Building Number Sense Through Strategies

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Try this…

- Without writing anything, try to solve this problem mentally:

$$500 - 298$$

What was your strategy?

Was your strategy the same or different than others in your group?

Algorithms

- A set of memorized steps applicable to a class of problems that gives the correct result when the steps are carried out correctly.

Algorithms

- Learning algorithms too early may inhibit the development of a child's mathematical understanding.
- Too often children use the standard US algorithms as a replacement for thinking and common sense.

Example: 300 − 1

Strategies

- Strategies are number oriented rather than digit oriented.
- Strategies may be “left-handed” rather than “right-handed”.
- Strategies are based on an understanding of place value and number.
- Strategies provide the basis for mental computation and estimation.
- Strategies strengthen number sense.

Common Core Addition Strategies

- Add tens, add ones, then combine (aka “splitting numbers”)
- Add tens, then ones
- Number sharing to make a friendly number
- Make friendly numbers, then adjust (aka “compensation”)

Addition Strategies Links

- Two-Digit Numbers

http://youtu.be/AyygADsMHp0

- Three-Digit Numbers

http://youtu.be/xVqqPwhZRDs

Empty Number Line

46 + 38

Now try it…

55 + 37

Common Core Subtraction Strategies

- Subtract tens, then ones
- Same difference
- “Add on” to subtract
- Subtract a friendly number, then adjust

Subtraction Strategy Links

- Two-Digit Numbers

http://youtu.be/8D624ovH4s0

- Three-Digit Numbers

https://www.youtube.com/watch?v=EhmfYeFACHQ

https://www.youtube.com/watch?v=mJjfvprBeE8

Empty Number Line

73 - 46

Now try it…

82 - 57

Elapsed Time

The movie starts at 11:30 AM. It lasts 2 hours and 17 minutes. What time is the movie over?

Now try it

I put a cake in the oven at 2:45 PM. It needs to bake for 1 hours and 25 minutes. What time will it need to come out of the oven?

Common Core Multiplication Strategies

- Area model
- Partial product
- Place value (expanded form)

Multiplication Strategy Link

https://www.youtube.com/watch?v=_jmb1yM9AO4

Partial Products

73 x 46

Now try it…

82 x 57

Common Core Division Strategies

- Model drawing
- Partial quotient
- Area model

Division Strategy Links

- One-digit divisors—4th grade

https://www.youtube.com/watch?v=dKc9S4ZL0Pw

- Two-digit divisors—5th grade

http://youtu.be/83xemtR8rWE

- Quotient Café Game

http://illuminations.nctm.org/ActivityDetail.aspx?ID=224

Partial Quotients

573 ÷ 4

Partial Quotients

$5482 \div 23$

Final thought…

Math is not about memorizing as much as it is about **thinking** and **doing**!

It is about **understanding** numbers and how they can work together.

It is about knowing the **why** as much as the how!

It's about teaching your students that they can ***solve*** anything.

And giving them the ***tools*** to make it possible.