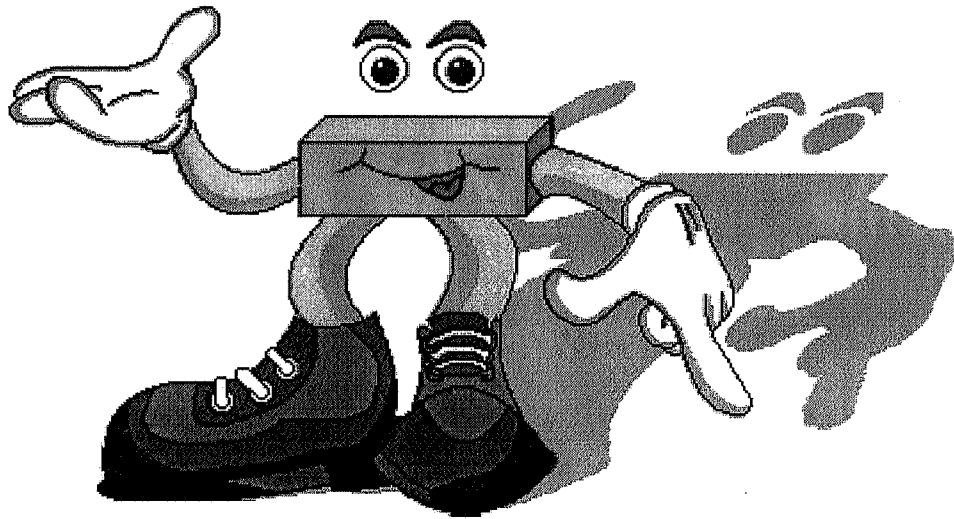


Subtraction Strategies and Algorithms



Count Back on a Number Grid

What is it?

Students start at the biggest number and count back.

When do I use it?

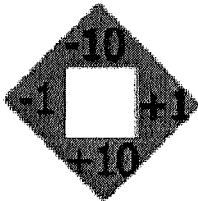
Students use this strategy for subtracting two digit numbers.

Example:

$$43 - 27 = ?$$

- Start at 43
- Subtract 20
- Move up 2 rows to 23
- Subtract 7
- Count back 7 to 16

$$43 - 27 = 16$$



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Milestones:

Look for children to begin to do this process mentally without the aid of a number grid.

Counting-Up Subtraction Method

What is it?

Starting at the smaller number, count up to make the nearest ten, count on by tens and hundreds, and then count up by ones. Finally, add all of the numbers you added on to find the difference.

When do I use it?

Students use this strategy when subtracting two digit (or larger) numbers.

Example:

Subtract 89 from 347 by counting up.

Write the smaller number and count up to the larger number.
Each time you count up, circle that number.

$$\begin{array}{r} 89 \\ + \textcircled{1} \\ \hline 90 \\ + \textcircled{10} \\ \hline 100 \\ + \textcircled{200} \\ \hline 300 \\ + \textcircled{47} \\ \hline 347 \end{array}$$

Count up to the nearest 10.

Count up to the nearest 100.

Count up to the largest possible hundred.

Count up to the larger number.

Next, add the numbers you circled. $1 + 10 + 200 + 47 = 258$
You counted up 308. Therefore, $347 - 89 = 258$

Milestones:

Look for students to begin to do this mentally, and to cluster their addition into fewer groups.

Partial-Differences

What is it?

In this method the children subtract from left to right, one column at a time.

In some cases, the larger number is on the bottom and the smaller number is on the top. When you subtract these numbers, the difference will be a negative number.

When do I use it?

Students use this algorithm for subtracting two digit (or larger) numbers. (Proceed with caution and watch for misconceptions.)

Example:

$$835 - 472 = ?$$

Subtract the 100s	$800 - 400$
Subtract the 10s	$30 - 70$
Subtract the 1s	$5 - 2$
Find the total.	$400 - 40 + 3$

$$\begin{array}{r} 835 \\ -472 \\ \hline 400 \\ - 40 \\ \hline 3 \\ \hline 363 \end{array}$$

When subtracting 70 from 30, think of first subtracting 30 and then subtracting 40 more.

$$30 - 30 - 40 = -40$$

$$835 - 472 = 363$$

Milestones:

This algorithm may be used in place of or concurrently with the traditional subtraction algorithm.

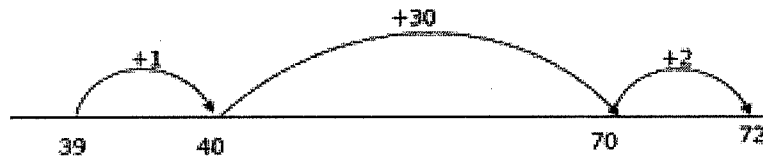
Students who have a strong number sense will quickly understand that subtracting a larger number from a smaller number will result in a negative difference.

Students who have a strong understanding of subtraction will be able to subtract the larger number from the smaller number regardless of its position in the problem as well as understand whether the answer is positive or negative.

Open Number Lines

Subtracting 2 digits from 2 digits:

I need 72 dollars to buy a skateboard. I have 39 dollars already. How many more dollars do I need to save?



Place 39 near the start of the open number line and 72 near the end. We can count up in 'friendly' jumps to reach 72. First a jump of 1 to reach 40 (multiples of ten are easy numbers to jump to and from), then a jump of 30 to reach 70 and finally a jump of 2 to reach our target of 72. I need to save 33 more dollars.