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Calgary Board of Education

dialogue

Council of School Councils Meeting
K-12 Math Strategy Pre-engagement Session Notes
January 26, 2107

This summary of the feedback from the Council of School Councils engagement session on the K-12 Mathematics Strategy Pre-engagement was compiled and summarized by CBE.
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Q. 1: What does it mean to be "Good" at Math?

- To do math in a practical setting, be able to problem solve
- To be able to write a test
- What skills to apply for what situation build foundations
- Learning as an individual - using any acceptable problem solving technique that results in the right answer
- Not using a calculator at early grades
- Having confidence
- What happened to basic math
- use globally recognized methods
- fundamentals are built upon
- make concepts relatable/practical i.e.: Algorithms and cleaning your room
- passing tests with actual grades, pass vs. fail, 85% measurable and black & white
- clear & concise and teach the language of matter - consistent
- mental math - able to do - less dependency on calculators
- read, understand and comprehend English language in order to understand what the question is asking
- confidence and the belief that you can do it, you can learn it
- be able to apply it in real life
- know how to add/subtract/multiply/divide
- to be comfortable/confident to try to figure it out
- good at mental math
- to have a foundational basic knowledge of math
- being taught by a math major teacher
- be good in problem solving
- learn basic math by memory
- understanding basic concepts - rote memory of the basic facts
- building in complexity , once the foundational pieces are mastered - continual building block approach; e.g.. Mad minutes
- the ability to "work backwards" to verify the answer - to have the ability to understand if the answer is reasonable (lateral thinking)
- to understand how math relates to everything - it is not just a subject - incorporate math into everyday life
- to be successful/confident in working through a math problem - understanding different strategies and what is going to work for each learner… (but not too many strategies)
- being able to figure things
- confidence in your math skills/abilities
- problem solving
- thinking flexibility about number concepts/operations
- analyze data, know what's important
- understand how math applies to life
- organize data in a way that makes sense and can be communicated easily
- strong foundation in number moving to an abstract understanding

- be able to read a question and know what you are supposed to do - math literacy
- de-code different ways
- student specific
- then = getting answer right - now = which method you use not just answer
- having a solid understanding of the foundation/set a good foundation
- excellence in basic skills to have strong foundations for more complex mathematics and application to other studies. Early ages critical to build skills
- ability to apply mathematics to different learning scenarios
- ability to memorize and apply critically
- engaged
- students enjoy it - attitude
- get rid of the math is hard mentally
- conceptual understanding - understanding why the answer is what it is
- abstract to concrete and the reverse
- each child's learning is unique - allow students to select a strategy that works for them
- being able to problem solve and apply the knowledge
- having a core base of math knowledge that can later be built upon - times tables (e.g.: learning the ABC's when learning to read)
- being confident/competent
- personalized learning with a technology component
- mental math (basic) - no calculator
- know the learning blocks (timetables, adding, subtraction….
- being a global leader in mathematics
- current grading system does not reflect their performance understanding (1,2,3,4, vs % grades)
- being able to do math without a calculator
- problem solving
- competence in math
- subjective depending on future
- everyone can be good in math
- elementary math specialist available
- to be able to apply math to your particular dream
- math facts need to be automatic e.g.: multiplication tables, division tables
- consistency between teaching and best practices
- parent dialogue with teachers
- to be as "good" as the student needs to that math is not the limiting factor for their future
- understanding math - know the process - memorizing math
- find solution in multiple ways vs. multiple ways can be confusing
- conceptually understand - do process
- skill - apply it to other
- confidence
- fact fluency
- achieve correct answer

- fluency with numeracy
- comfort
- efficiency
- to utilize math in everyday functions
- success is mastery
- mastery of basics
- memorization
- basic mental math
- memorize simple math strategies and apply those throughout their education
- different levels of preparation
- not needing external tutors
- confidence in the approach to get the answers you need
- building blocks before moving to discovery math
- building blocks: remembered and apply
- knowing when to apply certain strategies and why
- achieving a higher level of understanding
- understanding the basics
- can apply basic concepts to daily life/use and can add them to more complex concepts
- can do mental math - SO IMPORTANT
- be unafraid of doing math and trying new math
- not afraid of doing it and making mistakes
- Make it understood that mistakes are part of the process and feel unashamed of it
- make the question to answer shorter
- how to think through problems with a common strategy BASIC FACTS
- make the arithmetic important
- finding a kid's talent with one strategy and let them use that on tests and in work
- conceptual math is too much exhaustive work for Gr. 7 and beyond. Will feel lost in University
- when building the foundation, must know how the roof will fit
- showing work in a universal way
- math games make it fun but less conceptual - e.g.: solve equations to move forward on a board game
- be able to use it easily in daily life as a Life Skill
- be able to apply what you learn in elementary in high school
- be motivated and understand it is a Life skill
- being able to apply basic math skills to everyday living
- a decent math score
- enjoying the process
- comfortable/confidence
- learn and follow rules of math
- flexibility of resources to understand different methods (learning methods)
- basic understanding of math concepts and being able to apply it
- understanding mental math

- continuity - curriculum of instruction within same grade levels, classrooms, grades, and schools
- not a divisional divide

Q. 2: What support does your child need to be successful in math learning?

- have a strong math background in our teachers
- recognize teachers strengths
- access to online learning technology
- support at home
- mentoring in the school with students with strengths
- teachers more willing to give extra support
- numeracy as literacy, be able to explain world in numbers
- association of math with numbers and not just around the wording of questions
- ability to excel in math AND explain it, and be fluent in talking about it
- ability to come up with the right answer in the most efficient way
- able to do it the "old way"
- making sure the teacher is comfortable and good at math
- parents understanding the curriculum better
- open-mindedness of teachers and parents
- gradual transitions from grade to grade - with special attention from grade 6 to 7, grade 9 to 10
- a strong math foundation in the elementary years
- parents need to understand what the math is - strategy
- strong support of parents
- teacher of math should be qualified to teach
- teaching aids
- personalized learning plan
- youtube
- helpful sights
- every school should have a consistency with learning tools - standard textbooks online
- more supervision by teachers to make sure everyone is involved in class and "getting it"
- understand how the student thinks, and talk to them in language they understand
- push kids to find the answer on their own
- allow kids flexibility in showing work on tests
- let kids know that it is okay to not understand it right away - okay to ask for help after or during class
- watch for "lost eyes" in a student - talk to them after class
- hire help for math class if possible (1 extra volunteer/teacher)
- timing of math class important!! When kids most refreshed i.e.: morning or after gym class for example (adjust for age of class kids K-6 vs. kids 6-12)
- split up class so lower ratio of students
- reviews of concepts/basics when necessary (and always at the beginning of the year)
- teacher explain each step

- language of math needs to be easy & relevant to the age of the learner e.g.: 4-1=3 "less one" vs. "one less" vs. "take away one"
- deliver in different methods for all learners e.g.: visual, audio, doing
- appropriate teacher teaching the subject i.e.: music teacher teaching math
- consistency in how math is taught e.g.: gr 2 "old methods" gr 3 "new math" - confusing to student and parent
- seminars on "New Math" for parents so we can support students learning consistent to what teachers are teaching
- how much time is devoted to math at each level
- consistency across grade levels (need a basic standard)
- strong literacy development in early grades K-2
- standardization throughout all divisions with a focus on priorities on reading vs. math
- flexibility to appreciate and accept different learning styles using various resources (games calculators)
- make it fun
- strong/passionate/confident math teachers especially at elementary school levels - i.e.: Math Specialists
- gender neutral - all can excel in math
- practical application of math
- math homework (not daily homework - yet flexible over 1 week or so) - "Mad Minute" worksheets
- supplemental math materials to work at during school and some for homework
- clear/plan language in math problems
- lots of practice
- trained teachers
- consistent math message: teaching
- make it fun
- make it relevant and practical
- explain why - connect to practical
- continuity in teaching
- they need to know/to have it communicated to them that they are capable learners of math
- manipulatives, tactile tools
- be able to draw pictures to help with solutions
- approach math learning with creativity - art
- have different learning styles taken into account
- have mathematical concepts presented in different ways
- acceptance of different ways to approach the same problem
- teachers who will help when students are struggling (extra support)
- good communication between home and school
- subject matter experts
- allowing children to learn in own way and pace
- parental support at home
- teachers with qualified, consistent, teaching methods

- Math Lennox and Dream box - not just at home but offer at school too
- positive attitude towards mathematics
- engage parents in the learning process
- make math fun
- balance of worksheets (structured) and creative (un-structured) NEED BOTH
- a good foundation
- mathletics (4&5) - home/extra curricular
- positive re-enforcement
- not thinking that math is hard-accessible
- math specialist/use teachers that love math to teach math
- having more than one teacher to bring different perspectives to the classroom
- get them to use practical/realistic examples for problems - not unrelatable theoretical situations
- group by ability rather than age (homogeneous grouping) - similar skill levels working together supporting each other
- rewarding effort
- variety of available materials (tangibles, manipulatables)
- one on one support when required
- structure and consistency
- consistent messaging around math strategies - from teacher, student, parent
- grouping children by proficiency
- students need to be challenged based on their abilities
- a strategy that allows/fosters an individualized learning approach
- consistency in teaching between schools
- math best practices for teachers
- competent teacher
- retired "mathematicians" - engineers etc.
- team teaching using math specialists
- parental support for math
- transition from Jr to Sr high schools
- NEED MARKS & % NOT 1,2,3,4
- objective measures not subjective comments
- time/repetition to master skills
- access to practice materials
- to be able to manipulate numbers quickly
- real world examples
- good math teachers at ALL grades (elementary and secondary)
- informed parents
- assessment
- early intervention - ID of struggling kids and providing additional support prior to them being pushed into higher grades - this must occur early without the thinking that these kids will "pick it up later"
- standardized objective, and proactive communication between school and parent

- for math, we get raw scores such that parents can be abreast of real data on how their children are performing (objective formative assessment)
- higher expectations are needed - students not coddled
- consistency in teaching from grade to grade and teacher to teacher
- too many handouts for math - there is a need for a textbook
- Good supports
- everyone has a textbook
- teachers teach the same thing
- same tests across the system
- access to teachers outside of classroom
- enlargements
- supports to catch up when classes are missed/or falling behind
- clarity about what test materials to study
- pair students that can help each other
- smaller class sizes i.e.: 20
- teachers should be more aware of individual needs - kids learn differently - able to adjust i.e.: visual, verbal, tactile, multi-faceted
- consequence free opportunities for failure - practice test, worksheets
- it's not ok to say "some people are just not good at math"
- maintain high expectations for each student - personal best
- Is CBE going back to schools and comparing what they are doing different?

Q. 3: What would help you as a parent/guardian in supporting your child as they learn?

- tool kit of strategies, old way, new way, some way…..
- more recommended learning sites to better math skills
- help to teach parents how to help your kids
- resources for council
- parents learning the new math language - math night to help parents struggling with homework
- consistent at home and school
- knowing extra support could be provided if kid isn't learning
- city resources available if your child is falling behind - hand out at P/T interviews
- knowing the teacher is freed up to do teaching rather than wearing the hat of a therapist/speech pathologist/cheerleader etc.
- worksheets for home, fun activities to do at home
- knowledge of top 10 schools in YYC procedures and strategies so we can help our schools/homes implement them
- updating parents on students potential in math or areas of improvements
- consider the language barrier at home for math concepts - so sometimes less help in the home and need solutions for this
- gradual introduction to homework (5-10 mins) instead of all at once in later grades
- help them to get ready for extra work in later grades or university as early as gr. 4

- no need for 1-3 hours of homework a night - but 15 mins would help keep them up in schoolwork
- help in getting your kids see math as fun and games you can sneak in during the day, naturally - need those suggestions from teachers rather than trolling Pintrest for 3 hours
- tutorial for parent on New Math
- clear and concise marking throughout the year so you know where your child needs help
- knowing the expectations for each grade are i.e.: able to find Mathematics programs or studies overview
- access for all to weeble system
- definite marking system - defined, accurate - We want grading in % so we understand where they need help
- the material to be available
- brief overview of "this is how to do this"
- example questions
- to be informed about curriculum change and why
- to know there is a balance between foundational knowledge and inquiry-based learning
- 2 way dialogue
- to know the teachers have the flexibility to teach math t hat is student centred
- equitable access across schools for technology, manipulatives, etc.
- math homework for children would help both child and parent - flexible deadline (not daily) yet a "weekly challenge"
- supplemental work to keep children challenged in math
- know/inform what child is working on and what is coming home next and send more/communicate with parents
- reinforcing (partnership with parent/teacher that math takes practice
- as child moves into higher grades and more complex math - providing resources for parents to help their child
- communication regarding which topics are being covered at school
- links to online resources and downloadable extra practice
- more frequent progress updates (not formal report card) and student's math progress - pre assessments, assessments sent home, having some of daily work come home
- teach us the new math
- advocate and be engaged in education system and process
- revert to the old math
- teachers/parents need to know BOTH old and new math
- parents knowing more about their child's preferred learning method
- share/learn from other parents
- a "cheat sheet" for parents so we know what our kids are up to
- home learning resources i.e.: mathletics, ed.ted.com
- set up a community atmosphere so that students have an opportunity to share/learn outside of the classroom - teach to each other
- have kids teach parents math

- consistency in messaging from the school to home, student to teacher, teacher to student - understanding what the expectations are for a home math strategy
- parents need to understand what the measures of success are
- communication with parents about what is happening in the classroom
- have a parent info session or supportive material for us to understand
- online resources for to go to
- after school programs accessible to all levels
- top 3 students had to stay M W F 1/2 hour to teach anyone who had problem with math - tap into strengths
- mentoring
- objective measures
- standardized testing - variety of views - some agree/disagree
- numeracy literacy
- different language issues - taught in English v. alternate language at home
- topic page for parents as to what they are learning - an outline for parents
- communication with the teacher regarding their child's math skills
- "math nights" where families learn what kids are learning
- "math nights" - info for parents about curriculum and strategies and expectations
- more detail around what and how students are learning so they can be supported at home
- don't just tell us they are learning fractions - at what level are they learning fractions
- send all completed tests home - actually do tests - keep a copy if you need to
- set a standard for feedback so parents don't have to negotiate with teachers - i.e. every 2 weeks a quiz/worksheet/question examples goes home
- report cards are so limited - parents want to know more
- tap into the capacity, willingness and focus of parents - give them the info/data on their child - formative assessment/roadmap
- consistency in teacher
- indications/record of topics being taught, when they are taught and tested
- communication - D2L - parents want to help - textbooks same test across system
- success can happen with parent engagement at home - we need tools at home so we can help
- communication - teacher/parent, child/teacher circle
- parents need to know methods that are taught so that they can help
- back to old school math to old school parents - are we harming their math learning - should it even come home to parents
- through glossaries in the texts used - useful for parents with ESL
- connection with requirements in post secondary education
- information on how to use various methods of math
- resources for parents on teaching methods
- understanding teacher/CBE expectations
- communication with teach/school and being involved
- financial resources available (funded) for extra help - tutor
- Actually see some homework in elementary

- outline weekly exercises or curriculum
- resources for parents from CBE
- references: support

Q. 4: What do you think is important for us to consider as we develop a CBE K-12 math strategy?

- incorporating global math standards from countries with high math percentages
- create a hybrid strategy where basics are not forgotten, strong foundation and mental math strategies
- teachers who are skilled in math, supported by strong tutorial mechanisms (practice) - online technology
- teacher/peer mentoring - taught by students whose strength is the subject
- personalized learning
- assessment
- equitable access for all schools for technology and math resources
- teachers who are teaching math are equipped to teach math
- balance between the foundational and experiential math
- not implement new strategies so aggressively
- make math relevant to real life
- interdisciplinary learning so math is infused into other subjects
- make it accessible for different learners
- making math simple - foundational math important
- respecting the student to need more help
- support students to work at their own level - students who are bored need to be challenged
- theory to inform practice and practice to inform theory - feedback loop
- research based approach to philosophy
- follow what is proven successful in other school systems
- listen to parent/student concerns
- what program will be in place to help students from the old strategy cope with the new strategies
- consultation between elementary to middle to high school - what should students be learning
- consider what do universities/trade school need students to be learning
- roll it out in elementary first and 10-12 last. Don't change high school strategy mid stream
- a review of plan more frequently - yearly at least
- more unit quizzes and tests from Grade 6 on - at the latest, may want to start in earlier grades.
- collect feedback and stats frequently at least yearly - online surveys, paper to fill out at parent nights
- check that kid's are understanding the basics and how math can be practically applied in life - if kid's understand that math is a life skill for daily life, it will be easier to teach them
- integrate the school/curriculum and student/parent relationship more fully
- have more parents nights to explain math strategy, set up by CBE
- assess pilot program and if they can be applied city wide

- don't forget the math basics - ABC before learning to read - arithmetic before abstract math concepts
- value management approach are we doing the right thing? Are we doing it right? Are we delivering what was expected? Are we following up to see if it's sustainable? Are we frequently checking the results?
- consistency across different types of schools - TLC, Regular, Etc. Montessori
- consistency - methodology, language of math, grading of conceptual understanding and procedural fluency
- proper grading and using right educators - %'s, numerical grading on tests
- consider international standards for math i.e.: India, Japan
- IMPORTANT PLEASE READ: give the parents a voice after strategy draft - do not repeat transportation changes with no parent input
- training/teaching needs to flow from grade to grade and division to division
- consistency - language, method, grading
- exam grades - concrete
- parent learning of concepts and methods so can support using some as class/teacher
- communicate importance of using math daily in everyday life to child (real world)
- communicate to parents with reason and evidence on curriculum changes and why
- the importance of basic mental math
- understanding university expectations in high school
- consistency again within classrooms/schools (grade levels)
- look at existing successful math strategies - share resources - learn from other schools/provinces/educators (an extra consideration for 2nd language schools)
- plain/clear language on wording of math problems
- strong foundation in Algebra & Calculus - preparing high school kids for further education
- understand "What is working" - country - school - teacher and build on that - learn from that
- work with first year University/College Professors/Instructors - what they are witnessing - knowledge gaps
- functional math
- smoother transition of curriculum throughout grades K - 4 and middle school to high school
- year round math in high school
- listen to the teachers
- bring back practical
- keep up with other countries
- connect to the real world
- will be facing parental bias
- student success, preparation for university, careers
- consistency among boards, provinces
- jump from grades 8 to 9 and 9 to 10 preparation
- keeping students options open for their futures
- matching math curriculum to real-world needs, modern times
- is it adaptable to post-secondary entrance requirements
- what are other successful jurisdictions doing in math learning - Finland, China

- look at technology - Dreambox
- different learning styles (being learner-centered)
- consider aligning math to real world skills i.e.: math project to go to grocery store and make a budget
- no matter which way they learn, need to process math/equations with and without technology i.e.: making change at the till
- recognizing and considering the diversity statistics the student population to that different types of learners are considered i.e.: more girls in STEM
- looking at other successful math strategies - what are they doing better/different
- creating a strong foundation - focusing on early grades/younger children
- grouping by math abilities
- what is the CBE's measure of success in math - this needs to align with the strategy e.g.: is the standardization in testing the measure? If so, the math strategy needs to align - if the goal is math proficiency/understanding measured in multiple ways the strategy needs to align.
- life skills in math are required
- how does changing technology impact the strategy
- not all (Most) parents have the skills to support children in math at home - more focus on in class/school
- public perspective on what is motivating the changes
- don't reinvent the wheel
- do what works
- best practice
- look at what other countries/areas are doing that is working
- research based
- combine the basics with creative methods - not "either""or"
- rename "Math Strategy" endeavor
- parents are frustrated that math standards are not high enough
- good math teachers at younger grades to ensure mastery of basic skills "fact fluency" and conceptual understanding - so kids have math success early and confidence as a result
- rigor in math - quality time doing lots of math everyday
- grade marks in percentages - not 1-4
- CBE's average failure rate for grade 6 and 9 is 50% or higher than Catholic Board - find out what they are doing
- follow best practices
- don't re invent the wheel
- make (robust data) data - driven decisions
- multiplication tables memorized i.e.: 12 x 2 by grade 4-5
- mastery (we are what we repeatedly do) of foundational pieces/skills - this must occur early
- gold standards
- best practices
- data-driven
- fluency
- consistency in teaching

- early grades need to cover basic operations i.e.: grade 6 child hasn't ever covered multiplication
- motivation for student to keep going
- marking should be consistent if the right answer is reached - it should not be marked wrong if using another method
- students should not be presented with the idea that "you may just not be good at math"
- look at Asian math teaching program, use existing strategies