Math Strategies

Addition:

Expanded Form

Breaking Down

Stacking

Subtraction:

Breaking Down

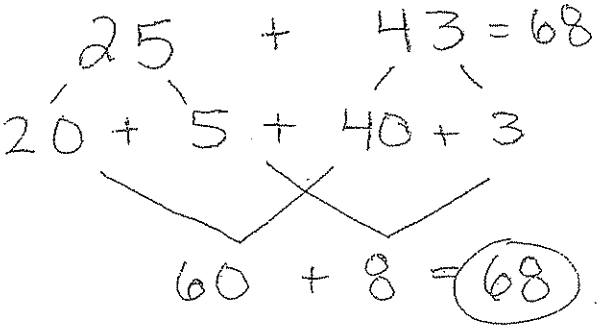
Number Line

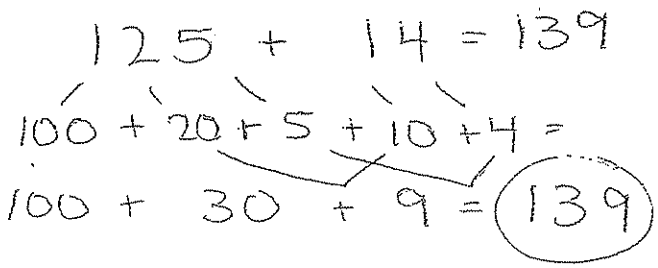
Expanded Form (only used for addition):

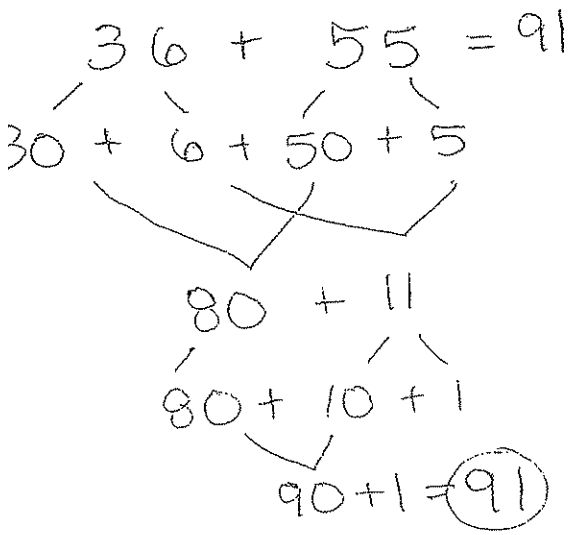
What it means:

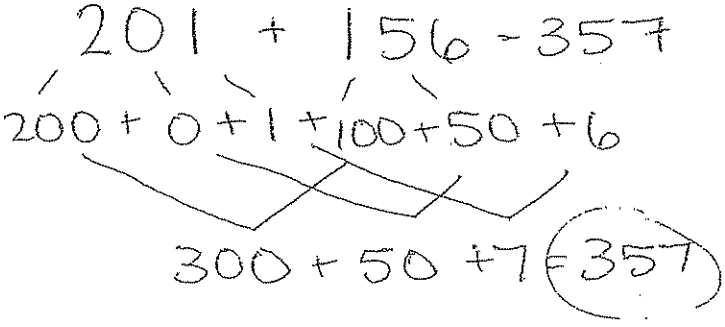
This is when you break down each number to show its actual value (what place value it is in, how much does that mean) and then add the same place values together first (the tens with the tens, etc).

What it looks like:







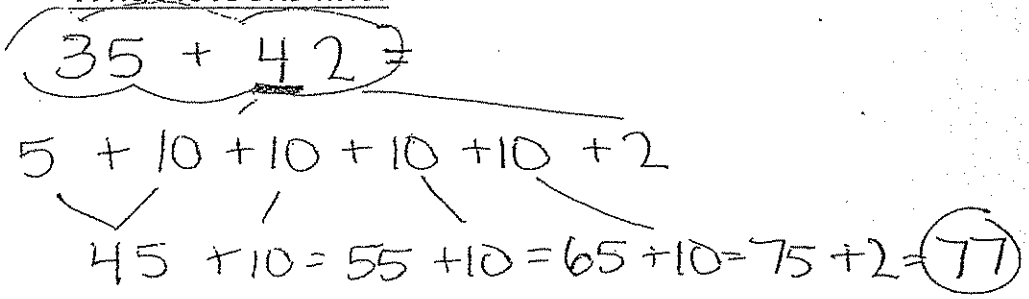


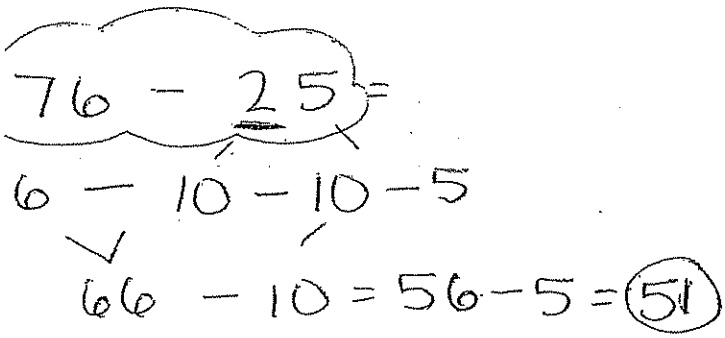
Breaking Down (can be used for both adding and subtracting)

What it means:

Breaking down is when we make the numbers into friendlier numbers, easier to add or subtract. We can do this by splitting the number up. The rules are to leave the first number, don't change it! You ONLY change the second number. We broke the second number down by tens, then ones. Once they get better, they could change it to whatever they want (example 12 could become 10 and 2 or 6 and 6 or 7 and 5, whatever they want!)

What it looks like:





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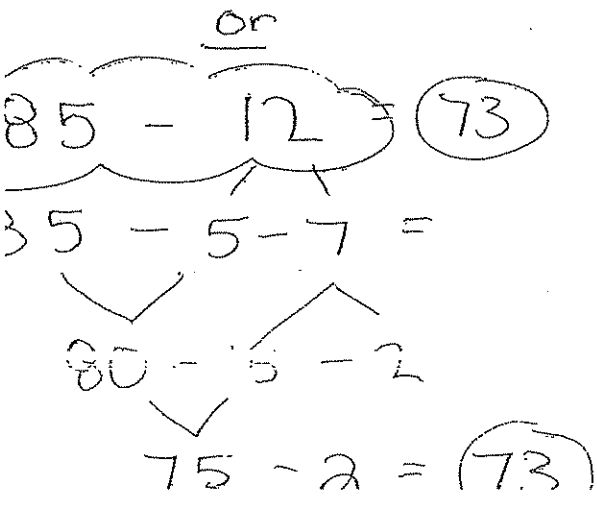


Number Line (for subtraction)

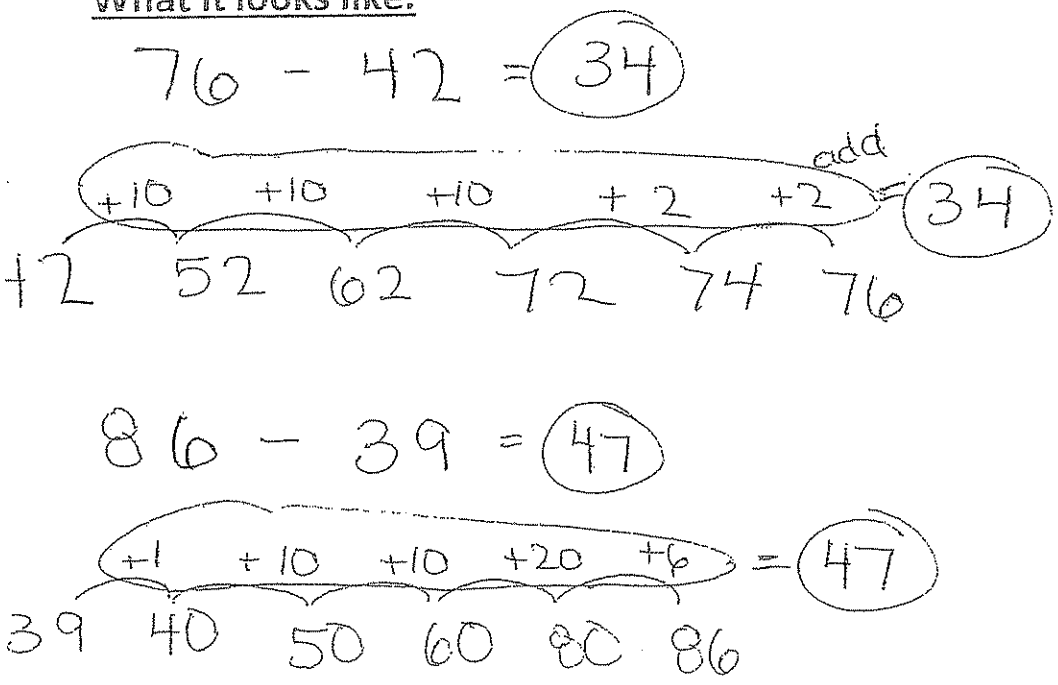
What it means:

The rule for this is to change the subtraction equation into an addition equation. We do this by starting at the lowest number, and adding to it until we reach the biggest number. We then add up all the numbers we added to the lowest number, and that's your answer!

Students have been taught to try and make the number into a friendly number (if your number is 29, they first add 1 to get to 30, and then it is easier to add to!)

Some students get confused and try to use the number line backwards (start at highest number and subtract the second number). This can work, but is more confusing and leaves more room for error. Number line should be used for subtracting, but change it around because adding is always easier!

What it looks like:



Stacking

What it means:

Stacking is very similar to expanded form. We add them in order of place value, stacking the answers. I don't like to use this, as it reminds students of borrowing and carrying way, which is no longer used.
Start with highest place value!

What it looks like:

36
+ 54
80 (30 + 50)
+ 10 (6 + 4)
90

126
+ 253
300 (100+200
70 (20+50)
9 (6+3)
379

46
+ 29
60 (40 +20)
15 (6+9)
75

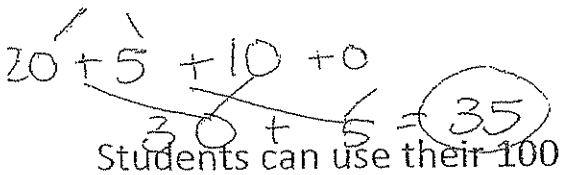
Adding 10 or Multiples of 10

We have been learning the strategy of counting by tens and the patterns that you see (the only thing that changes is the number in the ten place, the ones place stays the same).

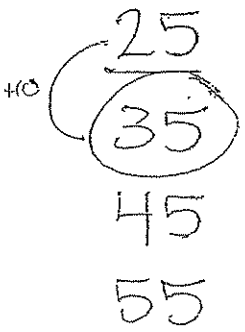
We have done many questions with just adding 10 and then later, we added multiples of ten. Students have learned that if they are using the 100 chart, they don't have to count 10, they can just go down in the column, as that is another ten!

25 + 10

Students can do this expanded form which would look like this:



Students can use their 100 chart. Find the number 25, go down one column as that is another 10 (for the first couple times, you could have them count the ten, so they can see they always end up right below their number).



Students may also build the number using base ten blocks

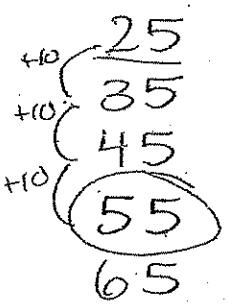
|=stands for 10 ∘ = stands for one.

Whichever way they decide to find their answer, point out that the only number that changes is the tens place by underlining and see how the ones always stay the same (have them show this on each question by underlining the 10s spot).

Multiples of 10

To add multiples of ten (25 +30) they can use the same strategies listed as above.

If they use the 100 chart, they still go down, but they have to see how many times to move down. Example, for 25 +30, they move down three times (10, 20, 30). Have them count allowed to make sure they are doing it properly!



Expanded form would look the same:

25 + 30 =

20 + 5 + 30 + 0 =

20 + 5 = 55

Strategies for understanding and memorizing basic facts:

(All of these strategies for basic facts will help them with harder questions and the main strategies)

1. Property of Zero
2. Using Doubles
3. Making Tens
4. Commutative Property (Flip-flop)

1. Property of Zero

When adding or subtracting by zero, number stays the same!

0+1=1

1-0=1

2. Using Doubles:

Students should be able to easily add all doubles such as:

1+1=2 2+2=4 3+3=6 4+4=8 5+5=10 6+6=12

7+7=14 8+8=16 9+9=18 10+10=20

Once they know these facts, they can use them to add similar questions (near doubles)

Near Doubles

Most students know their double facts inside and out (1+1=2, 2+2=4 and so on). They can use what they know to help them with harder questions.

Example: 3+5=
We can use the double fact 3 +3 to help. 3+ 5 is 2 more than 3+3.
So we can do 3+3 is 6, plus two more is 8!

4+5 =
4+4 + 1 = 9.

6+7=

Students think: I know that 6+6=12, so one more is 13. 7+6 =13.

Making 10:

Students need to know which facts add up to 10:

1+9=10 9+1=10

2+8=10 8+2=10

3+7=10 7+3=10

4+6=10 6+4=10

5+5=10 5+5=10

They can then use making ten strategy to help them with similar questions.

2+9= I know that 1+9 = 10, so one more is 11!

Examples:

8+5=

I know that 8+2 equals 10, but I need to add three more, so that is 13!

Or

I know that 10+5=15, which is two more than 8+5, so 15-2 is 13!

9+2 =

I know that 9+1 equals 10, plus one more is 11!

9 +4 =

I know 10 +4 is 14, minus one is 13!

Or rounding up the number to make 10 (it is a friendly number, so easier to add).

2+9=

Change the 9 to a 10, and then only add 1 so 11.

Another example:

9+4 = 10 +3 = 13.

Commutative property (fancy word for flip flop equations!)

Students should know that if you change around the numbers, it won't change the answer!

6+4=10

4+6=10.

Related Facts or Fact Families

Students need to recognize that if you know 3+2= 5, you know 2+3 = 5. They can then reverse the equation. 5-2= 3 or 5-3=2. There are always four equations in a fact family, 2 addition and 2 subtraction.

Example: 5 - ? = 3. For this, I make them think of backwards addition. What do you have to add on to 3, to get 5? 2. So 5 -2 = 3.

A lot of students think subtraction is harder, but are quite amazed to learn that it is just addition backwards!

Using a "friendly" number (often tens, or hundreds, etc).

See the poster attached of friendly numbers

Even numbers are friendly numbers (easy to count by, think counting by 2's)

5's are friendly numbers (we learned to skip count by 5's so it is pretty easy!)

Any number that ends in zero, as it is easy to skip count by tens and add on

Example: 8 +4= I know 8 +2 is 10, so add another 2 is 12! 8+4=12

You can practice this by listing a whole bunch of questions, and then your child has to change it around and write the answer again.