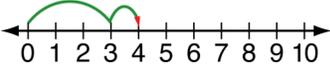When working with **elementary (PK-5th grade)** students,

You can NEVER do enough of the following things:

You Can Never Do Enough...	Because...
Modeling with **NUMBER LINES** 3 + 1 = **4** 0 1 2 3 4 5 6 7 8 9 10	• It helps to visualize addition and subtraction as movement. • It reinforces the importance of 10 in the base 10 number system. • It give students a visual representation for many topics • It is easy to draw anywhere, anytime • It is familiar to most students, so it gives most students language to enter and discuss the problem **Try it with...** Negative numbers (use wind chill as a reference)
SKIP COUNTING	• It is easy to do anywhere, anytime • It can be adapted for students at ANY grade-level • It reinforces pattern recognition and repetition, which can transition into discussions about rules and equations • It flexes the mental math muscle **Try it with...** 2's, 5's, 10's, 4's and 3's Start at a number not ending in zero and count by 10's (34, 44,....) Counting Backwards
Solving multiple types of **STORY PROBLEMS**	• Problems put in the context of a story help students visualize the action of the math. • Story problems put math into a real world context and can engage student interests. **Try it with...** <u>Non-Traditional Problems</u>: 3 + □ = 7 Story: I have 3 books. I got some more at the library. Now I have 7. How many did I get at the library? <u>Comparing Problems</u>: Sara has 6 dollars. Mike has 10 dollars. How many more dollars does Mike have?
Getting students to **EXPLAIN THEIR THINKING**	• It forces students to think about what they are doing, not just getting the answer. • It gives better insight into student understanding and reveals misconceptions. **Try it with...** "How did you figure that out?" "So you are saying..." or "Why did you do it that way?"

You Can Never Do Enough...	Because...
Creating **EQUIVALENT** **NUMBER SENTENCES**	• Students struggle with the ideas that 2 things that look different can be equal to one another. • It emphasizes the meaning of the = (equal sign) as "the same as" rather than "the answer comes next." • It sets the stage for the work students will do when the begin to study algebra. **Try it with...** True and False Problems $5 = 5$ $7 = 3 + 4$ $3 = 1 + 0 + \frac{1}{2} + 1$ $5 + 5 + 1 = 5 + 6$ Open Number Sentences $4 + \square = 10 + 4$ $10 + \square = 20 + 17$ $6 \times 6 = 12 \times \square$
Assuring students have a **FLEXIBLE UNDERSTANDING** **OF THE BASE TEN** **NUMBER SYSTEM**	• Many students enter middle school lacking a deep understanding of place value. • The ability to decompose (break apart) numbers flexibly is key to solving problems efficiently and estimating answers. **Try it with...** Decomposing and composing whole numbers in multiple ways. $42 = 20 + 20 + 2$ or $42 = 40 + 2$ or $42 = 10 + 12 + 20$ Looking at a number and stating it's value accurately. 432 ← 30 Using partial sums, differences, products, and quotient strategies. $\begin{array}{r}436\\+\underline{129}\\500\ (400+100)\\50\ (30+20)\\+\ \underline{15}\ (6+9)\\565\end{array}$ $\begin{array}{r}729\\-\underline{457}\\300\ (700-400)\\-30\ (20-50)\\\underline{2}\ (9-7)\\272\end{array}$ $\begin{array}{r}26\\\times\underline{34}\\600\ (30\times20)\\180\ (30\times6)\\80\ (4\times20)\\+\ \underline{24}\ (4\times6)\\884\end{array}$ $\begin{array}{r}14\\4\,\overline{)\,56}\quad10\\-\ \underline{40}\\16\quad4\\-\ \underline{16}\\0\end{array}$ *What can I multiply 4 by that will get me close to 56?*
SUBITIZING NUMBERS **SUBITIZE**: Immediately recognizing the number in a collection without counting.	• In order to move beyond simple counting by one strategies, students need to see numbers as sets rather than counting them 1 by 1. • It allows students to begin doubling and tripling. **Try it with...** Doubles 10s +