

Add and Subtract 10 and 100

Lessons for Grade 2

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Overview of Lesson

Students observe the pattern when adding and subtracting 10 or 100 and use the pattern to mentally add and subtract 10 and 100.

Vocabulary

Sum

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Difference

Mathematical Goals

Students will:

- Mentally add 10 to any two- or three-digit number to 989.
- Mentally subtract 10 from any two- or three-digit number to 999.
- Mentally add 100 to any two- or three-digit number to 899.
- Mentally subtract 100 from any three-digit number to 999.

Materials

- Hundred charts with numbers 1–100 and 101–200

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Teaching Directions

DAY 1

Add 10 to one- and two-digit numbers and subtract 10 from two-digit numbers.

Today we're going to look for patterns as we add 10 to numbers and subtract 10 from numbers. First we'll add 10 to any multiple of 10.

Remind students that when you count by 10s, you are naming multiples of 10. Point to the 10 on the hundred chart.

Where will I land if I add 10 to this number? I'll count on 10.

Count as you point to each square until you reach 20.

I added 10 and landed on 20.

Repeat for adding 10 to 20 and 10 to 30. Continue through adding 10 to 90. Record the equations on the board.

$$\begin{aligned}10 + 10 &= 20 \\20 + 10 &= 30 \\30 + 10 &= 40 \\40 + 10 &= 50 \\50 + 10 &= 60 \\60 + 10 &= 70 \\70 + 10 &= 80 \\80 + 10 &= 90 \\90 + 10 &= 100\end{aligned}$$

Counting by tens is the same as adding 10. When you count by tens, you say the next multiple of 10.

Now let's look at adding 10 to other numbers. I'll start at 4 and add 10. What is $10 + 4$? (14)

Shade in 4 and 14. Continue adding 10. Count on 10 as you point to 15, 16, ... 24.

So 14 plus 10 is 24.

Continue adding 10 and shading in the cell with the sum until you have shaded in the column with 4 at the top. Record the equations on the board.

$10 + 10 = 20$	$4 + 10 = 24$
$20 + 10 = 30$	$14 + 10 = 24$
$30 + 10 = 40$	$24 + 10 = 34$
$40 + 10 = 50$	$34 + 10 = 44$
$50 + 10 = 60$	$44 + 10 = 54$
$60 + 10 = 70$	$54 + 10 = 64$
$70 + 10 = 80$	$64 + 10 = 74$
$80 + 10 = 90$	$74 + 10 = 84$
$90 + 10 = 100$	$84 + 10 = 94$

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

What do you notice about the sums on the board? (the ones digit is 4, and the tens digit increases by 1) *It makes sense that the number of tens increases by 1 each time because we are adding 1 ten, but the ones stay the same because we aren't adding additional ones.*

Repeat this process of writing equations from 7 to 97.

State a two-digit number and ask students what the sum is if you add 10 to it.

Say, *I will say a number. You add 10 mentally and tell me the sum. 68 (78), 32 (42), 63 (73), 86 (96)*

After students say the sum by adding 10, verify on the table that the sum is directly beneath it in the column for that number.

How could I subtract 10 from a number? (go up one square)

Verify by counting back 10 to show that you in fact land on the number above the number stated.

Say, *Now I will say a number. You subtract 10 from it mentally and tell me the difference. 56 (46), 37 (27), 92 (82), 61 (51), 24 (14)*

Remind students that the answer you get when you subtract is called the **difference**.

DAY 2

Add 10 to three-digit numbers and subtract 10 from three-digit numbers.

Today we'll add and subtract 10 again, but this time from numbers greater than 100. We'll start by looking at the hundred chart that goes from 101 to 200.

Add and Subtract 10 and 100, Lessons for Grade 2, continued

Shade 134 on the hundred chart.

Let's add 10 to 134. I'll count on ten.

Point to 135 as you say 1, and then continue counting until you say 10 and point to 144. Shade in 144. Continue by adding 10 to 162, 156, 178, and 117. Shade the squares as you add 10 to each.

101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

Record the addition equations on the board.

$$\begin{aligned} \underline{134} + 10 &= \underline{144} \\ \underline{162} + 10 &= \underline{172} \\ \underline{156} + 10 &= \underline{166} \\ \underline{178} + 10 &= \underline{188} \\ \underline{117} + 10 &= \underline{127} \end{aligned}$$

We know that 134 is 1 hundred, 3 tens, and 4 ones. When we add 1 ten to the 3 tens we get 4 tens. The hundreds and ones stay the same.

Let's check the others.

Point to one, at a time to show that the tens increase by 1 ten.

Now I will say a number and I want you to add 10 to the number mentally.

Say five or six numbers between 101 and 200 and have students say the sum. Record the equations on the board.

Now let's think about subtracting 10. What is 183 minus 10? We don't need to use the hundred chart because we know that 183 is 1 hundred, 8 tens, and 3 ones. If I take 1 ten away from 8 tens, what do I get? (7 tens) What is 183 minus 10? (173)

Record on the board as shown.

$$\begin{aligned} 183 - 10 \\ 183 &= 1 \text{ hundred} + 8 \text{ tens} + 3 \text{ ones} \\ 183 - 10 &= 1 \text{ hundred} + 7 \text{ tens} + 3 \text{ ones} \\ &= 173 \end{aligned}$$

Verify that 173 is directly above 183 on the hundred chart. Then present several more numbers such as 152, 168, 197, 144.

Now I will say a number and I want you to subtract 10 mentally from the number.

After each number, record the subtraction on the board and have students verify that the number of tens decreased by 1 for each example.

Next extend the adding and subtracting of 10 to any three-digit number.

What is 654 plus 10?

Display 654 in expanded form and have students name the sum.

$$654 = 6 \text{ hundreds} + 5 \text{ tens} + 4 \text{ ones}$$

$$654 + 10 = 6 \text{ hundreds} + 6 \text{ tens} + 4 \text{ ones}$$

$$654 + 10 = 664$$

What is 654 minus 10?

Follow the same process, recording the subtracting of 1 ten on the board.

$$654 = 6 \text{ hundreds} + 5 \text{ tens} + 4 \text{ ones}$$

$$654 - 10 = 6 \text{ hundreds} + 4 \text{ tens} + 4 \text{ ones}$$

$$654 - 10 = 644$$

Now I'll say a number and I want you to add 10. You may write it down if that helps, but try to do it mentally.

Say three-digit numbers to 989 and have students add 10 mentally. Record equations on the board. Point to the number in tens place and ask students if the number of tens increased by 1 so that they can verify that their sum is correct. (Examples: $372 + 10 = 382$; $463 + 10 = 473$; $825 + 10 = 835$). Use the same numbers and have students subtract 10 from each. Record those equations on the board next to the addition equations. ($372 - 10 = 362$; $463 - 10 = 453$, $825 - 10 = 815$)

DAY 3

Add and Subtract 10 with regrouping.

Let's look at what happens when I add 10 to 192. First I'll write 192 as 1 hundred + 9 tens + 2 ones. When I add 1 ten to 9 tens I get 10 tens. What is 10 tens? (100) So now I have 2 hundreds + 0 tens + 2 ones.

Record this addition on the board.

$$192 = 1 \text{ hundred} + 9 \text{ tens} + 2 \text{ ones}$$

$$192 + 10 = 1 \text{ hundred} + 10 \text{ tens} + 2 \text{ ones}$$

$$192 + 10 = 1 \text{ hundred} + 1 \text{ hundred} + 2 \text{ ones}$$

$$192 + 10 = 2 \text{ hundreds} + 0 \text{ tens} + 2 \text{ ones}$$

$$192 + 10 = 202$$

Display the hundred chart as before but add a row to the bottom so that it goes to 210.

101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210

Just as before, the sum after adding 10 is the square just below the number.

Show several more examples of adding 10 when there is a 9 in the tens place.

Now let's think about subtracting 10 from 205. I know that in subtracting 10 using the hundred chart, the difference will be in the square above 205.

Point to 205 on the chart. The number above it is 195, so 205 minus 10 is 195.

Let's look at another way to find 195. I know that 1 hundred is 10 tens so I can rewrite 205 as 1 hundred plus 10 tens plus 5 ones.

Record the subtraction on the board.

$$205 = 2 \text{ hundreds} + 0 \text{ tens} + 5 \text{ ones}$$

$$205 = 1 \text{ hundred} + 10 \text{ tens} + 5 \text{ ones}$$

$$205 - 10 = 1 \text{ hundred} + 9 \text{ tens} + 5 \text{ ones}$$

$$205 - 10 = 195$$

Show several more examples of subtracting 10 when there is a zero in the tens place. Students will likely need practice adding 10 when there is a 9 in the tens place and subtracting 10 when there is a zero in the tens place before doing this mentally.

Extension

For several days after this lesson, write a three-digit number on the board and have students add 10 to it and subtract 10 from it, until they are confident and can answer without paper and pencil or using a chart.

DAY 4

Add 100 to a three-digit number and subtract 100 from a three-digit number.

Write $567 + 100$ on the board.

Who thinks they know what 567 plus 100 is?

Choose a student to answer. Then show why the sum is 667 on the board.

$$567 = 5 \text{ hundreds} + 6 \text{ tens} + 7 \text{ ones}$$

$$567 + 100 = 6 \text{ hundreds} + 6 \text{ tens} + 7 \text{ ones}$$

$$567 + 100 = 667$$

So to add 100 we just have to look at the number of hundreds and add 1 more. Let's subtract 100. What is 567 minus 100? (467)

Then show this on the board.

$$567 = 5 \text{ hundreds} + 6 \text{ tens} + 7 \text{ ones}$$

$$567 - 100 = 4 \text{ hundreds} + 6 \text{ tens} + 7 \text{ ones}$$

$$567 - 100 = 467$$

Follow this process for several more numbers. Then say, *Now I'll say a number and I want you to add 100 to it mentally. What is 382 plus 100?*

Then follow this same process for subtracting 100 using any three-digit number to 999.