Number Talks

Developing accuracy, efficiency, and flexibility

In a Number Talk, the teacher gives the class an equation to solve mentally. Students may use paper and pencil to keep track of the steps as they do the mental calculations. Students' strategies are shared and discussed to help all students think more flexibly as they work with numbers and operations.

Number Talks focus students' attention so they will move from:
- figuring out the answers any way they can to…
- becoming more efficient at figuring out answers to…
- just knowing or using efficient strategies

Number Talks are an opportunity for students to make sense of our system of tens.

Materials:

- Prepared problems to be explored
- Chalkboard, white board, or overhead transparency
- Individual white boards or pencil and paper
- Interlocking cubes and/or base ten materials

Directions:

1.
- Write an expression **horizontally** on the board. For example:

  48 + 37   or   148 + 237   or   9.8 + 8.7

2.
- Ask students to **think first** and estimate their answer **before** attempting to solve the problem.

- Post estimates on the board. This will allow you to see how the students are developing their number sense and operational sense.

3.
- Ask students to **mentally** find the solution using a strategy that makes sense to them.

- Encourage students to "think first" and then check with models, if needed. Have tools available to help students visualize the problem if they need them (e.g. interlocking cubes, base ten blocks).

- Ask students to explain to a partner how they solved the problem.

4.
- As students share with one another, listen for those strategies you might want other students to think about and possibly experiment with. These are the students you will ask to share. For example:

48 + 37	148 + 237	9.8 + 8.7
40 + 30 = 70	100 + 200 = 300	9 + 8 = 17
8 + 7 = 15	40 + 30 = 70	.8 + .7 = 1.5
70 + 15 = 85	8 + 7 = 15	17 + 1.5 = 18.5
	300 + 70 + 15 = 385	
or		or
	or	
37 − 2 = 35		8.7 - .2 = 8.5
48 + 2 = 50	100 + 200 = 300	9.8 + .2 = 10
35 + 50 = 85	37 − 2 = 35	10 + 8.5 = 18.5
	48 + 2 = 50	
or	300 + 35 + 50 = 385	or
48 is almost 50	or	9.8 is almost 10
50 + 37 = 87		10 + 8.7 = 18.7
87 − 2 = 85	148 is almost 150	18.7 - .2 = 18.5
	150 + 200 = 350	
	350 + 37 = 387	
	387 − 2 = 385	

- As students explain the steps they followed to solve the problem, record the steps and ask clarifying questions such as:

"Explain how this strategy works"
"Will this strategy always work?" How do you know?"
"Why did you need to subtract 2?"
"Where did the 40 come from? The 30? The 8? The 7?"

- You may want to give all students another problem and ask them to "try on" this strategy.

- When beginning a number talk, be sure that the quantities and problems are accessible so that students are solving the equations mentally.

- If you have students in your classroom who are performing at diverse instructional levels, select 3 different problems for students to solve at three different levels. Give students the choice of which problem they will solve. Select problems with different size numbers so that all students have access to a problem and all students are working at a level that pushes them to their optimal level. For example:

$$463 - 27 \qquad 63 - 27 \qquad 63 - 7$$

Possible Expressions for Number Talks

Addition with Tens and Ones

20 + 20	50 + 30	10 + 50
40 + 30	30 + 31	40 + 14
50 + 42	10 + 83	22 + 52
73 + 23	34 + 34	65 + 11
39 + 2	58 + 3	65 + 5
27 + 4	26 + 5	47 + 4
18 + 5	38 + 3	31 + 9
32 + 9	33 + 9	23 + 8
55 + 6	72 + 9	66 + 4
29 + 3	49 + 7	48 + 8
69 + 6	37 + 5	29 + 12

18 + 13	15 + 16	26 + 14
38 + 13	17 + 24	18 + 15
48 + 37	11 + 19	12 + 19
23 + 18	55 + 26	42 + 29
36 + 24	60 + 24	40 + 45
50 + 29	50 + 36	72 + 19
38 + 37	49 + 42	47 + 29
55 + 35	82 + 18	44 + 49
87 + 49	37 + 86	98 + 87

Subtraction with Tens and Ones

80 − 30	40 − 10	50 − 20
90 − 30	78 − 50	67 − 30
89 − 60	95 − 20	38 − 24
43 − 21	57 − 56	70 − 70
80 − 20	50 − 10	90 − 80
21 − 3	24 − 5	33 − 6
92 − 3	84 − 6	77 − 9
51 − 4	34 − 8	43 − 5
56 − 7	36 − 8	85 − 6
32 − 7	43 − 6	54 − 9
90 − 8	21 − 11	25 − 15
43 − 15	56 − 17	36 − 28
85 − 26	32 − 27	43 − 26
54 − 29	90 − 38	80 − 11

50 – 22	90 – 9	60 – 5
62 – 33	94 – 39	67 - 28
100 – 49	80 – 49	56 – 38
58 –39	91 – 53	64 – 55
94 – 39	55 – 26	91 – 53

Addition with Hundreds, Tens and Ones

104 + 75	623 + 4	984 + 12
456 + 225	813 + 209	368 + 29
761 + 127	404 + 175	199 + 85 + 1
450 + 76 + 50	80 + 90 + 20	75 + 88
26 + 48 + 24	170 + 59 + 30	356 + 80 + 20
278 + 70 + 30	88 + 90 + 10	275 + 8 + 2
726 + 9 + 1	177 + 5 + 5	370 + 99
230 + 230	400 + 400	420 + 420
750 + 250	16 + 78 + 22	9 + 52 + 48
96 + 6	8 + 178 + 2	25 + 37 + 125
80 + 59 + 20	38 + 8 + 2	78 + 119 + 1
139 + 5 + 5	598 + 187	299 + 301
370 + 99	499 + 76	372 + 98
750 + 250	359 + 36	187 + 298

Subtraction with Hundreds, Tens and Ones

864 - 500	458 – 230	854 – 312
430 – 205	956 – 207	512 – 104
983 – 143	184 – 15	400 – 200
340 – 40	280 – 70	270 – 80
600 – 90	320 – 121	320 – 119
400 – 1	400 – 10	855 - 56
600 – 101	600 – 99	347 – 124
375 – 280	263 – 247	312 – 298
458 – 9	458 – 99	458 - 399
782 – 83	782 – 181	888 - 789
864 – 500	104 – 39	855 – 56
100 – 49	156 – 38	462 – 33
1200 – 49	7200 – 49	1156 – 38

Addition with Decimals

0.5 + 0.25	.05 + 0.25	1.2 + 3.5
6.4 + 0.3	7.1 + 1.8	1.6 + 5.2
12.5 + 2.4	3.3 + 33.3	45.6 + 0.22
527 + 6.05	20 + 0.2	7.5 + 2.6
0.17 + 0.05	8.36 + 1.16	4.55 + 2.17
30.06 + 1.79	.75 + .25	32.7 + 44.2
4.3 + 1.8	7.12 + 0.6	0.3 + 0.7
0.03 + 0.07	0.3 + 0.07	3.6 + 3.09

8.3 + 0.7	1.0 + .80	1.98 + 40.02
3.9 + 4.2	0.39 + 0.42	3.9 + 0.42

Subtraction with Decimals

345.9 – 23.5	4.5 – 3.2	5.56 – 1.42
95.6 – 12	0.4 – 0.2	8.5 – 1.1
54.8 – 2.5	188.9 – 52	7.84 – 0.4
3.5 – 1.7	55.7 – 18.2	8.3 – 1.6
3.22 – 0.6	8.8 – 6.9	1.2 – 0.8
12.8 – 1.9	1.4 - .7	3.6 – 0.7
8.8 – 0.3	7.5 – 0.9	12.8 – 2.7
1.2 – 0.6	4.13 – 2.02	51.24 – 1.12
0.43 – 0.24	0.9 – 0.01	0.5 – 0.25
12.80 – 0.9	12.80 – 0.09	12.80 - 9

Multiplication and Division of Whole Numbers

2 x 12	2 x 24	2 x36
2 x 86	2 x 94	2 x 106
2 x 115	2 x 118	2 x 126
2 x 138	2 x 144	2 x 157
2 x 166	2 x 178	2 x 184
2 x 192	2 x 196	2 x 208
2 x 224	2 x 236	2 x 445
4 x 12	4 x 24	4 x 36
4 x 48	4 x 59	4 x 64

4 x 86	4 x 99	4 x 106
4 x 115	4 x 118	4 x 126
4 x 138	4 x 144	4 x 157
4 x 166	4 x 178	4 x 184
4 x 192	4 x 196	4 x 208
4 x 224	4 x 236	4 x 445
8 x 12	8 x 24	8 x 32
8 x 82	8 x 99	8 x 106
8 x 115	8 x 120	8 x 150
8 x 144	8 x 204	8 x 225
8 x 250	8 x 405	8 x 502
5 x 12	5 x 24	5 x 15
5 x 26	5 x 63	5 x 27
5 x 82	5 x 99	5 x 106
5 x 115	5 x 118	5 x 126
5 x 138	5 x 144	5 x 157
5 x 166	5 x 178	5 x 184
5 x 59	5 x 169	5 x 208
5 x 224	5 x 236	5 x 445
12 x 5	12 x 6	12 x 8
12 x 9	12 x 13	12 x 15
12 x 18	12 x 24	12 x 25
12 x 26	12 x 63	12 x 27
12 x 82	12 x 99	12 x 106

12 x 115	12 x 118	12 x 126
450 ÷ 45	560 ÷ 8	16,000 ÷ 2000
187 ÷ 17	52 ÷ 1	41 ÷ 2
171 ÷ 17	52 ÷ 10	42 ÷ 20

Multiplication and Division with Decimals

0.2 x 30	8 x 0.25	8 ÷ 0.25
52 ÷ 0.1	65% of 80	50% of 48
1 x 0.1	1 ÷ 0.1	0.1 x 1
0.1 ÷ 1	.55 x 24	6 ÷ 0.5