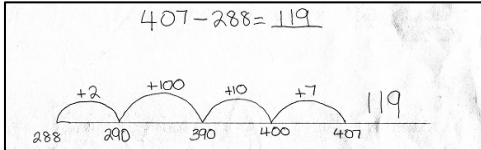


What does mathematics look like in my child's classroom?

When you were in school, you probably learned mathematics skills by watching the teacher and then practicing the skill many times. While mathematical skills are still very important, today's school mathematics programs also include attention to learning how to reason and apply understanding and skills to solve a range of real problems.

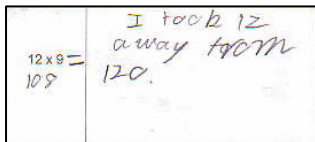


When you visit today's classroom, you might notice students...

- Interacting with each other, as well as working independently, just as adults do



- Using textbooks as only one of many resources. Manipulatives, technology, graphical displays, and measuring devices are useful tools, and students should be learning *how* and *when* to use them
- Becoming aware of how math is applied to real life problems, not just learning a series of isolated skills. As in real life, students will take time to solve multi-step problems
- Learning to communicate mathematical ideas with one another using appropriate terminology and notation. Student will use accountable talk as a regular part of all lessons



- Working in a physical setting that promotes teamwork, identifies multiple approaches and insights, and helps students challenge and defend possible solutions

- Assessing their own work products by comparing them with the expectations described by Manitoba Education, Citizenship and Youth



For grade specific information, please refer to <http://www.edu.gov.mb.ca/k12/cur/math/index.html>

- Realizing that many problems have more than one "right" answer. Students will explain the different ways they reach a variety of solutions and why they make one choice over another

Robert solved $674 - 328$ by adding 2 to each of the numbers, which maintained the difference, or distance, between them while changing it to an easier, equivalent problem.

$$\begin{array}{r} 674 - 328 \\ \downarrow +2 \quad \downarrow +2 \\ 676 - 330 = 346 \end{array}$$

Keleha solved $674 - 328$ by breaking apart 328 into $300 + 20 + 4 + 4$, then subtracting each part separately.

$$\begin{array}{r} 674 - 328 \\ \hline 674 \\ -300 \\ \hline 374 \\ -20 \\ \hline 354 \\ -4 \\ \hline 350 \\ -4 \\ \hline 346 \end{array}$$

$328 = 300 + 20 + 8$

John solved $674 - 328$ by subtracting a "nice," or easier, number to work with and then compensated for the change.

$$\begin{array}{r} 674 - 328 = \\ \downarrow \quad \downarrow \\ 674 - 330 \\ \hline 674 \\ -330 \\ \hline 344 + 2 = 346 \end{array}$$

- Working in groups to discover patterns, representations, and solutions. They will be more than "listeners;" they are highly engaged
- Reviewing peer feedback and/or teacher commentary to revise their work

The teacher may be...

- Posing problems that engage students in mathematical thinking and stimulate their interest in learning
- Moving around the room to observe students as they explore mathematical ideas
- Raising questions that encourage students to consider alternative solutions and that challenge deeper thinking about real problems
- Guiding and supporting students with leading questions
- Providing multiple pathways to learning
- Allowing students to raise original questions about math for which there is no "answer in the book" and helping students gain mathematical competence and confidence by finding their own methods and solutions
- Promoting student use of inquiry and creativity. Both teacher and students may pose new problems that are variations or extensions of a given problem
- Using manipulatives and technology as appropriate
- Explaining expectations or assessing performances by referring to the outcomes
- Collecting evidence of student learning and achievement
- Providing feedback or commentary on student work — orally or in writing
- Sharing samples of student work and indicating how it meets/exceeds expectations

- Encouraging students to be responsible for their learning and their behavior
- Assessing student understanding in a variety of ways

Mathematical Strategies:

Students are developing a variety of strategies that will allow them to solve many different types of problems. Developing a variety of strategies will also allow students to be able to add, subtract, multiply and divide mentally (without requiring pencil and paper).

Examples of operational strategies:

$100 - 36$	$\begin{array}{r} 100 \\ - 30 \\ \hline 70 \\ - 6 \\ \hline 64 \end{array}$
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$99 + 48$	$100 + 48 - 1$ $147 \checkmark$
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$20 + 21$	double 20 = 40 + 1 41
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18×20	$18 \times 20 = 36$ add on zero 360
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$26 - 9$	$\begin{array}{r} 26 \\ - 10 \\ \hline 16 \\ + 1 \\ \hline 17 \end{array}$
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$27 + 3 \rightarrow 30 \times 4 \rightarrow 120$ $3 \times 4 = 12$	$\begin{array}{r} 120 \\ - 12 \\ \hline 108 \end{array}$
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$10 \times 4 = 40$ $10 \times 4 = 40$ $7 \times 4 = 28$	80 108
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$4 \times 20 = 80$ $4 \times 7 = 28$	80 108
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Ways You Can Help:

Your support makes a big difference in your child's success in math. Please consider these:

At Home

1. Communicate a positive attitude toward mathematics. Your attitude about learning and using math will be the most important contribution you make toward your student's success in mathematics.
2. Talk with your student about what is happening in mathematics class.
3. Look for ways to connect math lessons with daily activities. Encourage your elementary student to name shapes, to count and sort items, to compare sizes and positions (inside-outside, above-below, in front-behind, right-left), to compute with money, and to tell time. Encourage your middle grader to halve recipes, estimate gas mileage, and figure restaurant tips. Ask your students how they think about these tasks and share your strategies with them.
4. If your child is bringing work home for practice, make sure there is time and a comfortable place for studying.
5. If your child asks for help, ask questions such as "What do you know?", "How did you get that?", "Why did you use that strategy?", "Is there another way?" Do not do the work for him or her, nor show him/her "a better way".



At School

1. Attend school functions and be involved in your child's school.
2. When meeting with his/her teacher, ask about the goals for your child, what kinds of assessments are used, and what you can do to help.

Mathematics in Your Child's Classroom



What is my child learning?

Curriculum outcomes are a set of expectations describing what students should know and be able to do. The curriculum outcomes for mathematics are set by Manitoba Education, Citizenship and Youth; and follow Canadian standards. They guide the instruction and the assessment in the math classroom.

Students should experience mathematics as interesting, relevant, and important. This means going beyond memorization into a world of inquiry, reasoning, and problem solving

