

## TRY THIS...

### Problem-Solving Questions

#### K - Gr. 2

- 1) My answer is 100. What is my question?
- 2) The Estimation Jar: fill a small jar with the same object and guess how many pieces are in the jar. Both adults and children can fill the jar *and* guess the quantity.

#### Gr. 3 - 6

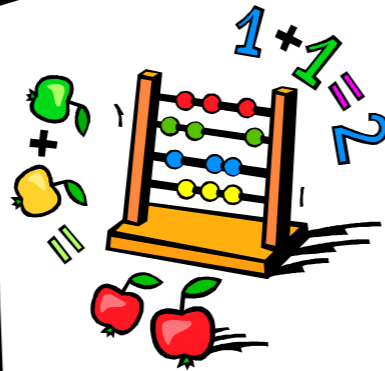
- 1) About how many letters are on one sheet of a newspaper? Explain your answer in pictures, numbers and words.
- 2) Horse Dealer - A man bought a horse for \$50 and sold it for \$60. Later he bought the same horse back for \$70 and sold it again for \$80. Did he: lose \$20, earn \$10, lose \$10, earn \$20, come out even, earn \$30, other answer.

#### Gr. 7 - 8

- 1) A prism has a volume of 120 cubic centimeters. What might it look like?
- 2) When you subtract a number from another number is the answer sometimes, always, or never less than the starting number?

*While some problems in math may have only one solution, there may be **many ways** to get to that solution.*

THAT'S NOT THE WAY I LEARNED MATH!



- ⇒ **Math In Today's Classroom**
- ⇒ **How to Help with Homework**
- ⇒ **Rote Learning vs Comprehension**
- ⇒ **Problem-Solving**
- ⇒ **How New Math is Assessed and Evaluated**
- ⇒ **Recommended Websites**
- ⇒ **Try This...**

*Parents may discover that learning math can actually provide hours of family fun!*

## MATH IN TODAY'S CLASSROOM

Adults may think that math hasn't changed since they were in school. After all, the answer to an addition problem is always going to be the same. Even though the answers to math problems haven't changed, techniques for teaching children math have changed substantially throughout the last few decades.

Today's teachers try to make math as interactive and hands-on as possible. When children are in elementary school, they will probably complete more math projects and have opportunities to explore math concepts. Parents may feel anxious asking for help with this new math because they are unsure of the new techniques being taught.

*In this brochure, teachers will provide parents with helpful tips to support math learners and a list of resources that will make that support easier.*



## ▶ HOW TO HELP WITH HOMEWORK

Routines are very important, especially in completing mathematics homework. Today's math students are asked to solve problems at home and asking good probing questions will help them to understand their thought processes and to communicate their ideas. Practising thinking about math and talking about math are equally as important as practising math facts and becoming fluent with numbers.



- ⇒ Show interest and curiosity.
- ⇒ When a child asks a question, respond by saying "That's a good question. What do you think?"
- ⇒ Give a child plenty of time to respond.
- ⇒ Don't pretend to know the answer. It is important for children to see how adults problem-solve too. Show how to go about finding an answer.
- ⇒ Ask questions about the answers. Ask whether or not the answers are correct. Ask "How did you get that answer?" before confirming it is correct or incorrect.

## ROTE LEARNING VS COMPREHENSION

### Rote Learning

- ⇒ starts with addition and subtraction, then moves on to the times tables and division
- ⇒ learners were taught to memorize mathematical information
- ⇒ application is the issue - how to apply the memorized information to a wide variety of situations
- ⇒ confused learners quickly lose interest when the memorized information is not easily applied to a variety of situations
- ⇒ those who do poorly in elementary school mathematics simply suffered through the math they had to take in high school

### Comprehension

- ⇒ building basic number knowledge is important
- ⇒ knowing how and when to use that knowledge is equally important
- ⇒ most learners who are engaged in mathematical learning are given activities that require thinking skills
- ⇒ those thinking skills include: how to approach a question and what prior knowledge is needed to problem-solve

## PROBLEM-SOLVING

### PROBLEM-SOLVING IS A PROCESS

**To do it** learners apply what they already know, what they have already experienced, and the skills they already possess.

### The Problem-Solving Process Four steps to success:

- 1) Understanding the problem by asking questions and discussing the problem in small groups, and making connections and inferences.
- 2) Planning to solve the problem by thinking about which problem-solving strategy to use.
- 3) Carrying out the plan and solving the problem by using a chosen strategy.
- 4) Looking back and checking on their work to see if their answer makes sense, look for patterns that make the answer reasonable and to reflect.

### Problem-Solving Strategies

Learning math is not only finding the correct answer, it is also a process of solving problems and applying what you have learned to new problems.

### A Variety of Strategies:

- ⇒ Use manipulatives
- ⇒ Draw a picture, diagram, or graph
- ⇒ Look for a pattern
- ⇒ Try a simpler form of the problem
- ⇒ Act It Out
- ⇒ Discuss the problem
- ⇒ Guess and check

## HOW NEW MATH IS ASSESSED AND EVALUATED

**A student's mark in math depends on their being able to . . .**

- ⇒ solve problems
- ⇒ understand the concepts
- ⇒ apply the concepts
- ⇒ communicate their answers

The focus is on *understanding* the concepts and *applying* thinking skills to arrive at an answer. Using manipulatives and finding relationships among concepts, with an emphasis on learning through problem-solving, is critical in new math. Students who understand and see the value in math, will have more success and enjoyment throughout elementary and secondary school.



### K-Gr. 2

- <http://illuminations.nctm.org/>
- <http://coolmath.com/>

### Gr. 3-6

- <http://www.ixl.com/>
- <http://www.edu.uwo.ca/essofamilymath/>

### Gr. 7/8

- <http://www2.ed.gov/pubs/parents/Math/index.html>
- <http://nlvm.usu.edu/>