



K-12 Math Strategy Engagement In-Person Sessions Summary

Host Locations:

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|--------------------------------|----------------|
| ▪ Sir John A. Macdonald School | Feb. 27, 2017 |
| ▪ Louis Riel School | March 2, 2017 |
| ▪ Terry Fox School | March 6, 2017 |
| ▪ A.E. Cross School | March 8, 2017 |
| ▪ H.D. Cartwright School | March 16, 2017 |

Total Number of Attendees: 218

Below you will find all the table discussion notes provided in the in-person sessions as they were recorded. Notes have been edited to ensure anonymity. We also edited or omitted abusive, discriminatory and otherwise inappropriate comments.

Question 1 | What does it mean to be "good" in math?

- solid foundation in arithmetic to 100, numeracy
- ability to use skills on tests, assignments
- apply math to everyday life
- using math in word problems - translating concept to usage
- quick recall of basic math facts. Once the basic facts are committed to memory then you learn to manipulate the facts and understand how all the maths relate to each other and fit into an overall math structure.
- confident in
- enjoy math and want to do it
- good at basic math - add, subtract, multiply, divide
- repetition builds confidence and feedback to grow and develop
- average or better compared to others
- solid foundation in the basics/fundamentals
- tools used to tackle new problems, know what works for you
- efficient, accurate problem solving
- not afraid of math or to learn math
- not limited in career choice by math limitation
- competent and capable in math - apply math in everyday circumstances
- deep understanding of algorithms
- have a basic foundation in math (add, subtract, multiply, divide)
- mental math is foundational
- visual math (3D, Geometry) have a good basis
- good understanding of the concepts (to be able to build on)
- confidence in math (children struggle)
- most-feared subject - (success moments - repetition/practice to build on early successes)
- to be adventurous - tools at your disposal



- concepts are true corner stone
- find a balance between memorization and problem solving
- strong concepts underscored
- develop interest
- foundation of basic skills
- real life application
- interconnecting with sciences
- pencil and paper
- problem solving
- abstract applications
- application and link
- linking skills and purpose
- connection to fundamentals of math
- repetition until confident (beginning)
- skill in each area - statistics, analysis, numerology (systems), algorithms, formulas, geometry, addition, subtraction, multiplication
- basics
- building off of foundation in an individual manner
- understand and solve a problem in an efficient, timely and accurate manner
- enjoying the process, - being successful
- being able to do more than the basics
- being able to tackle new problems with your existing tools
- having a solid and strong foundation (which enables the above)
- visualization: being able to reorient a problem in order to solve it
- is it comparable to what is good in other places/countries/areas
- being flexible, experimental and willing to fail in order to learn (many paths to the right answer)
- valuing the right outcomes as much as the process
- understanding that everyone learns and exercises their learning/knowledge in different ways
- fluency in numbers and be able to apply in everyday life
- positive engaging attitude to try math - even if the answer is wrong, positive re-enforcement to engage students in math
- be respectful that math is harder for some people - it's ok to be hard; celebrate the journey
- to be well prepared for post-secondary studies and/or life
- flexible thinking
- prepare for future; for students to be curious on next level of technology - level of creativity - coding rooky
- confident
- basic skills with quick recall
- multiplication tables
- manipulation of numbers
- ability to visualize the problem
- synthesis of basic skills - seeing how skills (ie. multiply/add) are related
- learning basic facts
- solving problems in one's own head (problem solving)
- to meet the pre-requisites of post-secondary



- knowing their times tables
- solid foundation in arithmetic and numeracy
- ability to apply this knowledge to work problems/real world
- sums and figures done in head (arithmetic basic computations)
- estimate without technology (add taxes, don't be caught by surprise)
- confidence in math skills, believing that you can do what needs to be done
- attitude toward math - promote a good attitude/mindset toward math so you don't give up - persevere
- in early formative years, tell the child when they got the question right, build the confidence
- make sure the child knows how they got to the correct answer
- being logical in math - break down the steps to problem solve (good at math means you may be more logical)
- the more creative child may struggle more with the logic making them feel "Not good" at math
- being able to put math into the outside world
- find and master the strategy that works for you to do math and be allowed to use in school if it works
- be comfortable doing math
- master your personal strategy so that you feel comfortable and confident using math
- ability to apply math concepts in all aspects of life
- "Good" can depend on basic life function in skills all the way to STEM level
- To be good at math students must not think they are bad at math
- strong fundamentals
- ability to find the most efficient way to solve a problem
- confidence
- love and enjoy math
- no conflict in learning
- has proficiency in a style that suits them
- foundation to function in daily society
- confidence in ability
- a child who has proficiency in a style that suits them has confidence in their ability and will love and enjoy math
- find the most efficient process for the child that derives the correct answer
- have mastery of basic concepts and operation
- be confident so you can tackle any problems - stemming from your knowledge
- to be able to solve problems and apply knowledge and be able to "compete and excel" in the global market (research or industry or anywhere that applies)
- OK at math = being able to estimate a grocery bill, balance a chequebook or plan for retirement - should be viewed as a minimum expectation for a high school graduate
- Good at math = being able to calculate fuel requirements for a Cessna aircraft at a given altitude and crosswind, etc. - should be required for pursuing a stem career
- confidence in having the ability to solve the math problem at hand - kids panic and forget or give up before even trying
- kids talk about hating math outside the classroom so making math relevant.
- making math interesting will make it fun - if fun the interest to solve the problem is there
- if a child is stuck they need to know where to look for similar examples and be able to recognize



them

- quickly
- master methodologies early
- application of math as aspects of life
- build confidence
- concepts understanding
- repetition/practice
- becoming competent
- to be comfortable/at ease with math subject and problems - to be able to comply with math problems at level required at post-secondary entrance level
- competent in whichever path you choose in life success in whatever you decide to pursue
- be able to use it as a tool in your endeavors
- having the fundamental skills set to survive the real world
- capable of being judged by employers, future educators etc. outside world
- to see that the kids are comfortable with the level of problem solving that is expected for their grade
- being able to apply math in day to day engagement and life skills
- being able to have the skills and support to help see/envision the application of math
- to understand the basic concepts of addition/subtraction
- understanding various methods to solve a problem
- timely manner
- learning to master methodology
- understanding the application of the math being taught in real world applications
- ability to transfer knowledge as a student progresses
- to be able to problem solve, rationalize
- to understand the basic math foundation and why they are solving problems not necessarily a human calculator
- strong knowledge across all strands
- more practice for every concepts
- clear connections in building concepts
- a love of math
- low anxiety and high confidence
- to understand problem solving tactics and the equation at hand
- confidence - absence of apprehension, solve real-life math problems
- literacy - understand the problem - core idea would be very clear
- develop core mathematics foundation
- ability to manipulate numbers
- confidence in applying math in daily situations
- confidence in considering professions with math focus eg engineering, accounting etc.
- speed/accuracy = confidence being self sufficient
- ready for post-secondary life - work, university, college
- apply math in real life = practice
- understand and can solve question of term contents
- apply the math knowledge needed everyday
- score well on provincial tests



- get basic multiplication
- if not ready for college, industry, university - then they shouldn't graduate
- self-sufficient -ability to apply learnings and solve problems without outside help
- student to have a repertoire of strategies to solve a problem
- students have an understanding of what is being asked of them
- confidence - understanding the why not just the how
- being able to see numbers and strategize
- have the fundamentals memorized
- multiplication tables from 1-12 memorized/practiced
- solve real life problems
- confidence
- absence of fear
- solid core foundation (manipulating numbers)
- ability to calculate
- creativity in thinking
- analytical
- literacy
- develop basic concepts
- be confident
- able to understand problems and determine the right ways to proceed for solution
- able to do simple calculations in head
- apply math in real life - making change, budgeting, balance finances
- not afraid of math (confident)
- fluent through practice of basics
- understanding the tolls and strategies to use at the right time
- knows the rules and tricks of math
- combine music/song with memorization
- practical
- intelligent
- numerate
- easy/quick
- problem solving
- foundational
- creative
- logical
- well organized
- understanding the problems at hand - good problem solving skills - but you will need basic math foundation to succeed
- being able to understand the foundational concept - what is the meaning
- to rationalize - recognize if the answers are reasonable
- show interest/passion
- problem solving
- application - budget
- inspiration to hard work
- use math in everyday life



- knowing the basic facts
- understanding practical applications (daily)
- recognition that math is everywhere - geometry etc.
- mental math
- solving word problems
- to be able to apply mathematics in practical situations ie make change, estimate costs
- to be able to explain mathematical thinking - how to get the answer
- to feel confident/comfortable in approaching mathematics
- to be able to work with numbers in your head
- to see patterns and make connections
- to apply skills across a variety of situations - transfer ideas
- speed and accuracy in basic facts in combination with problem solving
- have flexibility to view numbers more than 1 symbol way - deep sense of number
- to use concepts such as - friendly numbers, doubles, odd, even, double plus 1, make ten, chisanbop, ordinal, cardinal, ten frames
- see math as creative
- see math as a language
- being able to talk edit (like in literacy) about math, justify thinking, revise ideas
- work with others
- collaborate
- strong understanding of the basic/mental math ability by grade 3 (required for deeper problem solving)
- have confidence/no anxiety to try in elementary
- multiple strategies to solve problems
- not reliant on calculators
- successful citizens (life skills, career choices, school success in other areas as well)
- strong estimation skills, reasonableness tests
- know the basics
- efficient math - simple steps
- consistent
- traditional method
- benchmark to global standards
- logical
- confidence
- structure
- disciplined
- foundation building - fact recall
- need to do global comparisons in order that results are internationally competitive
- logical thinking, analytical thinking about any problem (cohesion between left/right brain)
- confidence, comfort, without fear
- tenacity in problem solving
- love of exploration in math
- being able to apply concepts in different contexts (ie: physics)
- ability to make connections and see patterns
- speed



- confidence
- accuracy
- ready for post-secondary/industry
- test skills preparation and performance - good test results (provincial, federal, municipal, internationally) assist with test anxiety
- numerically fluent
- ability to solve problems
- frequency - using the skills
- self-sufficient - ability to apply learnings and solve problems without outside help
- understanding core operations
- apply it in everyday situations
- apply it as a tool in problem solving
- score well on provincial tests
- a solid foundation for key professional careers (engineering, finance)
- being able to visualize, deep understanding of material
- a confident learner
- finances in day to day life
- translate math concepts to real life situations
- math is a foundation that a lot of other subjects are based on/use (science, music)
- strong understanding of fundamentals
- fast facts
- mental math ability and confidence with numbers
- multiplication tables must be expected to develop student's abilities (ie allows greater ability with algorithms later)
- learning the steps (1 way not ALL the ways)
- long division (not estimating)
- no calculators or limiting calculators
- not being confused by discovery math
- sometimes manipulatives are poorly understood by staff teaching and students but mostly parents
- nothing in school teaches children about rigour
- basics first then build on that working up to logical understanding - able to recall knowledge
- confidence
- mastery in strategy
- understand the purpose of math
- student able to successfully break down pieces in their own way
- children able to be confident in the best way for them
- build of basics to increase knowledge and push out of comfort zone to step up confidence
- ability to apply what you have learned in school to real life - make change, understand banking and taxes
- pass the class
- ability to confidently transfer their knowledge to all aspects of life
- understand purpose and vocabulary of math (language and context)
- repertoire of strategies to solve problems
- confident in choosing careers in math



- having a growth mindset not fixed
- desire to know/understand what was missed (learning) and pursue the learning to build upon
- kids don't know basic math times tables
- why don't kids in grade 11 know basic math
- too many choices and methods that kids are confused and don't really know how to do it correct one way
- teachers spend too much time teaching all the methods that kids don't learn all the content
- parents spending too much money on tutors
- 42 kids in grade 10 math class and 30 showing up to daily tutorials at school
- 30 minute tutorial for 30 kids = 1 min per child if you're lucky
- we are not giving children rigorous training as they grow up
- kids don't know how to problem solve
- successfully doing math basics add/sub/mult/div
- banking / % discounts / cash register counting change
- interest rate calculation
- arrive at correct answer without losing points for doing it
- capable of doing basic math well
- knowing how to do reasoning/problem solving skills well
- knowledge of math enough to go to university (advanced math) so can get into university (not be limited)
- need kids to enjoy math
- Kids now feel - frustrated - feel not capable - need tutors, do not know basic math/not confident, even high honors students are lacking confidence in math - they just don't know the basics
- to be able to explain in words and draw out visually
- quickly calculate
- strong basis for more complex concepts - (there is a right and wrong answer)
- to be proficient in elementary math and able to progress to algebra, and higher math
- being able to cope without a calculator
- knowing questions and answers with their respective graphical representation
- proficiency
- conceptual understanding
- speed
- critical thinking and being able to apply it to the tools provided (age appropriate math skills) - not just memorizing
- everyday math isn't a problem in life
- knowing basic addition/subtraction/multiplication/division
- seeing importance - embracing numbers
- be able to explain numbers
- real life applications - building confidence
- not about speed - good learning takes time
- not about skills and drill, memorization, rote
- balanced approach
- math is about problem solving/not worksheets
- learn concepts before memorizing
- don't spend lots of time on a low level math - things that a calculator can do



- understanding conceptual ideas - of big ideas - allows for flexibility
- knowing how/when to apply the concepts in a variety of situations
- understanding a variety of strategies to reach the same results
- not just memorizing but automaticity
- two kinds of math - functional daily math and abstract high level math
- being presented with a problem and developing an intuition about the solution
- to figure out quickly the mental math the basic arithmetic
- understanding the underlying concepts of math - instead of just being able to compute
- being able to derive solutions in a logical sequence and apply to other situations
- to be able to connect the concepts to the real world and vice versa
- to have a strong foundation of functional concepts
- to understand math as a way of thinking
- to understand the beauty in math and its patterns
- to love math
- not just about mechanically calculating, but to understand why you are doing something
- having grasp of basic facts
- working on mindset
- understand fundamental interaction between numbers and variables
- critical life skills
- budgeting (mortgage, debt) competence
- understand fundamentals in addition to memorization
- rote, repetition building blocks, concepts
- go beyond into problem solving in real life scenarios
- getting the fundamentals as early as possible
- logical, reasoning approach to problem solving
- being able to think critically, quick on your feet (you can't take forever to get to the solution) - real world is high stress, finite time
- mathematics as a tool
- aligning all math concepts, not strictly in a linear fashion
- pedagogic strategy that caters to the majority of students - you can't customize to every student
- learning in math takes effort, requires ongoing challenge
- understand concepts
- demonstration of work (clearly shows steps to answer)
- keep it simple
- application to life ie GST in head - % off a product - change from a cash transaction
- ability to tackle complex problems with more self initiation of assistance from the teacher or self learning
- recall of some basic numeracy facts
- having a strategy that works for them and they can use all of their life
- no fear of numbers
- knowing if you've got the right (or logical) answer
- every child should be able to reach any occupational destination
- achieving curricular expectations
- able to use real life everyday math skills easily ie make change, percentages
- find enjoyment or engagement, interested, seen as important



- mental math - foundations
- importance of basic facts - automatic/effortless
- seems to require post-secondary for everything.... But can the cashier count change
- understand process, not necessarily getting right answer
- not heavily dependant on technology (ie making change)
- be able to apply basic math to solve everyday problems
- key is understanding methodology to solve problems
- difference between "memorizing" and "grasping concept" - should be "second nature" but still need memorizing - complimentary process ie: need times tables
- problem solving - real life problems ie word problems, real problems with debt, financing, banking, mortgage - financial literacy
- not feeling scared/intimidated by numbers
- confidence
- deep understanding of math/numbers
- being able to choose an approach
- knowing how exact you need to be - estimation, rounding, being able to check solutions - does that make sense
- fluency/automaticity with facts
- multiple strategies to get solutions
- defending your choices
- explaining your thinking
- efficient solutions
- how much do you need to be skilled with language to be skilled in math
- balancing automaticity with deep understanding and problem solving
- confidence
- basic math literacy
- plan, recognize, strategies to problem solve
- ability to recognize errors
- emphasis on importance of good math (number sense)
- real life math skills - basic math skills - grocery shopping
- balance between skill/drill memorization vs. critical thinking
- critical thinking
- quickly calculate basic math so you can focus on more complex math concepts
- proficiency in elementary arithmetic
- be able to progress to higher level math eg algebra and calculus needs basic math foundation first
- choose proper strategy to identify how to problem solve eg do I add, multiply or divide
- understanding basic concepts
- being able to represent things graphically
- being able to explain and equation in words
- doing problems without a calculator
- being able to apply concepts to real life
- meeting or exceeding the required standards
- building a foundation
- precise measurement/communication of assessment



Question 2 | What support does your child need to be successful in learning mathematics?

- passionate teachers, patient teachers
- teachers have to answer questions
- teachers understand there are different strategies, teach different strategies
- allow freedom to take the path that makes sense to the child
- sequential learning materials
- clear expectations
- confident math teachers
- opportunity to achieve mastery before switching units
- Repetition
- weekly worksheet booklet sent home so student and parents can check that they're on track (think Fountis & Pinnel for Math) doesn't necessarily need to be returned to school for marking. Just a touch point.
- smaller teacher student ratio focus groups maybe once a month
- worksheets/activities when they want to do more
- tests
- feedback to parents and the student so they can learn and grow
- challenged - keep engaging and wanting to learn
- ability to make questions more difficult - relation to the world
- textbooks and reference materials
- help in sorting out strategies
- positive environment, energizing positive feedback
- show application to real world
- Drills - practice for foundation math
- practice for problem solving
- generate interest with math in other subjects
- create fun in math
- define min baseline # of hours for math - who delivers?
- evaluation when someone is behind - provide support to catch up
- standardize tools for math - online/paper
- report cards that work
- teacher who loves math
- students need more practice
- lessons should be reinforced by a combination
- more/frequent review of material
- parents need to understand learning strategies - various ways (online or other ways)
- feedback loop improvement (frequency)
- uniform strategies for all schools in Calgary
- some homework needs to be there
- benchmarking tools available to parents
- quarterly agenda sharing
- teachers with math background
- support for success
- testing
- study online (affordable)



- limit technological resources
- rigor
- repetition
- notification in advance the to the home - timeline, appropriate accessible resources
- parents need involvement (fun and engaging)
- encouraging and positive learning environment school/home
- opportunity to learn and try new things
- seeing mathematics in the everyday and in unexpected ways
- getting kids excited about what they can do (expose the different opportunities to get them excited)
- recognize the need of the individual
- understand the audience/student to engage
- gaming strategy
- helping students find the right strategy and focusing on the strategy that works for them (solidify)
- hyper-pause problems/program of study = opportunity for positive feedback
- strong foundation before expanding on concepts
- clear understanding of process and be able to explain thinking/reasoning
- fluency with numbers before abstract concepts
- fun games and activities as practice to repeat concepts
- practice concepts for mastery and speed
- repetitive/time for practice
- consistency across grades for use of calculators
- memorization is essential for foundational skills
- building fluency with a goal of understanding
- child needs feedback to know where they are in learning
- build confidence
- needs to be challenged at their level (either ahead or behind)
- repetition - leads to confidence
- encouragement
- variety of methods that are accepted
- time dedicated to math (at home and at school)
- small groups within classroom of kids with similar ability
- variety of assessment styles (word problems, worksheets etc.)
- prompt feedback by teachers/parents
- early intervention (can't learn multiplication if you can't understand addition)
- teachers with confidence and "like" math
- being taught by a style that suits their needs/understanding
- tutoring
- real time feedback from teacher to parent
- noon hour extra help/studies
- more time for child to understand the question/problem
- 1 on 1
- an avenue to ask for support without being put on the spot
- more examples of current topic
- passionate patient and engaged teachers



- allow children the freedom to use different strategies
- parents need to know the math strategies and methods taught to their child so they can help them
 - update us on the math terminology
- expose children to a variety of math methods, but allow them to use the strategy that works best for them in the classroom
- assess children with "old-school" methods, teach those who that does not work for the new strategies
- do not overwhelm children with strategies that do not work for them, or causing extra stress/unnecessary homework
- encourage mastery of math - streamline "old school" is ok
- allow the child to use method that works
- teach foundation basics and build on each year
- be consistent in what is taught (finish the unit, don't teach in bits and pieces)
- early on learning - manipulatives & tactile are important - fun games, understand concept when using manipulatives
- parents and children both need the solid foundation to know and understand the basics (core arithmetic)
- parents need to know how to help - learn math games taught in school (info sheet, blog etc.)
- interactive web based games divided by grade level on CBE website
- relevant real life applications to cement learning
- tactile activities
- supportive feedback especially when offering alternative method
- community working together (teachers/parents/student)
- textbook/E-text book
- not overwhelming students
- access to extra help
- clearer steps to define each process
- multiple examples
- textbooks
- assignments that connect to the text/subject
- allow singular learning styles
- encourage/identify/acknowledge preferred learning styles (giving confidence)
- more online interactive grade appropriate tools
- regular feedback from classroom so parents can reinforce concepts taught in class
- share the math agenda with parents so parents can support and assist
- curriculum that is on par with advanced nations
- less toys more math
- kids first need a good foundation which translates into having to memorize times tables, what to do with fractions, BEDMAS what to do with - and +, etc.
- once fundamentals are in place they need to learn to be creative - how to try something and be ok with it being a wrong turn at first
- my child need to feel that things are organized and not all over the place or just pulled out of a hat
 - scenarios must be clear
- having a list of formulas to refer to would help



- kids don't always take good notes and could write down wrong or miss important points all together
- consistency in language between what is taught in the classroom and how things are worded on tests
- building kids confidence with all concepts so they don't panic
- feedback - loop
- games/puzzles
- minimize anxiety/stress tools
- frequency of communications
- tactile hands on exercises
- some homework
- teacher with math background
- kids are not being challenged
- standardize teaching style
- Drills - practice for foundation math
- direct engagement rather than just online
- text books and syllabus
- being taught math fundamentals to reach expected levels set as entrance requirements for post-secondary
- have qualified math teachers teaching math
- assist/communicate full year curriculum at the beginning of the year to parents/students
- regular testing to help kids/parents understand their progress throughout the year
- tools that mirror the methods taught in class
- support staff/communicating with parents for kids that are struggling - some kids are not as challenged
- standardized approach/teaching style to help kids manage expectations
- more direct engagement between teacher and student, even student to student (buddy system) rather than in depth online systems
- having a textbook/syllabus that is used for both kids and parents can use to follow and revise
- review and ensure that the mechanism for teaching allow the basic math is understood and the common mechanisms is understood prior to exploring the other options for achieving the same concept (eg. Many different methods of multiplication vs. specializing and applying a single strategy).
- ensuring that there is dialogue between the teacher and students to explain the concept and different mechanisms that are required for each topic (factoring, etc.)
- understanding and mastering/repeating the basics prior to engaging/starting the other concepts of multiplication, division, factoring etc.
- feedback on work (homework) done
- need for more practice of methodologies
- need more clear guidelines of the curriculum at mid-semester, semester end and year end
- more frequent feedback from teachers, if there are problems
- feedback to the child to ensure there is clear understanding of material taught
- more curriculum feedback via agenda books, blog or D2L
- consistent software platforms across schools
- inclusion of puzzles/games to develop stronger logical reasoning in students



- use of technologies to enhance learning and add to improve logical reasoning skills
- strategies to increase positive mindset towards mathematics
- aid in decreasing stress students have towards math
- decrease negative social perceptions towards math
- have qualified math teachers teaching math
- teachers that have the appropriate skills and resources are needed to teach math
- one on one time with teachers so that teachers can identify child's skills/struggles
- consistent support at school and home so the teaching styles/approach is the same
- to have their confidence built up
- much stronger math knowledge by elementary teachers
- teach the student and ensure understanding don't just cover the curriculum
- ensure that all teachers use strong, coherent resources
- provide ongoing connected PD in math to close teacher knowledge gaps in mathematics
- sylvan learning centre apparently
- the same teacher for more than 3 weeks at a time
- other than curriculum adjustment, more recognition of the understanding or lack thereof of the student
- finding what they need to understand
- elementary - homework like mad minute/problem solving
- bring in real world examples - to the practical
- curiosity
- continue to provide feedback to parents from teachers
- student tutorials supported by other students
- how to improve child's math skills at different levels
- student and teacher accountability
- practice
- incorporate math into non-math subjects
- tutorials if struggling in specific areas
- peer learning if both parties are open to it
- consistent teaching methods
- ID/adjust to individual students needs
- qualified experienced teachers - continuing PD essential
- free tutors
- website learning centre - IXL
- diploma prep - IXL
- teachers who know math
- identification of learning styles
- promote interest in math with real life examples of application
- culture of math being important
- appropriate support for all learners - exceptional ability vs. struggling with concepts
- less discovery learning and more direct teaching
- support to be aligned with individualized learning
- new challenges for students who are excelling to keep them engaged
- more resources for practice - or to know what resources are available
- encouragement



- personalized attention in school
- involve in practical application eg. Math lab
- communicate to parents monthly programs
- sharing appropriate curriculum timely with parents
- involve in online interactive problems
- strong math knowledge and math instruction of teacher (starting with primary and junior high)
- fun way to learn math/engaged students
- resources (textbooks, manipulatives) - should have coherence with resources being used by teachers
- professional development of teachers to deepen pedagogical knowledge and teaching/instruction practices
- practice
- teacher knowledgeable in math
- continuous math education
- incorporate math into non-math subjects
- practice
- parent support
- accountability of student and teacher
- combine music with learning
- repetition of times tables
- make it fun
- buddy classes (older students with younger students)
- opportunities to explain (or teach) what they know to another class or student
- gain the understanding
- discussion groups allow new perspective & strategy to learn
- application in real life
- financial education needs to be taught
- estimating practice
- number sense
- continuity
- how to support numeracy at home
- having confidence
- practical examples
- hands on
- curiosity
- vocabulary
- visualize (2D/3D)
- availability of teacher to do one on one teaching and really understand where the child struggles or excels
- more detail (truthful/accurate) on progress reports - move frequent
- teachers need more support in teaching the curriculum
- consistency of lesson plans between teachers
- encourage confidence and feel comfortable asking for help
- teach practical way games/visual
- worksheet



- important in life
- set goals - preparation for what comes next
- online website/video support
- after school support
- failure fear
- great teachers
- support at home
- materials to help parents understand the methodology (current)
- teacher support in teaching the curriculum and after the test
- extra support if they need more help in an area
- less curriculum - more solidification for those struggling in math
- can we multi-age to help students avoid boredom/frustration levels
- students helping students
- open-ended questions - more student discussion/voice
- make math fun
- make math interesting
- confident teachers = confident learners
- mnemonics - songs, stories, games etc.
- a variety of tools
- the vocabulary of math
- a solid basic foundation before moving on
- teacher to notice each individual child's needs and strengths
- balanced approach
- access to all the best resources to support learning
- speed and fluency/confidence in basic facts to support dealing with more complex problems
- specialized teacher (Jr. & Sr. High especially)
- frequent update to parents on learning math
- realistic grading
- allocate more time to core subjects
- communicate traditional math learning resources
- categorize resources that support each learning style
- teacher to emphasize the building block concept
- same emphasis as home reading (gr. 1-3)
- parents need a better understanding of strategies that kids are learning
- teachers could share methods or approaches so that parents can reinforce
- is there a way to offer seminars for parents
- problems arise when homework is sent home because a parent may have a different approach or student may not know how to begin
- could there be an increased investment in the area of math - eg teaching assistants, out of class tutorials/clubs/support
- identification of learning styles
- promote interest in math with real life examples of application
- culture of math being important
- open dialogue between parents and teachers
- more test preparation



- qualified and experienced teachers - experts in their field
- appropriate support for all learners - exceptional ability vs. struggling with concepts
- clear understanding of student's minds of what defines success
- materials for parents to understand what is being taught
- Kumon style worksheets
- motivated to succeed
- online practice tests for PAT's (IXL) - connected to Alberta curriculum
- additional tutoring support - exam prep, tutorials (more focused/efficient use)
- special needs/modified - workbooks or guidance from teacher for home study
- prioritize homework workload - what the student struggles with
- being able to improve - re-write tests
- repetition of material
- differentiated teaching - within a grade level/across classes
- different level of math - jr. high level
- fundamentals
- reduce confusion in class
- respect and encourage math at home
- tutoring
- enthusiasm and passion about math at home and school
- competent teacher that inspire a love of math
- online resources available
- political correctness is a barrier to excellence
- students and parents need more feedback - more than 2 x per year - June is too late
- consistent expectations between elementary to Jr. high to Sr. High
- grade 0-6 rigour improved to meet expectations in jr. high/sr. high
- daily practice/regular practice to increase basic knowledge and give a strong foundation
- potential gaps in the curriculum
- practical knowledge and application to the real world
- increase the child's confidence with numbers
- more dedicated time in math
- communication between parents and teachers
- additional support in classroom
- math groups or math clubs - den's to focus on age app
- integrate math learning more fully into all subjects to create a love of math
- feedback (marks)
- allowed to question and explore
- clear expectations, math feedback and lessons shared with home
- real life experiences
- bring home practice and unit outlines so that parents/students/teacher are on the same page
- support through CBE supported extra help tutoring and individual help
- children grouped by ability and able to move forward without struggle - allowing students to work to confidence at their own pace
- buddy classes
- love of mathematics - math fairs, clubs, competitions
- communication of the how to parents on blog, D2L, letter home, math night



- peer teaching
- tutorials
- extra practice and enrichment work to do at home (homework - optional)
- feedback regarding child's individual program from teacher exchanged with student and parent - consistent from school to school and K-12
- tutoring - after school options for parents
- STEM focus - science technology engineering and math - encourage kids to do more STEM (promote a culture of math)
- tutorials - teachers helping kids
- math remediation - learn basic math
- smaller class sizes - 42 is crazy high
- teachers that know math to teach math (not all teachers know math) - math specialists
- repetition of simplicity - "Keep it Simple"
- better communication between parents and teachers
- too many options now makes no one good at math
- posting class notes - teachers don't post notes - so kids spend too much time copying notes and not listening or learning
- best practices for math to standardize teaching
- Jr. High marking - need % grades in Jr. High so they know if they are doing better 4 now vs. 4 later doesn't show improvement - demotivating for good kids
- High schools have too much time between math so they forget (consistent math scheduling)
- more options to do online math and kids understand their option to take math
- lots and lots of tutors
- hundreds of hours of flashcards
- computer sheets
- more instruction time
- less complicated ways of doing math - get the answer not so many option on how to get the answer
- online learning resources (paid for with user id & password)
- assessment (quantity evaluation)
- daily blocks of math are critical at all grade levels
- ensure fundamentals are learned before we get too concerned with "applying concepts"
- proven, simple methods
- textbooks
- fewer PD days and more instruction hours
- study habits
- instruction in basic arithmetic not aimlessly trying to find strategies to solve simple math problems
- strong arithmetic operation as a basic foundation
- repetition
- mathletics - online learning support
- math test evaluations
- continued emphasis on understanding concepts
- making it fun
- find methods that are the best to help children master concepts - some do work better than others, but each teacher picks their own method



- problem solving
- fun not fear or boring (challenge)
- challenge
- more self study
- more engagement
- gap identification - stop the gaps so they don't perpetuate throughout the years
- allowing children to use only the methods that work for them
- no real alternative if student requires it
- doing smaller tests more frequently
- homework - provide more examples to practice repeatedly - ie daily practice exercises
- incorporate games into learning math - games - textbooks
- identifying a single strategy to solve a problem
- flexible pacing
- time to learn well - math developmental
- high quality teachers in math/number sense
- inquire, take risks, ok to make errors
- hands on relative learning
- remove timed testing if still in use
- manipulatives
- ok to make mistakes
- a supportive environment at home and in the community to encourage math
- to see the connections between math and the real world
- to be allowed enough time to learn the concepts and not rushed onto the next topic before they are ready
- send home extra exercises in areas where the student is struggling
- good ways to understand students learning - be able to identify where students went wrong - eg no multiple choice
- video lessons that can be watched repeatedly to better understand parts of the lesson
- to connect course material to on-line resources
- make it fun - learn math in a playful way
- engaged parents
- uniformity in how things are taught from grade to grade, school to school and teacher to teacher
- allowing children to "fail"
- parents being equipped to be able to practice math scenarios with their kids
- opportunity to learn outside of a classroom environment the application of math
- being able to identify more abstract and problem solving lens
- math literacy, vocabulary, introducing math concepts at an early age
- being able to have extra challenge for students who are excelling in math
- straight forward language in the way math problems are worded
- making math more fun as a topic at the early stages
- parents need info on how and what they are learning
- figure out each child's path to understanding and accept that approach (not test on 5 methods - choose one they are strong at)
- practice is important (daily/regular) with (some memorization tasks)
- identify gaps before they are a problem - parents want to help their kids



- need some more challenge for kids - pace may be slow and bore them
- parents involvement (we don't always know what they are doing and how they are being taught so we can help)
- more resources for parents ie websites, videos, where
- home math - we have had home reading for years starting at kindergarten, what about math - in the car, games, flash cards, electronics
- if kids aren't coming home with homework, then we need another way to know what they are learning
- have connections among subjects so "Math" is not so arduous
- parent math sessions provided by educators for parents (multi-school)
- parent/child board game night
- keep it simple
- daily and more time dedicated to mathematics in class - practice practice practice
- more worksheets sent home for practice, daily practice (not online)
- less reliance on technology for teaching math, more "pencil and paper"
- make math fun - never imply that its hard
- more feedback to student
- regular evaluations - quizzes - small concepts ie not too many topics
- document results of above for parents
- variety of resources, textbooks to games
- need workbooks/textbooks to come home (hard copies)
- opportunities for practice and chances to deepen the learning process/understanding - give kids more challenging work (greater stimulation)
- math projects - group work, discussion
- teacher motivation to "celebrate" math (engagement)
- peer tutors
- targeted strategies for approaching language in math
- not making the language unnecessarily complicated
- I need my child's teacher to understand how to present word problems in a way that focuses on the math and the necessary language
- I need my children to be challenged (gr K-2)
- I need my children not to be overwhelmed when they hit grade six/seven - pacing
- I need math instruction to be differentiated
- the schools should provide graphing calculators
- I need my child to receive feedback regularly
- sufficient instructional time
- help to narrow down their preferred strategy
- workbook so we know issues, progression, where the breakdown is
- classroom blog
- more high quality math specialists who love math
- initiatives to support girls math achievement gaps
- more safe learning environments to make mistakes - learn from mistakes
- hands on relative learning
- activities match abilities "gifted vs. remedial" = individualized
- flexible pacing



- confidence
- specific honest feedback - don't sugar coat where our kids need to improve ie tests
- quantify/clarify the evaluation standards
- more frequent/ongoing communication of achievement
- frequent evaluation
- online learning resources ie mathletics
- repetition - emphasis on basic arithmetic
- graphic representation of concepts
- additional assistance for struggling students

Question 3 | What would help you, as a parent/guardian, support your child as they learn mathematics?

- an understanding of strategies
- increased/immediate feedback
- communicating what your child is learning
- work sent home - can we see exams?
- D2L up to date
- Calgary Reads style training and parent volunteers helping in the classroom
- Khan Academy style website specific to CBE outcomes that A. shows parents what their kids are learning and B. can provide tutorials for parents in "new math" methods
- hand-outs/websites with math problems that link to the curriculum - so parents don't google what they "think" will help
- parent math nights - learn how they are learning, share games, tips & tricks
- allow parents to volunteer like "Wee Reads"
- train them and let them help kids - helps the child as their "math ladder" develops while of benefit to the overall class too
- partner with an engineering/accounting firm to help
- lots of educated people in our city
- being able to view/helping with homework (later)
- knowing the strategy the school is using
- getting feedback, quizzes, marked work as indication of how they are doing
- online resources
- standardized tools
- online communication, increased frequency
- Khan Academy
- homework
- more structure in the concepts
- textbooks
- basic agenda passed to parents - more details
- need a benchmark
- need a tool to reinforce the concepts
- tests to measure, report cards, feed back
- resources for teachers, parents and students that are easily accessible (better training)
- consistency between grades
- parents need to know the key understandings and examples



- more structure
- consistency in reporting and grading
- more communication from the school about what the children are learning
- leverage apps
- provide detailed feedback (eg. particular areas for development)
- required/regular meetings between parents and teachers
- option to be more engaged as the students get older (high school)
- provide ideas to engage (different real life scenarios that encourages learning the concepts)
- honest feedback to parents (and students)
- provide grades
- help parents understand current evaluation (report cards)
- parent support - where are the resource links (inside track)
- parent support - bridging traditional with newer strategies
- parent support - access to classroom resources
- digital works
- practical
- progress evidence
- proactive advancement communication - all grades
- more feedback loops
- parent support - share curriculum knowledge - schedule weekly/nightly
- communication of good quality and frequency (email, method/language summary, extension activities)
- examples of questions/solutions
- resources - checklist of outcomes (websites, apps, textbooks) - links to detailed examples - teacher/class specific
- feedback - empirical evidence with SCORES (raw + percentages) in a timely manner (D2L)
- further assessment at a younger age with scoring - math is concrete and can be assessed
- clear idea of what expectations are (for different assessment levels) with examples of each
- staying up to date on what your child is learning
- keeping blogs up to date
- at home games/apps/books
- extra training or material for parents
- more homework (to understand more of the topic)
- re-design grading system
- more communicated between the teacher and parent
- sending a weekly email home to the parents
- having homework that's partially completed in class vs. blank
- an understanding of strategies being taught
- quality and timely feedback - what is my child learning - work sent home - exams given to students to keep and review
- website for parents to learn how child is being taught - school specific if not consistent across school boards (website for parents to learn) Khan Academy website
- parent/teacher learning night for strategies
- math needs to be taught in a consistent method across the schools
- both methods taught, but still consistent (traditional inquiry & discovery)



- levelled math books (like Raz Kids or the A-Z books) for children to bring home and parents to learn along with
- update parents on the new math terminology (glossary - math sentence = equation)
- remain in consistent communication with teacher about child's math success for struggles
- parent forum/blog comment on what a parent is doing to help teach, teacher give teaching suggestions in the daily blog - like the "Wee Reads" training
- teacher teach parents how to help in classroom hours
- online parent group for parents to talk/discuss teaching strategies
- parent run math club (teacher supervised) - kids and parents
- allow parents to be more involved when volunteering in the classroom to be 1:1 or in small groups with children who are struggling (help teacher by taking notes of struggles, teach learning styles etc.)
- online resources revamp - access to teacher resource side
- clear understanding of expectations
- acknowledge the generation gap and set reasonable expectations for parent support
- a teacher's accountability
- recognize time limitation for all parents, need individualized, specific feedback
- start of year provide a curriculum road map with time line
- posting worksheets/homework online
- understanding what and how the students are being taught to enable parents to support students
- communication of what is going on in the classroom
- some homework is a way for parents to understand what students are doing/learning
- receiving more real time feedback on progress of child
- parents to receive feedback on quizzes test in addition to report cards, seeing homework
- understand online resources the CBE supports for math
- understand how students are being assessed - tests vs. in-class evaluation
- better online resources for parents
- more examples and more tests online for children to use
- detailed online curriculum with examples and tests
- need regular feedback from school about progress and more importantly about what is being taught in class in order to support the child
- information on where my child is ??? Standards (global) and the roadmap
- parents need to know if /when their kid is at a roadblock that the teacher does not have the resources to overcome
- relevant math - math is gymnastics for the brain but a good chunk of questions seem not to engage the child - yes calculate GST (percent and decimal)
- need Khan Academy at all schools instead of just at one school
- set expectation at the beginning of the year with the syllabus
- tool standardization
- feed back
- Khan Academy
- tools to reinforce concepts
- start the year with a roadmap
- acknowledge the generation gap



- pamphlet with basic theories, step by step methods and examples - detailed explanation of the level achieved by our kids - qualify 100% report card
- set up a system at school where some grades help other grades (mixed grades)
- need for quantification/proper evaluation
- need for textbooks to understand curriculum
- need minimum standards
- keep parents workload/responsibilities in education manageable
- parents and teachers to use same method of teaching
- resources like Kahn Academy are to be encouraged and used
- need teacher feedback
- teacher to tell parents what the goals and objectives are
- taking a test every month for feedback
- need to know what the teacher is teaching
- getting feedback from the teacher
- resources to help us know what they are learning
- have timelines of syllabus (schedule)
- have a digital resource for parents - online guide books
- consistency
- have additional practices for parents to encourage child to practice
- resources coming home (worksheets/textbooks) to explain what and how kids are learning - online may not work for every family
- parent info session to learn new strategies that are being taught
- ideas about how to help and engage with kids through math outside of school
- provide parents with excellent activities to support math literacy
- frequent, mandated communication to tell us what the upcoming topics in math will be
- solid and steadfast curriculum that is attainable for parent to assist with
- truthful progress reports
- textbooks or other materials that help us understand the what and how
- know where to go for help ourselves
- standardized materials
- teacher parent communication
- communication with teachers on a regular basis
- teach parents to support students - textbooks, online resources
- homework - senior/junior/elementary review/redo schoolwork at home
- understand what kids learn and answer questions from assignments and teachers conversation
- know kids level, interest, ability of math
- math club
- understand expectations per grade level
- technology - can I help and how
- understanding the math streams and what they mean
- giving real % grades, class median ranking, ability to action plan/intervention with communication to family
- understanding what is being asked and know how to do the math
- better report cards
- a better understanding of content and method of teaching and how it's evolved and why.



- better communication - during parent teacher conferences - ask parents if they received/understand the communications being sent out
- math games/ideas to play at home
- engage them in math thinking/discussions through everyday things like setting the table
- math night for parents to show/tell what mathematical learning is happening at school
- communication through newsletter/blog/twitter about what math students are working on
- overview of program of studies for parents
- important for parents to know what to expect children to be learning at various grade levels
- how to create practical/real life homework
- without homework it is hard to know what they are doing or how to help them
- to understand what is developmentally appropriate at each grade level
- what are the big ideas in the math - is there an explanation of the problem, is vocabulary defined
- are we using the correct mathematical language ie: 2017 is NOT twenty seventeen
- share the specific strategies being used so parents can understand and support learning at home
- I want to know early on if there are any concerns
- information about the details - I need to know enough about what my children are doing so I can ask them specific questions
- a teacher who knows (an expert) what they are doing in math - even in elementary
- strong teaching from math specialists
- curriculum or a teachers approach which includes practice - more narrow focus on what will allow students to develop confidence
- a common, sound, effective approach by knowledgeable teachers
- more support for exceptional needs students - resources to support
- ensure all students achieve at a basic level so others aren't held back or all the attention doesn't go to the students who need extra help
- enrichment activities so kids don't get bored - challenge
- open communication with the teacher to support child
- understanding how concepts are being taught
- math night - educate parents on strategies used and resources used in the classroom
- twitter - learn about different games that parents can play at home with their child
- enjoyable and fun
- what skills do you have - volunteer and share your knowledge
- know how math is being taught - better communication
- know what the resources are at every grade level
- standardized materials
- better understanding of different strategies used in the school
- after school support
- online support
- what/how they are learning
- some of the resources are not clear
- book
- early support so it becomes integrated into life
- direction and ideas to encourage the math skills daily - consistent
- opportunities for parent to learn and work with math along with student



- activities to do practically at home with child and parent. Eg. Follow a recipe, challenging math questions
- communication and proactiveness
- offer a workshop to parents to provide advice and techniques to help their child with math
- sharing weekly program/progress feedback
- provide Alberta curriculum, text book, work book
- video - how to subjects explained in school
- share online resources
- some understanding of what/how they are learning
- resources coming home so that parents can help with homework/home learning eg. Textbooks, worksheets that explain what is being taught
- homework/short review time at home so parents have a sense of how their child is doing in school
- better flow of communication with parents and school - frequent updates on child's learning
- websites for math help
- show the parents what they are teaching in school
- math night for parents
- how do I encourage a love of math
- understanding what the requirements are for post-secondary education and teaching to prepare for that
- math nights/seminars for parents so they can learn current strategies eg. How to use lattice multiplication
- sharing of strategies and approaches
- clarification regarding what type of mathematical literacy we are striving for
- more feedback from teachers so that parents are aware of gaps in learning that exist
- understanding the math streams (-1, -2) and what it means
- understanding expectations per grade level
- understanding math systems, methods and vocabulary
- definitions of acceptable vs. exceptional - introduction of more challenging problems when capable
- understanding of child's ability - % scores (ie 65% vs. 75%)
- class median
- clear definitions of abilities - not everyone is exceptional
- ranking
- ability to communicate to family action plan - immediate intervention
- communication between home/school
- clear understanding of expectations
- parent math nights/events
- math club within the school - cross grade math help (nearby schools ie: high school -> Jr. high, Jr. high -> elementary)
- the coles notes for parents on math strands specific to work sent home
- webinars for parents (grade specific topic specific) - these could be live and then uploaded online.
- uploading short videos about concepts and watching on D2L
- communicate between teachers and parents
- at home practice



- enthusiasm/passion
- exams to come home to determine where issues are - teachers can create new exams
- tying math to real life examples
- higher expectation by teachers
- political correctness
- clear understanding of report card ratings (1-4)
- more quizzes/tests
- online tools, resources discussion forum
- parent/guardian recommended workbooks
- parents - teacher effective communication system
- clear expectations between parents and teachers
- homework (proper amount)
- direct parent/teacher interaction
- recorded math session from the teacher posted online
- math specialist in all grades especially in higher grades
- communication between teacher parent and student
- work coming home blogs session plans, curriculum goals
- math training opportunities for parents in current teaching strategies
- consistent teaching in foundational basics
- approved tutor resource lists
- online support for parents to help their kids
- being honest about student progress and highlighting problems early - don't sugar coat results
- better understanding of content and method of teaching (how it has changed) and the purpose of the change
- tutorials for parents
- tutorials after school (Renert Learning) by 3rd party groups funded by CBE and Parents
- math night - includes website/books (resources)
- direction by school (school initiated and guided)
- assessment and rubrics results entered into D2L within a timely manner (all teachers mandated to use D2L)
- communication
- money to hire tutors - expensive
- help kids to prepare for post-secondary
- honest grading in school
- bring back math minutes so kids know how well they are doing vs. themselves
- kids setting up for failure because 1-4 doesn't tell us how they are doing in Jr. High
- ways to teach kids simple mental math
- access to Kumon training and other support
- feedback 2 times per year is too late to do anything
- teachers that know math to teach math - specialized teachers in Jr. High
- I want to be the parent not having to be a teacher
- parents don't have time and knowledge to help with the math
-



- more resources
- focused feedback
- how are they actually doing
- online resources need to be centralized and focussed; "one stop shop" for parents
- we have too many online resources right now and most are not great quality or vary from teacher to teacher, school to school ie: D2L, online blogs, Facebook pages etc.
- clear homework assignments
- % test scores/quizzes to ascertain heir achievement against objectives
- scrap "discovery learning" and get back to basics so parents can help their kids - current curriculum is more confusing to parents than the poor students who are floundering
- willingness to study math
- additional resources
- more specific feedback on student achievement
- what strategies are being used to teach the concepts
- small homework so I can evaluate my child's understanding in order to know when they need help with a new topic
- more communication
- curriculum
- teaching the parents to teach
- sending tests home
- sending home tests to provide extra support
- more real life examples/modeling that we as parents can review with kids
- time
- communication that is solid when rolling out math strategies - especially those based on good research
- address any problems in communication and strategy and delivery - I like the current thinking and emphasis on learning
- formative feedback
- real world examples
- remove competition in the classroom
- to be kept up to date on the new curriculum - school sessions
- to see our child's progress - bring home tests
- show me what my child is struggling with and I have the ability to help them
- don't assume that we don't have the ability to help them and learn ourselves
- to realize as a parent there is a limit to how much I am able to help
- to have more time as a parent to help
- easy access to what your child is - working on - struggling with - assignments and tests
- access to formative assessments of my child
- to understand how my child learns
- better communication between parents and teachers
- math night
- resources to help parents learn how kids are being taught
- webinars
- knowing the concepts that are being taught ahead of time and at what point in the year (month to month curriculum calendar)



- how students being taught different concepts
- recognition that there is different ways of learning math (flexibility in the approach)
- word literacy has a big emphasis early on (apply the same emphasis to math literacy) - equivalent forms of recognition
- take home math material (just like home reading program), online apps, quizzes
- more info on curriculum being taught (the what being taught) - course of study
- communication
- brief teaching examples for parents to help their kids
- more classroom time for math
- inconsistency in teachers
- identifying the child's struggles to prevent cumulative learning gaps (send tests/quizzes home)
- more detailed curriculum online for parents - in parents language (not in outcome/expectation verbiage) edubabble
- more feedback from teachers, quizzes come home to be signed
- more worksheets/problems sent home we can use at home to support concepts being learned in class
- syllabus for year - rough outline of concepts and time for the year
- do not rely on online, time consuming, not everyone checks
- for bilingual, etc. - keep it clear and easy to understand, if parents aren't bilingual they still should be able to figure out what is being asked
- need workbook to track child's progress
- need to know what concepts they are working on
- need to know structure
- online journals, or communications
- have issues identified earlier to us so we know how to support
- textbook resources
- earlier problem identification
- more feedback needed, more timely
- record of understanding - so we know how our child is progressing
- need more clarification on report cards and descriptors/indicators - would like to have more
- accurate evaluation ie % scale
- need structured feedback from schools and frequent
- assurance that what and how they are learning now (early grades) will align with how they will be evaluated at math 30
- more standardized testing
- teach parents how to support children - parents math night - teach us the different strategies our children are learning
- it would help if I knew what and how well they were doing in the classroom - feedback, communication routinely from teachers, examples
- I would like to know themes/topics
- use of agendas, learning management systems
- tools we can use - apps, websites, games, baking at home, building, measuring
- most parents know/recognize it's important to read at home, we also need home math
- honest and timely feedback
- paper (hardcopy) exercises vs. blog/D2L



- additional practice (drills/questions)
- practice this strategy
- program of studies - simplified language (give examples)
- parent communication session on math strategies in the classroom - info session for the parents (new math curriculum)
- connection between stems - concepts - grades - progress
- attachment to prior learning
- feedback (formative)
- parents get a copy of the check-in - communicate students progress - reinforce extra practice
- real world examples - attach thinking too - go to skate park - use bodies as pullies
- modelling
- hands on learning
- fractions - attach learning
- communication about math learning/deliver/real world examples
- support for a child at home - requires what they need help with
- need to know what strategies teachers are using
- online resources - ixel, mathletics, dreambox
- knowing what they are learning eg blog
- more specific info (more communication about specifics of learning)
- provide access to curriculum information
- more clarify about child's proficiency
- additional resources/practice
- help build love of math

Question 4 | Given that Alberta Education determines the mathematics curriculum, what do you think is important for us to consider as we develop a CBE K-12 mathematics strategy?

- should elementary teachers be generalists?
- get rid of discovery learning
- teach passion about math early, that math is FUN
- go deeper not broader
- strategies must focus on fundamentals
- consistency across the schools
- integrate math into all subjects.
- parent participation/communication
- math is fun - integrate into other subjects
- consistency between schools and even teachers
- don't keep flip flopping - traditional vs. inquiry/discovery
- compare with other provinces/countries and learn from their success
- achieve to be a leader recognized by others not just meet the average
- textbook
- regular testing/standardized
- consider curic as base level
- consistency
- too much priority on concepts vs. skills
- teachers who teach math should have a background in math, especially in higher grades



- outcomes and results
- what are the benchmarks we are comparing to?
- ability to obtain more depth in the understanding in math
- need transparency
- look beyond just the province, compare nationally/internationally
- urgency in implementation of the strategy
- follow through by stakeholder during the implementation
- acknowledgement that the CBE needs to change approach, data/results are not showing a comparative success to other jurisdictions
- consider the global environment and what is happening outside the region
- consider the application of learning beyond the obvious application
- encourage vision and possibility = confidence
- create a positive 'vibe'
- get teachers excited about math - their passion will inspire our children
- more time per style for students to figure out their strengths
- value the struggle as much as success (effort) (perseverance)
- critical thinking skills are presented to early
- simplification of style, delivery - back to basics
- smaller classes
- fundamentals need more time
- different strategies are acceptable
- where is the emphasis - basic skills - 4 operations, recall on basic facts including multiplication and division
- reading a word problem and knowing what to do with it (marriage of numeracy and literacy)
- fluency in the language of math
- tools to pinpoint where kids are struggling and develop an individual strategy for their brain
- emphasis on communication to parents that is common to all of CBE - for each unit - what are they learning/what are terms/examples of responses and assessment levels
- creates a circle of accountability with teachers as well
- flexibility strategy/curriculum
- pay our teachers more
- clarification
- incentives
- games
- a balance of traditional vs. modern learning
- integrate math into all subjects especially in younger grades (eg: social population/English, plot story on line, etc.).
- make math important to learn
- remain consistent in how math is taught in CBE in all schools (definitely keep traditional, can be supplemented by discovery)
- look to other countries who are successful in math in how they teach to learn strategies that may help CBE
- more testing (keep from falling behind, standardized and classroom) - start early for early intervention purposes, provide feedback to parents/child



- weekly homework/practice sheets for parents to help keep on track/in the loop - does not need to be teacher marked in consideration of parent involvement
- support teachers in communicating with parents how to approach parents for the accountability piece with parents helping their children
- math can be fun and cool - card games
- parent math nights, "math" spelling bees (add, subtract)
- don't always realize where you may excel at math
- teach parents/give us the instructions on how to play fun math games in school
- supporting transitions ie: jr. high to high school
- standardized, more frequent feedback
- parents access on resources of "how to teach math concepts"
- recognize value of new and traditional way
- teacher accountability for consistent teaching and feedback to students and parents
- Alberta education curriculum could be used as a minimum vs. a standard
- give students the opportunity to learn if they are interested/capable
- design strategy from 12 - K; know the goal and design the goal
- guidelines on testing frequency and reporting - send test/quizzes home to be signed
- better ongoing communication with parents - test results, report cards, regular testing, more feedback
- teacher accountability to the curriculum - provide a detailed curriculum at the beginning of the year and check back on it throughout the year with parents
- develop the tools that help kids while staying within the curriculum
- use technology and engage with Alberta education to share real challenges with the curriculum
- identify where our graduates stand globally in research/hi tech areas that require application of math
- don't use calculators before high school - too many kids don't have the fundamentals and use calculators as a crutch. Kids who get by without calculators are much stronger in math
- get kids to do more memorization
- dedicate 1 teacher to one core subject vs. same teacher for math, science and an option - 10 minutes is not enough time to discuss child's issues at parent teacher interviews
- backward curriculum design with post-secondary entrance level as grade 12 end goal
- give valuable and quantified feedback - revert to 100% report card for all subjects
- textbooks - hard copy only
- ungraded tests for evaluation
- math specialists to teach math
- teacher assistants
- peer tutoring
- accessible compilation of tests and assignments
- at the beginning and end of each year give an exam so that you know where the child needs support
- provide enough feedback at the end of the year so that parents can help the child to be prepared for the next year
- have tutorials before and after school (face to face time)
- students need to be taught that what they learn is connected to the next grade
- to encourage students to think conceptually (discourage full memorization)



- to encourage/challenge students in math (ie: math olympics with other schools etc.) to motivate students
- more extracurricular math activities
- professional development for teachers
- team teaching to strengths, even in elementary school
- more diverse learning experiences
- transparency and consistency with how curriculum is being taught, expectations and support at home
- stop allowing elementary teachers to build their own resources and lessons (especially if they are working for a deficit in their own math knowledge and pedagogy)
- clearly define what the board and each teacher means by inquiry
- how can you have 1 strategy for K-12 - break it up into separate strategies div 1, div 2 etc.
- more real practice
- remove dependency on technological aids
- is this timeline truly realistic for staff to implement effectively - seems like a pretty tight timeline for staff to develop a classroom plan and implement
- multi-age grouping to address learning levels
- why can't a grade 1 student, capable of doing grade 2-3 math, not be able to go ahead or those who are behind, not able to do or solidify a lower curriculum
- strong math based background for all teachers
- focus on math literacy
- continuous professional development
- appropriate math language
- align with post-secondary life (work/college)
- engage parents/students who are math phobic
- eliminate step changes within CBE elementary/junior/senior high
- consistency across CBE/Province/Canada
- learning more advanced than the curriculum coverage
- expand good CBE program ie; TLC, Science GATE
- each year should build upon learning from previous years learning
- teachers who are proficient in math but are also able to communicate and translate math to students
- how are new teachers being evaluated
- what continuing development is expected of teachers
- consistency from teacher to teacher and year to year
- better communication between student, teacher, parent
- get involved in practical applications, projects
- teachers should know the best way to teach through regular training
- continue to engage parents for continuous improvement
- should it be a K-12 strategy - early learning K-3 is very different than 4-6 learners and different in Jr. High and something different for high school
- transitions between divisions, grades, schools - need clear standards that we expect of ALL students to be able to achieve at many levels/developmental stages
- programming for all levels of students
- should we have a common approach in the CBE around homework



- robust professional learning for teachers - ensuring all teachers have a strong understanding how to teach mathematics
- if numeracy is at the core (AB Ed focus) of teachers work, the province universities, system all could use the ELRP approach (as a model) to building teachers understanding of literacy, be used for mathematics PL for teaching math
- ELRP - this was a very strong model in the CBE that helped teachers to become excellent literacy teachers
- is there an elephant in the room that is not being addressed - we need more resources dedicated to PL, ongoing
- literacy coaches, books, monthly PD for teachers, school commitment, admin PD, high expectations
- resources should be based on equity not equality - Area III needs more support and different support
- incorporating new trends with old fundamentals - *mindset
- conversing - number talks, revise and edit challenges as needed
- exposure to modern methods/techniques
- condensing topics to ensure all concepts are covered
- keep different learning styles - audio, visual in mind when teaching
- be responsive to assessment data/information
- hands on projects - exposure to where/situations math is required in daily life
- practical application
- real life application
- math based specialists (gr. 7-12)
- strong math background for all teachers (K-12)
- focus on math literacy
- continuous professional development
- textbooks, online resources (solaro) - use in all schools
- why aren't all schools/teachers using solaro
- appropriate math language
- access to free resources so kids can practice at home
- know math concepts in advance to help support child at home
- teach so that kids understand before moving on
- good teachers
- building confidence
- good resources
- math clubs
- every child in every class is learning in different ways and at different rates
- early support for parents helps build confidence young
- practical uses of math
- consistency in teaching
- practical problems - embedded in larger problems ie designing a community garden
- always connect mathematics to something real - don't just use fictional problems
- use actual tape measures to measure a real place not just add dimensions written in a problem
- easily understandable and well communicated
- personalization for individual students perspectives



- re-evaluation/assess to see if the strategy is effective - helping students achieve greater success in mathematics
- connected to program of studies - discipline of mathematics - what is happening in kindergarten and also in grade 12
- we want kids to be good in and understand math for their futures
- more support for continued professional development for teachers (to help teachers strengthen their math teaching skills)
- team teaching, so that teachers can teach to their strengths, even in elementary grades
- smaller class sizes
- appropriate levels of technology for each grade (less in elementary school) - more opportunities for tactile learning/experiential
- looking at what other countries are doing that are successful
- looking at what other provinces are doing that are successful
- best practices globally, provincially, different systems etc.
- right answer - wrong approach
- realistic grades
- providing class averages as markers for parents and students
- real world application
- establish a CBE directive on the effective use of D2L - it's frustrating when things are so different from year to year
- consensus among parents at our table that D2L is exceptionally helpful
- be transparent regarding what is expected of students (to be learned in each grade) P of S seems quite subjective and students don't always seem to be held accountable to objectives
- establish more standardization in the strategies that are being used to teach concepts
- balance out creativity with proficiency
- protect parent choice with respect to accessing diverse school program (especially charter schools, ie: TLC, Science, Arts, etc. but with consistent measures/standards
- targeted math streams
- more focus on results, less on methodology
- balance between (numerical) fundamentals and abstract problem solving (reasoning)
- evidence based approach to teaching
- set appropriate tests based on goals of strategy (balance)
- more frequent testing, more visibility, more data - as so much weight is placed on PAT
- feed creative thinking, strategic approaches
- web based resources with grade appropriate testing
- do we aspire to international math front runners
- build learners confidence - put tools in their hands to be successful so that children enjoy math and they want to be good at it
- list of resources available to parents to support their learners
- software that have math occurring, but it is fun - games ie Oregon trail civilization - 1987 (multi-disciplinary learning)
- multi-age grouping to address learning levels
- general understanding of how concepts apply - assist children at each grade to get to the end goal
- assessment level - outcomes, competencies



- inspire children who are drawn to math
- look beyond Alberta - look globally (South Asia)
- look at other schools within board and province that are performing better (TLC, Catholic Schools)
- team planning more (teachers)
- get input from teachers - high school teachers explain exactly what's missing from kids' understanding of new students - Jr. High give feedback about new kids from elementary
- use the info gathered at sessions into the strategy ie do testing at younger ages (Gr. 1 onward)
- qualifications of math teachers in younger grades - math residencies/math resource teacher
- why specialized music teachers and not specialized math teacher
- research successful math strategies in other nations/countries
- sequential content - continuity (make it as a text book)
- evaluation system that allows failure and retaking the program
- clear expectation for each grade elementary -> Jr. high -> Sr. High -> university
- meet the national/international standard
- focus on what is going to be successful
- multiple tools for foundational learning - let students learn in their way
- math resource teachers in elementary
- allowing teachers to confidently teach in the method that works for the students - more gradual step up through grades
- math is very important and should be integrated into all subject areas to give life skills and letting children become proficient - stem, phys. ed, music
- be willing to support ILX or jump math or other online resources to support learning between home and school
- high school leadership credits for peer tutoring
- communicate expectations better to both parents students and teachers
- specialized math teachers in older levels
- resource math better and encourage learning outside of the classroom
- don't ignore that math is a massive problem right now
- allocate funds towards math and redirect padded \$\$ - redirect
- be willing to help the kids more who need it the most
- give feedback earlier than January - 2 (1-4) reporting periods are not enough
- expand best practices - look at what is/has been working and use it
- uniform assessments from K-12
- reporting has to be understandable and measurable (outcomes identified in assessments so we know what knowledge is mastered and what needs attention)
- better understanding of math by teachers (math specialists/teaching math)
- documenting beginning teachers
- get rid of 1-4 rating scales
- best practices - resource commonality (print/manipulatives) across the board for proven math strategies that produce the highest achievement
- TED talks for parents/teachers
- no calculator until grade 9 to encourage mental math
- reporting on strands to align with the assessed work and made public on D2L - what questions address what strand?



- mandate use of D2L, blogs math nights for all math teachers (K-12)
- scrap Alberta learning - we know it's not working
- teachers are bought into the way of doing it
- rigor/repetition - to make sure kids understand
- rote math/mental math (learn)
- teach kids that math is all around you and why it is important
- 30-50% final is good
- teach kids to be their own advocates
- smaller class size
- allow kids to talk to teachers and get guidance vs. helicopter parent (kids responsible for their own courses)
- teachers must know math
- make sure kids are ready for post-secondary math
- teachers were confused when new curriculum came in - they didn't even "get it" so how can they teach it?
- to make math easier for everyone - we lost a lot of kids - now losing good math students
- allow kids to fail and have more time if needed
- teach kids why math is important and math is all around you in life
- make math questions less stupid and simpler
- teachers need to get the questions they give out correct in the first place
- learn long division earlier
- kidcraft wastes class time and learning time
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- lets look at strategies that work and build on them
- would prefer more worksheets to support in-class concepts at home at our convenience (not "homework" per se) - this is for elementary
- Focus a program for the "lost children" between grades 1-8 that have endured the current curriculum
- proven methods
- simplicity
- address the "lost children" and get them up to speed
- stop the failed strategy of discovery learning
- using graphics
- psychology - students become very interested in math
- using proven strategies in other jurisdictions
- focus on future students needs ie: university
- don't reinvent the wheel - what are other public/urban schools systems use that has proven to be effective
- balance - between those who are struggling and those who need more of a challenge
- different strategies - pilots
- evaluations
- training the trainers (both parents and teachers)
- look at how the reporting process is feeding into the problem
- invest in the teacher who deliver the curriculum
- making math fun, "Public Relation" type of thing



- self evaluation
- reconsider the influence you most definitely have in the process with the province - apply this with sound communication and delivery at school level
- focus on conceptual - process
- help parents understand the methods that are rooted in good research
- do not base the math strategy on trends, strong lobby groups or politics
- address math anxiety
- distinguish between students who are succeeding vs. those who are not trying
- keep children interested and engaged
- focus on sense-making
- teach the beauty of math and not just the function - what is beauty in math
- accommodating the different paces of learnings of students
- cluster students in different ways - learning styles - concept understanding
- focus on numeracy to the same degree as literacy
- bringing in math specialist for early grades (bringing the joy back into learning math)
- building the math capacity for the teachers (especially during early grades)
- segregation of classes based on ability and/or gender
- math centric focus career workshops/speakers for classroom discussions ie at early grades
- teaching foundational math in early years and more and more emphasis on critical thinking in later years
- quote "I'm in Math, not Art" - Math is a blend of science (primary) and art (secondary)
- where are the best practices in math teaching - can CBE model it
- how are gaps in learning being monitored and how reactive is the system to help minimize the fallout
- more discussion on assessments/evaluations (what is real achievement)
- expectations clearly set out ie grade on report card is 3 versus what it means to have a 2
- everyday math vs. higher concepts
- ensure every teacher can deliver the curriculum
- involvement of games in the learning process
- home math - consistent daily applications (akin to home reading)
- engagement for both stronger and less abled students
- provide resources developed by specialists so teachers have "approved" materials
- evaluation of a variety of strategies using "pilot" school
- make sure we learn fundamentals before we go into "application of concepts" ie multiplication tables before we are trying to solve everyday problems with multiplication
- make math fun but balance with daily practice of basics
- take best practices from other countries
- challenge our kids, they will rise to the challenge
- daily mathematics is key
- parents will help, use us as a resource to provide help at home, we need to be engaged in a timely fashion
- math marks should be a %, how can we measure how they are doing
- need to follow approved program of study, not experimental
- publishing resources to support what the teachers are using at the different grades
- increased time for math classes



- more instructional days to support math learning
- different ways and more assessments required to truly understand how different children can learn best. (not one size fits all)
- math strategy may be multiple strategy
- volunteers trained to support math learning
- more specialized personnel to help (math teacher experts)
- math activities, math competition = motivate
- awareness for math competition - math Olympics
- more focus on girls and math - build confidence - stem type
- differentiating instruction - challenging/supporting
- ability and resources to teach children in a way that reaches them
- support for parents - resources
- pacing of instruction - K-5 too slow? 6-12 BOOM
- building independence, starting to remove scaffolding
- math specialists in the early years
- targeted numeracy support - one-on-one support
- engaging math - find the way in
- building confidence in math
- an environment that supports risk taking - being wrong is alright - but still wrong
- growth mindset - resilience
- exposure 4, 3, 2, 1 in learning
- rubrics
- exemplars
- lag vs. lead learning - continuous feedback
- self evaluation
- reflection in math
- report card language for children
- PR - math is fun
- Stems - K-12 - number sense - Div 1 - Div 2 - Div 3 - Div 4
- progress of concepts
- competency based - problem solving in grade 2 to grade 12 - what skill do they need
- CBE celebrate
- research based practices - sound research
- connection in assessment Div 1 - Div 2 - Div 3 (4321) - Div 4 (0-100%)
- spectrum High School detrack - 9 gaps
- identify assessment with actual learning
- utilize strategies that have been successful in other places
- research informed math strategies
- grassroots involvement
- attention to common themes in the feedback
- optimizing technology to encourage enjoyment of math
- resources that align with the curriculum