shelley grays

FOURTH GRADE

ADDITION & SUBTRACTION STRATEGY GUIDE

SUBTRACTION STRATEGIES

QUICK REFERENCE CARDS FOR FOURTH GRADE

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○ LEFT-TO-RIGHT ADDITION

Add the thousands first, then the hundreds, ~~the~~ ones.

~~?~~, first add 20+10 to ~~m~~ake 5. Then add 30+5

~~S:~~

313=9515	34+13=47
~~17~~	256+122=378
0=9921	13+14=27
~~481~~	43+24=67
	75+13=88

○ USING FRIENDLY NUMBERS

"Bridge" to a friendly number, and then add the remainder. (Number lines are useful for this strategy.)

Example: For 418+6, start with 418 and add 2 to get to 420, then add the remaining 4 to make 424.

SAMPLE EQUATIONS:

466+7=473	116+7=123
79+4=83	4857+9=4866
615+7=622	1675+6=1681
67+5=72	2108+5=2113
1217+5=1222	345+6=351

introduction

Hi there! I'm Shelley Gray, and I want to challenge you to focus intensively on math facts this school year. Let's stop seeing math facts as an isolated math unit, and begin integrating them wherever possible into our math and daily routines.

A solid understanding of math facts in early grades will help your students as they progress to later grades. Imagine how simple long division and multi-digit multiplication can be when the basic facts are already mastered?

strategy vs. memorization

When we think about mastery of the math facts, we tend to think about getting a quick answer. Automaticity is a goal. This means that students can solve a fact within 1-3 seconds, and just "know" the answer. But there is more to it!

We want to teach our students to be <u>flexible</u> thinkers when it comes to solving an equation. This means that they are able to manipulate the numbers in different ways in order to solve a problem. The steps that one student takes to solve a problem might be very different than the steps that another student takes. We want to celebrate this flexible thinking!

Math fact fluency should not be based on the ability to perform a memorized series of steps. It is so much more than that.

big goals

Throughout your math fact instruction and practice this year, try to keep three main words in mind when it comes to how your students are solving a problem or equation: EFFECTIVE, EFFICIENT, FLEXIBLE. Is the strategy effective and efficient (is it quick and works well)? Are they able to think flexibly with the numbers?

how to use this guide

This guide is intended as a reference guide for the various mental math strategies that are best-suited to your particular grade level.

It can be really confusing to teach math strategies. How do you integrate them? When do you move on to the next one? How do you differentiate to the different ability levels?

My hope is that this guide gives you a starting point for reinforcing the strategies. Begin with the first strategy, allow your students to master it, and then move along to the next one.

If you are not in our 30-Day Math Fact Challenge private Facebook group yet, be sure to join so that you collaborate with other teachers who have the same goals as you. Join here: https://www.facebook.com/groups/424672038022627/

resources

You do not need to purchase any resources to reinforce these strategies. You simply need a commitment to teaching and reinforcing them throughout the year.

However, if you would like a complete system to help you do this, here is a link to The Fourth Grade Addition Station and The Fourth Grade Subtraction Station, which will reinforce all of the strategies that are outlined in this guide. The entire Addition and Subtraction Station programs are self-paced so that students will move through the strategies as they feel ready.

Addition Station:
https://www.teacherspayteachers.com/Product/The-Addition-Station-Fourth-Grade-1833131

Subtraction Station:
https://www.teacherspayteachers.com/Product/The-Subtraction-Station-Fourth-Grade-2263806

whats included?

In this strategy guide you will find Quick Reference Cards and a timed test for assessment.

QUICK REFERENCE CARDS

The Quick Reference Cards can be laminated and put on a ring for quick and easy reference to the strategies that are best suited for this grade level.

They can also be used for oral assessments. I highly recommend oral assessments to assess math strategy knowledge. When you SEE a student solve an equation, you get a far different perspective than you do when you simply mark a written solution.

Oral assessments enable you to see which facts/strategies a student struggles with, which ones are quicker than the rest, and which strategies are used to solve a problem.

Oral assessment is the assessment method that is used in all of my math stations. Although this might seem like a huge task, it only takes about 1-2 minutes, and many teachers report that it is their favorite part of using the stations.

If you would like to try oral assessments, you can use the Quick Reference Cards from the previous few pages as a guide. Look for the following:
- Is he using an effective strategy to solve the equation?
- Is his strategy efficient? (meaning that he can solve the equation in 1-3 seconds)
- Can you see flexibility in his thinking? (is he able to manipulate the numbers in a flexible way to make the strategy work for him?)

TIMED TESTS

Timed tests do not work for every student. However, they can be useful to assess fact recall.

I've included a timed test sheet following the Quick Reference Cards.

IF you choose to use them in your classroom, here are some ideas for use:

- Focus on self-improvement and self-growth over time rather than competition with classmates.
- Do not force a student to perform a timed test if it causes stress to him/her.
- Have students perform the assessment once every 2 weeks to assess self-improvement.
- Only expect to see growth if fact practice is a regular part of the classroom routine.

ADDITION

PAGES 7-11

ADDITION STRATEGIES

QUICK REFERENCE CARDS FOR FOURTH GRADE

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PLUS 0

Any number plus 0 equals that number.

Example: 16+0=16

SAMPLE EQUATIONS:

110+0=110	1255+0=1255
250+0=250	409+0=409
2392+0=2392	64+0=64
655+0=655	2003+0=2003
30+0=30	388+0=388

PLUS 1

Any number plus 1 is one more than that number.

*Extend to 10's, 100's, and 1000's.

Example: If 6+1=7, then 60+10=70 and 600+100=700

SAMPLE EQUATIONS:

221+1=222	30+10=40
1097+1=1098	400+100=500
564+1=565	7000+1000=8000
477+1=478	50+10=60
2909+1=2910	2000+1000=3000

PLUS 2

Any number plus 2 is two more than that number.

*Extend to 10's, 100's, and 1000's.

Example: If 6+2=8, then 60+20=80 and 600+200=800

SAMPLE EQUATIONS:

256+2=258	40+20=60
1981+2=1983	500+200=700
457+2=459	80+20=100
2036+2=2038	6000+2000=8000
562+2=564	300+200=500

PLUS 3

○

Any number plus 3 is three more than that number.

*Extend to 10's, 100's, and 1000's.

Example: If 6+3=9, then 60+30=90 and 600+300=900

SAMPLE EQUATIONS:

822+3=825	40+30=70
467+3=470	500+300=800
1075+3=1078	6000+3000=9000
245+3=248	70+30=100
1001+3=1004	400+300=700
3275+3=3278	200+300=500

DOUBLES

○

Have your students try to memorize the doubles facts. Then practice extensions to the tens, hundreds, and thousands.

Example: If 3+3=6, then 30+30=60 and 300+300=600

SAMPLE EQUATIONS:

1+1=2	4+4=8	8+8=16
2+2=4	5+5=10	9+9=18
30+30=60	6+6=12	10+10=20
300+300=600	7+7=14	11+11=22
40+40=80	70+70=140	12+12=24
3000+3000=6000	4000+4000=8000	

DOUBLES PLUS ONE

○

The double plus one more. Also, extend to tens and hundreds.

Example: If 3+4=7, then 30+40=70 and 300+400=700.

SAMPLE EQUATIONS:

5+6=11	2+3=5	11+12=23
9+10=19	7+8=15	10+20=30
1+2=3	6+7=13	60+70=130
3+4=7	4+5=9	300+400=700
8+9=17	10+11=21	200+300=500
3000+4000=7000	4000+5000=9000	

DOUBLES PLUS 2

○

The double of the number plus 2 more. Also, extend to tens and hundreds.

Example: If 3+5=8, then 30+50=80 and 300+500=800.

SAMPLE EQUATIONS:

200+400=600	8+10=18
3+5=8	2+4=6
30+50=80	5+7=12
7+9=16	50+70=120
6+8=14	10+12=22
1+3=4	100+300=400
3000+5000=8000	2000+4000=6000

○ MAKING 10, 100, AND MAKING 1000

Know the addition facts that make 10. Use these facts to make 100 and 1000.

Example: "What can you add to 6 to make 10? What can you add to 60 to make 100?"

SAMPLE EQUATIONS:

8+____=10	3+____=10	30+____=100
4+____=10	7+____=10	20+____=100
6+____=10	10+____=10	400+____=1000
1+____=10	2+____=10	50+____=100
9+____=10	5+____=10	700+____=1000

○ ADDING 10'S AND 100'S

Add groups of 10 or 100 to the tens and hundreds place.

Example: To solve 234+20, just add two groups of 10 to the tens place to make 254.

SAMPLE EQUATIONS:

73+10=83	3000+700=3700
449+30=479	5314+40=5354
127+20=147	7600+200=7800
780+200=980	275+400=675
6145+200=6345	569+10=579

○ PLUS 7, 8, AND 9 (FOR NUMBERS ENDING IN 7, 8, OR 9)

Take from one number and give to the other to make a number that is easier to work with.

Example: For 226+8, think, "I could take 2 from the 226 and add it to the 8 to make 10, and then add the leftover 224 to make 234."

SAMPLE EQUATIONS:

829+8=837	77+9=86
427+6=433	39+5=44
568+7=575	5018+5=5023
48+8=56	108+4=112
6819+2=6821	509+4=513

○ ADDING 1000'S

Add groups of 1000 to the 1000's place.

Example: For 324+1000, add one group of 1000 to make 1324.

SAMPLE EQUATIONS:

1002+1000=2002	1346+1000=2346
389+2000=2389	231+2000=2231
354+1000=1354	719+1000=1719
2441+3000=5441	367+1000=1367
6873+2000=8873	2445+3000=5445

○ USING FRIENDLY NUMBERS

"Bridge" to a friendly number, and then add the remainder. (Number lines are useful for this strategy.)

Example: For 418+6, start with 418 and add 2 to get to 420, then add the remaining 4 to make 424.

SAMPLE EQUATIONS:

466+7=473	116+7=123
79+4=83	4857+9=4866
615+7=622	1675+6=1681
67+5=72	2108+5=2113
1217+5=1222	345+6=351

○ LEFT-TO-RIGHT ADDITION

Add the thousands first, then the hundreds, then the tens, then the ones.

Example: To solve 23+12, first add 20+10 to make 30, then 3+2 to make 5. Then add 30+5 to make 35.

SAMPLE EQUATIONS:

12+45=57	7202+2313=9515	34+13=47
115+212=327	23+24=47	256+122=378
80+19=99	7611+2310=9921	13+14=27
61+18=79	180+301=481	43+24=67
31+32=63	54+11=65	75+13=88

○ BREAK UP THE SECOND NUMBER

Break the second number into its expanded form and then add in parts.

Example: To solve 25+34, first add 25+30 to make 55, then 55+4 to make 9.

SAMPLE EQUATIONS:

18+11=29	1423+350=1773
120+25=145	93+24=117
43+32=75	202+374=576
56+42=98	35+57=92
167+121=288	25+33=58

○ COMPENSATION

Change one of the addends to make it more manageable. Then adjust the sum to make up for the original change.

Example: To solve 34+49, first solve 34+50 to make 84. Since we added one to the equation, we take 1 away from the answer to make 83.

SAMPLE EQUATIONS:

32+38=70	1213+211=1424
41+72=113	2500+313=2813
64+47=111	510+213=723
302+39=341	240+141=381
250+252=502	22+62=84

How many equations can you solve in 1 minute?

176+3=_____

50+60=_____

500+300=_____

77+9=_____

200+100=_____

11+11=_____

4000+2000=_____

39+5=_____

7+7=_____

1456+400=_____

11+12=_____

145+2=_____

600+400=_____

1242+0=_____

30+50=_____

900+900=_____

3289+400=_____

600+800=_____

68+7=_____

4000+4000=_____

200+800=_____

2447+2=_____

829+8=_____

509+4=_____

40+20=_____

80+90=_____

465+3=_____

2544+1000=_____

300+300=_____

319+5=_____

4000+1000=_____

388+300=_____

2000+3000=_____

2867+30=_____

456+0=_____

346+10=_____

4377+1=_____

26+41=_____

3551+400=_____

40+60=_____

500+200=_____

12+12=_____

7229+5=_____

70+30=_____

2490+1=_____

3651+20=_____

40+30=_____

2000+4000=_____

2097+0=_____

200+300=_____

617+5=_____

500+500=_____

6799+2=_____

58+6=_____

856+15=_____

900+100=_____

222+555=_____

500+500=_____

306+12=_____

8+8=_____

DATE: _____   TOTAL: _____   MY GOAL FOR NEXT TIME: _____

SUBTRACTION

PAGES 13-18

SUBTRACTION STRATEGIES

QUICK REFERENCE CARDS FOR FOURTH GRADE

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PROPERTIES OF 0

A number subtract 0 equals that same number. A number subtract that same number equals 0.

Example: 5-0=5 and 5-5=0

SAMPLE EQUATIONS:

2340-2340=0	67-0=67	112-0=112
204-0=204	4012-0=4012	92-0=92
47-47=0	191-0=191	410-410=0
1200-1200=0	56-0=56	98-98=0
59-0=59	27-27=0	94-94=0

ONE LESS

-1 means one less. Extend this to tens and ones.

Example: If 8-1=7, then 80-10=70 and 800-100=700.

SAMPLE EQUATIONS:

43-1=42	29-1=28	70-10=60
990-1=989	200-100=100	60-1=59
30-10=20	14-1=13	30-1=29
20-1=19	87-1=86	500-100=400
90-80=70	300-100=200	18-1=17
3000-1000=2000		6000-1000=5000

TWO LESS

-2 means two less. Extend this to tens and ones.

Example: If 8-2=6, then 80-20=60 and 800-200=600.

SAMPLE EQUATIONS:

30-20=10	57-2=55	80-20=60
92-2=90	600-200=400	13-2=11
44-2=42	70-20=50	60-20=40
500-200=300	97-2=95	25-2=23
85-2=83	37-2=35	50-2=48
7000-2000=5000		5000-2000=3000

COUNTING BACK

○

Count back to subtract 1, 2, 3, or 4.

Example: For 115-4, think: "115...114, 113, 112, 111."

SAMPLE EQUATIONS:

1877-4=1873	58-4=54	7301-3=7298
51-3=48	675-4=671	14-2=12
80-3=77	35-3=32	9820-3=9817
289-2=287	650-3=647	55-2=53
9202-2=9200	40-4=36	84-3=81

COUNTING UP

○

Start with the smaller number and count up to the bigger one when the difference is 4 or less.

Example: For 25-21, think: "21...22, 23, 24, 25." We counted up 4, so the difference is 4."

SAMPLE EQUATIONS:

458-455=3	36-32=4	1422-1419=3
51-48=3	300-297=3	600-598=2
510-506=4	67-64=3	72-70=2
17-15=2	1210-1207=3	32-29=3
56-53=3	220-216=4	89-85=4

THINK ADDITION

○

Use addition to subtract.

Example: For 15-10, think: "What can I add to 10 to make 15?"

SAMPLE EQUATIONS:

1190-100=1090	20-9=11	100-65=35
29-8=21	63-30=33	301-201=100
1322-10=1312	3-2=1	20-7=13
314-307=7	812-800=12	18-8=10
800-500=300	25-15=10	70-50=20

USING DOUBLES

○

Use the doubles facts. Also, extend this to the tens and hundreds.

Example: If 6-3=3, then 60-30=30 and 600-300=300.

SAMPLE EQUATIONS:

14-7=7	22-11=11	10-5=5
6-3=3	8-4=4	60-30=30
24-12=12	18-9=9	400-200=200
16-8=8	12-6=6	800-400=400
20-10=10	4-2=2	8000-4000=4000
6000-3000=3000		4000-2000=2000

○ USING NEAR DOUBLES

Use the addition doubles plus 1 facts to solve. Then extend this to the tens and hundreds.

Example: If 9-4=5, then 90-40=50 and 900-400=500.

SAMPLE EQUATIONS:

3-1=2	11-5=6	5000-3000=2000
300-200=100	13-7=6	17-8=9
17-9=8	5-2=3	130-60=70
90-40=50	21-10=11	7000-3000=4000
19-9=10	15-7=8	21-11=10

○ USING COMBINATIONS OF 10 AND MULTIPLES OF 10

Use the addition combinations that make 10, and expand that knowledge to multiples of 10.

Example: For 10-7, think: "I know that 3 and 7 makes 10, so the difference is 3."

SAMPLE EQUATIONS:

80-4=76	10-7=3	20-5=15
20-8=12	20-3=17	50-2=48
10-5=5	70-9=61	60-1=59
20-14=6	20-10=10	20-6=14
90-6=84	20-9=11	10-8=2

○ USING COMBINATIONS OF 100 AND 1000

Use the addition combinations of 100 and 1000 to subtract.

Example: For 1000-700, think, "What can I add to 700 to make 1000?"

SAMPLE EQUATIONS:

100-20=80	100-70=30
1000-500=500	100-50=50
100-40=60	1000-800=200
100-90=10	100-80=20
1000-300=700	1000-600=400

○ BACK TO A FRIENDLY NUMBER

Decompose the subtrahend to get to a friendly number (10, 20, 50, 100, etc.) first. Then subtract the rest.

Example: For 14-5, do 14-4 first to get to 10, then subtract 1 more to make 9.

SAMPLE EQUATIONS:

65-6=59	14-6=8	72-4=68
24-5=19	46-7=39	225-7=218
364-12=352	71-5=66	25-6=19
17-9=8	14-7=7	12-7=5
156-7=149	17-8=9	32-5=27

UP TO A FRIENDLY NUMBER

Start with the smaller number and go up to a "friendly number" (easy to work with), and then add the rest.

Example: For 61-54, think: "I can add 6 to 54 to get to 60, and then 1 more to get to 61, so the difference is 7."

SAMPLE EQUATIONS:

213-199=14	250-198=52	55-42=13
45-28=17	34-17=17	24-18=6
172-165=7	180-95=85	62-26=36
105-96=9	404-390=14	100-31=69
25-19=6	44-18=26	88-16=72

SUBTRACTING MULTIPLES OF 10 AND 100

Subtract groups of 10 from the tens place and groups of 100 from the hundreds place.

Example: For 43-20, think: "43 subtract 2 groups of 10 makes 23."

SAMPLE EQUATIONS:

61-50=11	772-30=742
34-20=14	841-30=811
38-10=28	356-200=156
237-20=217	44-10=34
198-60=138	3814-600=3214

SUBTRACT 7, 8, AND 9

First subtract 10, then make up for the difference.

Example: For 45-9, think: "45 subtract 10 is 35, then add 1 (since we took away one extra) to make 36."

SAMPLE EQUATIONS:

45-9=36	132-7=125	76-9=67
64-8=56	562-8=554	104-8=96
82-7=75	102-7=95	1425-9=1416
34-8=26	313-7=306	441-9=432
112-9=103	153-8=145	313-7=306

SUBTRACT 1000 AND MULTIPLES OF 1000

Take groups of 1000 away from the thousands place.

Example: For 3429-2000, think: "3429 subtract 2 groups of 1000 makes 1429."

SAMPLE EQUATIONS:

5436-1000=4436	2450-2000=450
7761-3000=4761	3100-3000=100
2450-1000=1450	4005-1000=3005
8233-5000=3233	5776-5000=776
4900-1000=3900	3200-1000=2200

COMPENSATION

◯

Change the subtrahend into a friendly number, and then compensate for that change in the difference.

Example: For 84-18, do 84-20 instead (64) and then add 2 to the difference to make 66 (because you took 2 extra away in the first step)

SAMPLE EQUATIONS:

84-18=66	59-19=40
53-39=14	161-47=114
72-28=44	188-59=129
185-48=137	65-18=47
751-47=704	67-49=18

EXPANDING THE SUBTRAHEND

◯

Break apart the second number and subtract in parts.

Example: For 23-11, break the 11 into 10 and 1. Subtract 23-10 first to make 13, and then subtract the 1 to make 12.

SAMPLE EQUATIONS:

65-25=40	24-13=11	247-13=234
87-20=67	46-31=15	50-42=8
234-11=223	284-14=270	84-23=61
68-33=35	309-12=297	23-11=12
445-24=421	56-32=24	37-12=25
7865-5551=2314		2920-1220=1700

How many equations can you solve in 1 minute?

250-25=_____

1437-2=_____

35-10=_____

12-6=_____

347-347=_____

1258-8=_____

9000-5000=_____

2815-1=_____

90-7=_____

1415-4=_____

50-25=_____

11-6=_____

8000-2000=_____

34-17=_____

16-8=_____

100-40=_____

1000-100=_____

404-390=_____

546-300=_____

80-3=_____

400-100=_____

4584-4580=_____

609-0=_____

2000-1000=_____

1213-1210=_____

100-50=_____

56-8=_____

459-456=_____

100-80=_____

700-400=_____

30-10=_____

80-5=_____

13-7=_____

458-455=_____

533-322=_____

50-7=_____

184-9=_____

6000-3000=_____

5245-2=_____

322-200=_____

4566-1=_____

3244-1000=_____

375-75=_____

53-4=_____

390-3=_____

57-54=_____

364-12=_____

150-70=_____

1200-1200=_____

20-6=_____

775-124=_____

787-400=_____

743-740=_____

1000-600=_____

40-8=_____

387-2=_____

62-26=_____

2445-20=_____

44-18=_____

1592-8=_____

DATE: _____   TOTAL: _____   MY GOAL FOR NEXT TIME: _____
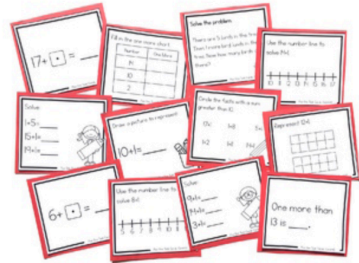
additional resources

Are you looking for more resources to reinforce these mental math strategies in your classroom? The resources below will reinforce the strategies that are outlined in this guide.

THE ADDITION STATION

https://www.teacherspayteachers.com/Product/The-Addition-Station-Fourth-Grade-1833131

ADDITION STRATEGIES TASK CARDS

https://www.teacherspayteachers.com/Product/Addition-Strategies-Task-Cards-Fourth-Grade-Bundle-Sums-to-10000-3860513

THE SUBTRACTION STATION

https://www.teacherspayteachers.com/Product/The-Subtraction-Station-Fourth-Grade-2263806