basis and can dialogue with all teachers about teaching and learning strategies.

State assessment results, CTBS results and ACT scores are used as supplements to our classroom performance.

We look at how students do on the state assessments, standardized tests and ACT's. We also look at the number of students enrolling in math classes.

We look at all the math scores each year to identify patterns of strength or weaknesses. School improvement strategies are evaluated on a yearly basis.

Each fall and spring a locally developed assessment (LDA) is administered per grade level. Monthly assessments focusing on data analysis are given and recorded by a teacher developed rubric.

We give the Iowa Testing of Basic Skills in the fall. At the end of the year we give an algebra test to all grades. In my classroom, I am constantly assessing the students for mastery.

We look at the State Assessment data and the areas that were weak. We use unit tests, daily work and teacher observation. ITBS data Rocket Math Graphs

I analyze data from the previous years to see which standards and benchmarks we are low in. Then I look for ways to target those for the next school year.

The progress is addressed through feedback to the C & I depart. We ask them for additional resources or training when needed. Sometimes we get it and sometimes the \$ is not there to provide it.

We are beginning to use Pass/Plan assessments online, and that really helps us evaluate where kids are.

Our Essential Math Competency matrix is reviewed every quarter and updated each semester. In the spring we begin to provide specific remedial sessions during our Seminar period for students who have not made appropriate progress on these competencies.

We continually strive to meet the standard of excellence. I suppose when we DON'T meet it, someone will make improvements in this area.

District level curriculum meetings address assessments - both in student learning and instructional materials. Surveys at district and building level give results of teacher opinions. Data collection and analysis is probably the best method.

We have committees for our targeted areas. Those committees collect data (samples) quarterly from the teachers and check them for accuracy.

QUESTION 15: KEY STRATEGIES THAT YOU KNOW ARE HELPING STUDENTS WITH MATHEMATICS ACHIEVEMENT

We do not let any student fall between the cracks. We are a small enough district that parents are well informed of how their student is performing. And if the parents care, the students will be successful.

High Expectations-Summer Academy maintains high expectations; teachers expect students to perform at high levels and help them to do so. The focus at the school is high-level college preparation. Assessments such as the IB exams and KS Assessments help to maintain the standards. Teachers put in an enormous amount of time to help students achieve. They are here to help students before and after school, on Saturdays and even in the summer.

Small class sizes, high teacher-student ratio, support from parents We try to give immediate feedback to our students and help to understand concepts which they are having trouble understanding.

Grades K-6 have agreed to use bus-riding time to and from field trips as time on task. Math basic facts are studied during these trips. Huge success.

Motivation, repetition, adequate resources, and excellent teachers.

Work hard.

Students are constantly reminded of our high expectations. We have outstanding support staff in our Special Ed. department, along with an exceptional aide that is in the library all day, and runs our After School Assistance Program.

A great deal of effort goes into proper class placement for students. We are also given the flexibility to make changes when needed to get students into the proper setting to help foster success for them mathematically.

They know that much is expected of them and they have pride in their achievements.

Excellent teachers.

We encourage students to take higher-level math classes. About $\frac{2}{3}$ of our students will leave high school with 4 or 5 math classes.

We also use technology in the delivery of material to students.

Finally, our school has provided students in upper level math classes (algebra 2 and above) with access to graphing calculators. Students may rent a calculator for \$15/year and use it in any of their classes.

Increasing demands of the job market promotes higher expectations both from instructors and students.

Work and practice.

Continued assessment of skills, teacher professionalism, parent involvement

Requiring all students to take math for all four years that they are here. Making the math classes ninety minutes long. Starting students in Algebra I or above. Having high expectations for the students.

The standard of expectation remains high. It is not lowered for students struggling to meet it. Instead, there are various strategies in place to provide help for the student.

Ability grouping (All students work at grade level and those who can work at 1-2 grade levels higher) Exception a few IEP students. --6th graders use a 7th grade textbook, 7th graders use an 8th grade textbook or a pre-algebra textbook, 8th graders use a Algebra textbook or a pre-algebra textbook

Focusing on math vocabulary K-5, Regularly sharing math data K-5, Students use computer assisted instruction daily; 15 minutes; CCC

1) We push the pace of our courses. Even if we don't have everyone mastering all of the topics we hit, it at least gives them exposure to more material, because even your top students may not hit the top levels of achievement unless they are exposed to enough material. 2) We start talking about the assessment from the 1st day of school and that has seemed to increase the motivation of the students more than we could have expected. 3) We explain how the Standard of Excellence works, emphasizing that it will be a total group effort to reach it, this too seems to help with motivation.

I am constantly reminding the students how important this State Math Test is all year long. It's like practicing for a big ballgame; testing week is our tournament. I hand out lots of treats when they succeed. I promise to the students if they do well on the test we will have a BBQ on the last day of school. We have After-School Math Academics that is geared towards the lower students and provide transportation to take them home. We also have a Quest (Title 1) Math group that is pulled out of the classroom to work with the lower students.

Of course, celebration of successes. The school has a building-wide assembly to present a banner to the students who took the assessment. The students shared with the other students what helped them be successful. Also, teaching the format of the test about a month prior to giving it is beneficial. With the district aligning the curriculum, having district-wide grade level meetings has helped the teachers make sure they know what is assessed. Having experienced teachers in the grade level is helpful, too. As principal, I visit each 4th grade classroom a day before testing begins, read a book, give them a pencil (if needed) and share what expectations our staff has of them. A lot of things go into making it happen, I can't pinpoint one thing!

Parent involvement--At-Risk identification--Differentiating Instruction--Tutoring

Most important we have excellent students who want to achieve/perform at a high level due to high parental involvement (for most of our students). For example, we have about 95% turnout for parent-teacher conferences each year!

Increased parent communication

Time and scheduling issues. With the change in our schedule, we have been able to provide for our teachers more time to collaborate with their peers about student learning issues on a regular basis. Our learning support time and after school tutoring program have also had an impact with our scores. Our teachers are now looking at the scores and analyzing data to gain more information about their strengths and weaknesses as well. Teachers are effectively implementing school improvement strategies that have been adopted and identified in our school improvement plan.

All students engage in a 20-minute period of extra mathematics instruction on Wednesdays. This period is in addition to the regularly scheduled math classes and is led by the students' previous period's teacher.

The math teacher used some instructional time each week to work on enrichment activities that are geared towards the standards. We stress the importance of doing well on the Kansas Math Assessment and reward them as a group for surpassing AYP benchmark.

Another key factor is the time set aside three times a week for students to receive extra help during the school day. We have a correctives period (20 minutes) where students can use to retake tests, work on homework with teachers help, or get more clarification on the material they are studying. Of course students have to make the choice to use this time, but most will use it to their benefit.

Ninety minutes each day spent on Math - teacher instruction, student work, and student peer teaching. We also believe the Saxon math series has helped raise our test scores.

Resource teacher instruction

Good teachers teaching good kids, high expectations, and determination help our kids score high on tests.

I don't know that we have particular strategies. I would say that our excellent student to teacher ratio helps and the fact that two of our three math teachers have 30 years of experience and high expectations from our students. One has a masters in mathematics.

Teacher awareness of the standards and items being tested, teaching test taking skills, highly effective teachers

Teacher enthusiasm. Both math teachers have good rapport with students, good content knowledge, and are very structured teachers. The students know we expect good performance, and it "rubs off" year-to-year. We employ cooperative learning in most math classes and emphasize hands-on learning.

As teachers, we are available before and after school for extra help daily. We have a study hall where students can get help. Our school stresses the importance of doing their best. We concentrate on all students, not just are high achieving students.

High expectations, positive attitudes of teachers

Our teachers simply won't let our kids fail. If it means staying after school with them to help them catch up, they do so. Our parents expect our kids to be high achievers. Parents support our efforts to help kids. Our kids expect to do well. They are disappointed if they are not recognized as achieving the standard of excellence.

We emphasize the importance of learning the information, provide lots of positive reinforcement and make sure students have ample opportunity to learn. Before and after school sessions, tutoring, and math club are a few of the extras to assist the students. Motivation is a key to our program. Kids feel so good about their accomplishments that they often say the state math assessment is easy. We remind them that things seem easy when we know how to do them.

One-on-one tutoring

The key strategy we use is to identify early those students that are not achieving. We have an after school program where we work one-on-one with students that are not meeting specific standards. We also have a summer school program for students that need extra help. Both of these programs are mandatory for our students.

Consistency with implementation of the series, using proper vocabulary across grade levels, building-wide strategies implemented at every grade level, and grade level and building focus meetings. We all work together to make math instruction seamless from grade to grade. Our library, music and PE teachers also participate in our meetings and incorporate math in their instruction.

The curriculum and textbook alignment along with teacher collaboration times have been very helpful. We also have a lot of parent support.

Increased vocabulary teaching

Problem solving is a targeted area in our school improvement plan. It is emphasized daily in most classrooms. After school sessions are held for students who fail their quarterly local assessment or are asked to attend by their teacher. Students in grades 5-8 use journals to assist their learning. Cooperative learning activities also assist students, as do hands on learning, and the use of manipulatives. Math is also integrated into other subject areas. The CCC program allows for individualized learning as each student works at his/her own level whether it is advanced from classroom instruction or below grade level.

Curriculum alignment. Our problem-solving model is used school wide. Warm-ups related to the assessment outcomes. Incentives.

Each grade level teaches problem solving strategies that build and expand each year. Teachers present concepts in a variety of ways to accommodate student-learning styles.

We highlight key works, information, and questions in word problems. The accelerated math program reviews concepts frequently. We use a lot of hands on manipulatives to make concepts more concrete. We also review our math journal frequently.

We all use the same problem-solving model. Cooperative learning. Math graphic organizers Concentrate on using the same math vocabulary. Problem-solving instruction with lots of modeling. Worked on metacognition.

Committed focus on math instruction especially problem solving. On-going dialog in professional development focus meetings (monthly) Everyday Math curriculum

1) Timed math tests to help develop computational skills. 2) Students learn and apply vocabulary words for each grade. 3) Alignment of taught curriculum with state curriculum. Curriculum mapping during teaming time has really tightened helped prevent overlap. 4) Integration of problem solving techniques throughout math curriculum.

1. Use the Saxon Textbooks. (I know you don't want to hear this, but it works) 2. Encourage students to take four years of math. (Include a separate class of Geometry and Trigonometry outside Saxon's Textbooks) 3. Start 8th graders in Algebra I. 4. Use Southwestern Regional Service reviews for the Kansas Math Assessments. 5. Constantly get feedback from graduates concerning areas that they felt were strong or weak. 6. Have para-professionals to help with slower students. 7. Incorporate Calculators 8. Starting in February review one problem daily for the Kansas Assessment Test.

At the junior high level, which I teach, I'm the only math teacher, I teach all the 6th, 7th and 8th grade students. I know what I've taught, I know my students, and I set high expectations. Our class sizes can range from 10-25 students usually. There is communication throughout our district, we have a great math team, and we work well together. I think as the math curriculum chair that I'm very lucky to work with such a great staff. Our high school has two math teachers, they've been here for several years, and we all

communicate with each other. The grade school also has a small turnover in our staff; this means a lot with our consistency throughout our district. When people ask what we're doing or how we do so well, I think it comes down to teaching the math, teach it, practice it, and teach it again if necessary. When I hear "teach to the test", it makes me angry, there is a lot more that goes on in a classroom than a four-day math test that schools are now being accredited for. The pressure is there though, which is very sad. Too much stress can be placed on a school, teacher, and most of all the students, for a four-day test.

Emphasis on the standards, indicators that appear to be the weakest after we have mucked the data.

Continuous cumulative review, several short quizzes each week on basic skills and processes (with no calculator), consistency of personnel and the expectations of that personnel, problem solving and reading activities to help students analyze what is known, what is needed, and what is trying to be found.

Following the SMSD written, taught, and tested curriculum has provided high achievement for all of our students.

ESSDAC -KS Math Assessment Warm-ups Grade 4 - Uses 1 sheet per week with time set aside for discussion and mastery. Use of vocabulary on these sheets match the Ks State Math Assessment Test. Huge resource.

IDEA Model, using the Saxon book, and we just ordered a book entitled Math on Call to strengthen some areas that needed to be taught according to our state indicators.

Teaching all students Algebra and Geometry, no matter which math class they take.

ACE material, Math Club and Math contests with both the jr. and sr. high school students. Implemented Algebra at the 8th grade level and Pre-Algebra with the 7th graders. After school tutoring using building wide referral forms.

Providing practice opportunities, guided discovery, peer tutors, graphing calculators, spiraling, and board work, note cards with formulas, conversion factors mnemonic devices for order of operations. etc.

Use of mental models has been very successful for students to actively participate in math classes. Their ability to be thinking and doing math is very helpful for them to see their progress. Knowing that we want them to do well (provide tutoring, math programs, etc.) is a great incentive as well. Parents are very supportive our efforts to help their children.

Accelerated Math, Larson Math, Math word walls, Title 1 program, At-risk aides, after school program, Student Academic Hall Of Fame, Class Goals and Incentives, Highly motivated staff.

ACT scores, Algebra I in the 8th grade, Math Relays at FHSU, AP Calc scores