

Number Sense

A Case For Using Mental Math in the SVMS Math Club.

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The SVMS Math Club Document Purpose

The purpose of this document is to discuss the philosophy behind Number Sense, why it is an important part of the SVMS Math Club and how you can help your child improve their sense of numbers.

The intended audience for this document are the parents and coaches of the SVMS Math Club.

What is Number Sense?

The philosophy behind Number Sense is that students should know

how to solve problems
in one's head

without the help of
a pencil, paper or calculator.

Number Sense is a part of the SVMS Math Club because it is a practical skill that helps us solve problems with speed and accuracy.

Why Number Sense Matters?

It is a **practical skill** that we use on a daily basis

(e.g. Counting change from a cashier, estimating time to reach a destination, checking the reasonableness of a number on a report or an answer on a test.)

Certain **problems can be solved faster** in our heads

(e.g. $88 + 28 + 12$ is solved in seconds by our SVMS Third Grade Math Club.)

It encourages a **deeper understanding of numbers**

(i.e. It pushes us to surface relationships and patterns that exist in numbers.)

It is proven that we **become faster and more adept with problem solving** when we mentally perform calculations.

Practicing Number Sense drills is also a good way to keep math concepts fresh in our minds and surface areas that we need to review.

How Do We Improve our Number Sense?

There are *three ways* we improve our sense of numbers:

- **Memorize math facts** that aide us in mental math (e.g. times tables, primes, perfect squares, percent-to-decimals.)
- **Learn math shortcuts**, faster ways to solve problems based on mathematical principles (e.g. multiplication shortcuts, how to add in our head, sifting out primes)
- **Deliberately practice** what we memorize and learn (i.e. we master any new skill through practice and taking the time to reflect on outcomes.)

Performing math mentally can be faster and encourages a deeper understanding of numbers -- but it takes practice.

Do Not Race on Number Sense

Number Sense problems appear on most math contests (e.g. the Mathleague.com contest that SVMS participates in each year); the emphasis is on *speed*.

In the SVMS Math Club, we **deemphasize speed** and give the children the **time** they need **to talk through number sense**.

- We believe this is an important part of the learning process as laid out in the Math Talk philosophy we employ in math club.
- We collaboratively “talk” through our answers to demonstrate our understanding and to surface the best approach to the problem.

Speed and **accuracy** is **naturally achieved** by learning these approaches and through consistent and **deliberate practice**.

Speed and accuracy is achieved through deliberate practice.

How You Can Help Your Child?

Math Club is 1 hour a week; of that, 10 minutes are spent on Number Sense. Number Sense concepts could use additional reinforcement. The club could use your help:

→ Number Sense problems will be made available weekly

A hard copy will be provided in your child's folder, a PDF file by email (note: loading the PDF file into iBooks on your child's device provides a nice interface for reviewing problems.)

→ Spend 10 minutes solving Number Sense problems

a couple of days a week. Draw a line or remember the page where you and your child left off. Reflect on the more challenging questions. No pencils, no paper and no stress.

→ Spend 10 minutes solving the shortcut of the week

a couple of days a week, alternating with Number Sense. A packet is provided in your child's folder and in the email each week. No pencils, no paper and no stress.

Please no worries if you cannot!

The SVMS Math Club will always be working on Number Sense. These strategies will become available on our SVMS Math Club blog in fall.

Start the drumbeat if or when it makes sense for you and your child.

Thank You!

Further information can be found at:

NRICH from Cambridge University: <https://nrich.maths.org/2477>

MathLeague.ORG: <http://mathleague.org/nsrules.php>

University Interscholastic League: <http://www.uiltexas.org/academics/stem/number-sense>