

Operation

Addition:

Add in ten frames, make ten, ask students to visualize making tens.

Make friendly numbers.

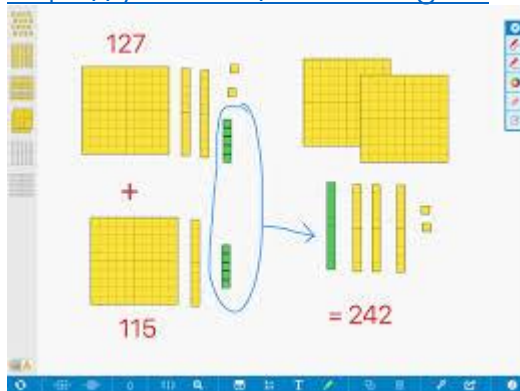
Work on strategies of addition: Doubles, doubles plus one, doubles minus one, making ten, adding ten, adding nine, etc.

Help students name their strategies and explain reasoning.

Use number strings from number talk books.

Teach Regrouping (carrying). Use base ten blocks.

<https://youtu.be/bkcUfPlwgMU>



- The rule is we cannot have more than nine of any shape.
- Ask students to add large numbers and when they have more than nine unit blocks, exchange ten of them for a ten-rod.
- More than nine ten-rods, exchange ten of them for a hundred-flat.
- More than nine hundred-flats, exchange ten of them for a thousand-cube and so on.

Connect the base ten work with the algorithm. Students must connect the act of exchanging ten unit blocks for one ten-rod with “carrying” the one in the algorithm. This is mathematical *connections* as per the mathematical processes in curriculum.

Work on fluency with addition. Use flash cards, games, programs, and especially number strings.

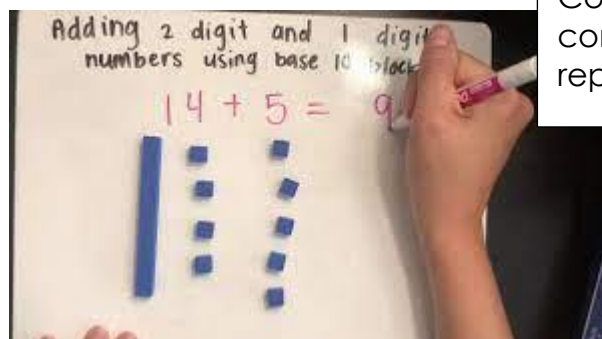
Review the place value chart with “families”

Place Value

Billions			Millions			Thousands			Ones			Decimals		
Hundred Billions	Ten Billions	Billions	Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
Standard Form														
Word Form														
Expanded Form														

Fact families: Every time we write an addition statement, there are three other statements: One other addition statement, and two subtraction statements.

For example: $14 + 5 = 19$



Connecting concrete to abstract representation

Then:

$$5 + 14 = 19$$

$$19 - 14 = 5$$

$$19 - 5 = 14$$

Also teach the algorithm, or “stacking”

This is a “fact family” for addition and subtraction. It helps students see subtraction as the reverse of addition. We have many students that are fluent at adding but struggle with subtraction because we don’t make this connection often enough.

For students grade 3 and up, point out the commutative property of addition. Ask if subtraction is commutative.

Move on to **subtraction**. Teach strategies such as number line, open number line, compensating (friendly numbers) and of course the algorithm ("stacking").

Have students model subtraction with base ten blocks. Here is how we demonstrate regrouping for subtraction, or "borrowing".

Ex: $23 - 8$

Give the student 43 base ten blocks—four rods and three units.



When you ask the student for 8 ones, they will have to exchange a rod for 10 units, then give you eight.

Be sure to then show the algorithm, and connect the exchanging of the rod to "borrowing" from the tens column.

(This is why the term "regrouping" is more accurate than "borrowing".)

Review the "strategy cards" in this section, as well as the ministry documents from the Numeracy Project.