

Grade 4 Mathematics

Number and Number Relations: Lesson 1

Read aloud to the students the material that is printed in **boldface type** inside the boxes. Information in regular type inside the boxes and all information outside the boxes should **not** be read to students. Possible student responses are included in parentheses after the questions.

NOTE: The directions read to students may depend on the available materials. Read only those parts of the lesson that apply to the materials you are using.

Any directions that ask you to do something, such as to turn to a page or to hand out materials to students, will have an arrow symbol (\Rightarrow) by them.

Purpose of Lesson 1:

- In this lesson, the tutor and the students will
 - ✓ identify an amount when given materials or drawings,
 - ✓ name a number when given a number word,
 - ✓ understand place value words and concepts, and
 - ✓ recognize patterns in our number system.

Equipment/Materials Needed:

- One hundred thirty counters – such as paper clips, beans, coffee stirrers, straws, strips of paper, or the base-ten blocks that are used in the school. You will need these per student. (Optional, but recommended)
- To make groups of 10, use small cups or rubber bands. You will need about 10 of these per student. To make groups of 100, use paper clip boxes, shoe boxes, bowls, or large rubber bands. You will need one of whatever you use per student. (Optional, but recommended)
- Copies of Student Sheets 1 – 5
- Paper and pencils

Preparations before beginning Lesson 1:

- Run off 1 copy of Student Sheets 1, 2, and 5 for each student. Run 1 copy of Student Sheets 3 and 4 for yourself.
- Have counters, paper, and pencils available.

Lesson 1: Number and Number Relations

Note: If materials are not available, use drawings. Use a dot (•) for ones, a stick(▮) for tens, a square (□) for hundreds, and a box (◻) for thousands.

Say:

Today, we are going to talk about our number system. Our number system is made up of 10 number symbols (0, 1, 2, 3, 4, 5, 6, 7, 8, 9), called “digits” and some punctuation symbols such as commas, decimal points, and fraction bars. With these symbols, we can write all kinds of numbers, large and small. Write a small number for me. (Sample response: 0, 1, etc.) Write a large number for me. (Sample response: 1,000,000, etc.)

⇒ Give each student 46 counters of some type. (If no materials are available, you may want to draw 46 circles or stars on a piece of paper for each student.)

Say:

Put your counters into groups of 10. How many groups of ten do you have and how many ones are left over? (4 groups of 10 and 6 left over.) We can write this amount in different ways. We can write 4 tens and 6 ones; 4 tens + 6 ones; 40 + 6; or simply 46. Does 64 name the same amount as 46? (No.) How is it different? (64 means 6 tens and 4 ones.)

Note: If you are using beans or counters, you may want to have the students use paper cups to group each ten. If you are using paper clips, you could have the students clip 10 together or use a cup. If you are using straws or stirrers, put 10 together with a rubber band. If you are using drawings, circle a group of ten. You want the students to get the idea that 10 “things” = 1 ten.

⇒ Place 13 counters in front of you.

Say:

Would someone count the counters? Write all of the ways that we could show this amount. (1 ten and 3 ones; 1 ten + 3 ones; 10 + 3; 13) Does 31 name the same amount as 13? (No.) How is it different? (31 has 3 tens and 1 one.)

⇒ Write the number 32 on the board or on a piece of paper.

Say:

With your counters, show me this amount. (See whether the students automatically group the counters by tens. If not, ask questions that will encourage them to do so.) **How many tens are in this number?** (3) **Show me where they are in your counters.** (Students need to show the tens by grouping 10 in some way.) **How many ones are left over?** (2) **Does 23 name the same amount as 32?** (No.) **How is it different?** (23 has 2 tens and 3 ones.)

⇒ Write the number word (*sixty-one*) on the board or on a piece of paper.

Say:

Show me this number with your counters. Write this amount in the different ways that we have written our other numbers. (6 tens plus 1 one; 6 tens + 1 one; 60 + 1; 61.) **If I asked you to add 10 more counters, what would the number be?** (71)

⇒ Give each student (or a group of 2 students) 126 beans, paper clips, etc. (If no materials are available, you may want to draw 126 circles or stars on a piece of paper for each student.)

Say:

Put your counters into groups of 10. How many groups of ten do you have. (12 groups of 10.) **When we have 10 groups of 10, we can make 1 group of 100. Let's take 10 of our groups of 10 and put them together to make 1 hundred. Let's move the hundred to the side. How many tens do we have left?** (2 tens) **How many ones do we have left?** (6 ones) **We can write this amount in different ways. We can write it as 1 hundred plus 2 tens plus 6 ones, or as 1 hundred + 2 tens + 6 ones, or as 100 + 20 + 6, or simply as 126. Is this number the same as 216?** (No.) **How is it different?** (216 means 2 hundreds, 1 ten, and 6 ones.) Note: If you are using beans or counters for ones and paper cups for tens, you may want to use a bowl for hundreds. If you are using paper clips, a box of paper clips contains 100 clips. If you are using straws or stirrers for ones and rubber bands for the tens, use a larger rubber band or a box to group 100. If you are using drawings for ones and circles for tens, use a larger circle or a rectangle to group the hundreds. You want the students to get the idea that 100 “things” = 1 hundred and that 10 groups of 10 = 1 hundred.

⇒ Write *105* on the board or on a piece of paper.

Say:

With your counters show me this amount. (See whether the students automatically group the counters by tens and hundreds. If not, ask questions that will encourage them to do so.) **How many hundreds are in this number?** (1) **Show me where they are in your counters.** (Students should show some way of grouping 10 tens as 100.) **How many tens are in this number?** (0) **How many ones are left over?** (5) **Does 15 name the same amount as 105?** (No.) **How is it different?** (15 has 1 ten and 5 ones.)

Say:

Because it takes so long to count our counters, I am going to draw some pictures for you. I want you to tell me what numbers I am showing. Use a dot for ones, a stick for tens, a square for hundreds, and a box for thousands.

⇒ Draw $\square \square \square \quad : : : :$ on the board or on a piece of paper.

Say:

What is this amount? Write the number on your piece of paper. (308) **Why did you put a zero between the 3 and the 8?** (To show that there are no tens) **Does 38 name the same amount as 308?** (No.) **How are they different?** (38 has 3 tens and 8 ones; 308 has 3 hundreds and 8 ones.) **Does 803 name the same amount as 308?** (No.) **How are they different?** (803 has 8 hundreds and 3 ones; 308 has 3 hundreds and 8 ones) **What would my picture look like if I added one ten to it?**

$\square \square \square \mid : : : :$ **What would my new number be?** (318)

⇒ Write the number word (*six hundred one*) on the board or on a piece of paper.

Say:

Draw a picture of this number using the blocks, sticks, and dots.

($\square \square \square \square \square \square \cdot$) **What is the number?** (601)

⇒ Give Student Sheet 1 to the students. Have them look at the top part.

Say:

This time we are going to look at thousands. To show thousands, I will use a cube. Look at the first rectangle. How many thousands are shown? (2) How many hundreds? (1) How many tens? (2) How many ones? (4) Write the number for the amount shown. (2124) If I added another hundred, what number would be shown? (2224) In my original picture, if I took 2 tens away, what number would be shown? (2104)

Look at the second rectangle. Write the number for the amount shown. (4302) Why did you write a zero between the 3 and the 2? (To show that there are no tens) Do 4302 and 432 show the same amount? (No.) How are they different? (4302 has 4 thousands, 3 hundreds, and 2 ones; 432 has 4 hundreds, 3 tens, and 2 ones.) If I removed 3 hundreds from this picture, what number would name the amount left? (4002) Write the numbers that name the amounts for problems 1 – 5. Answers:

1. 27 2. 131 3. 2020 4. 4310 5. 4123

Number 5 was placed in a scrambled order to make sure the students are not just writing down the numbers as they appear.

Say:

We are going to talk about place value. *Place value* tells you the value of each digit. (Sort of how much each place is worth) Our number system is pretty easy to use because it is based on tens. Each place has ten times the value of the place to its right: for example, 1 ten = 10 ones; 1 hundred = 10 tens; and 1 thousand = 10 hundreds.

⇒ Give Sheet 2 to the students. Either call out the numbers, write them on the board, or write the number word. Have them write the numbers in the correct place on the chart: for example, **4 thousand three** would look like the number in the sample chart below.

Thousands	Hundreds	Tens	Ones
4	0	0	3

1. 43
2. 34
3. 239
4. 932
5. 923
6. 903
7. 920
8. 1234
9. 1024
10. 1204
11. 1290
12. 2001
13. Show the year you were born.
14. Show the year that we are in now.

15. Show the largest number that you can.

⇒ Write 7,804 on a piece of paper.

Say:

Which digit is in the hundreds place? (8) Which digit is in the ones place? (4) Why is there a zero in the tens place? (There are no tens.) What is the value of the 8? (8 hundreds)

⇒ Use one copy of Student Sheet 3. Turn it so that it faces the students.

Say:

Tell me something that you notice about the chart. (For example, The smallest number is 0, the largest is 99. If you look at the 2nd row, all of the numbers have a 1 in the 10's place. If you look at the 2nd column, all of the numbers have a one in the ones place, etc)

⇒ Using Student Sheet 3, cover up the number 63. (You can use one of the counters or just a small piece of paper.)

Say:

What number have I covered up? Do this activity with a few different numbers. Next cover up two numbers in a row or column, such as 42 and 52. **What 2 numbers are hidden?** Cover up 12 and 22. **What two numbers are hidden?** Cover up 63, 73, and 83. **What three numbers are hidden?** Cover up 84, 85, and 95. **What three numbers are hidden?** Keep covering numbers and asking what you have covered. This activity helps students see the patterns in our number system.

⇒ Using Student Sheet 4, the 0-199 chart; cover up numbers as you did in the activity for Student Sheet 3.

⇒ Give the students a copy of Student Sheet 5. The top half of the sheet will be based on the 0-99 chart. The bottom half will be based on the 0-199 chart. The object of this activity is to see whether the students really understand the patterns of our number system.

Answers: top half

- 1) 21, 30, 31 2) 34, 35, 44, 54, 55 3) 78, 79, 88, 89, 99
4) 41, 50, 52, 61 5) 8, 17, 18, 28 6) 58, 68, 79, 88, 99

Answers: bottom half

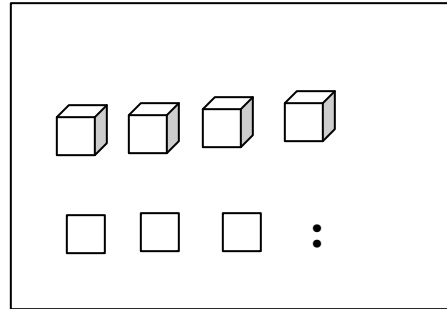
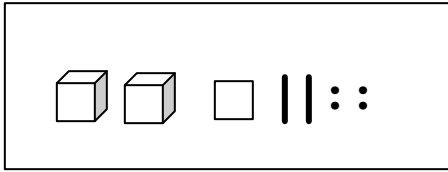
- 1) 123, 132, 133 2) 144, 145, 154, 164, 165
3) 172, 173, 182, 183, 193 4) 123, 132, 134, 143
5) 107, 116, 117, 127 6) 156, 166, 177, 186, 197

Extension:

You may want to ask the students to rename numbers in various ways: for example, 24 can be 2 tens and 4 ones or 1 ten and 14 ones or 24 ones. This activity will help later in addition and subtraction.

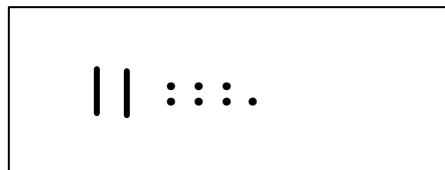
⇒ Have one student summarize today's lesson.

Student Sheet 1 (Number: Lesson 1)

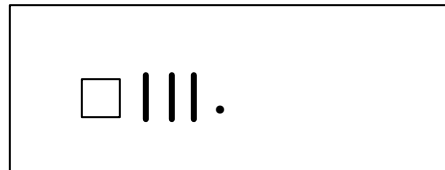


Write the amount shown by each picture.

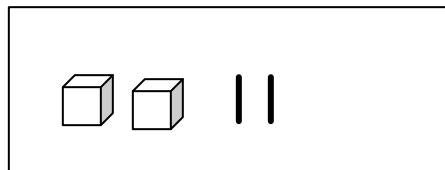
1. _____



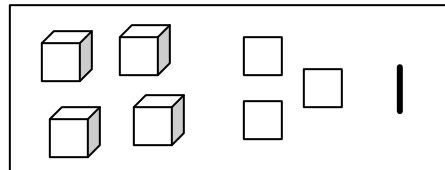
2. _____



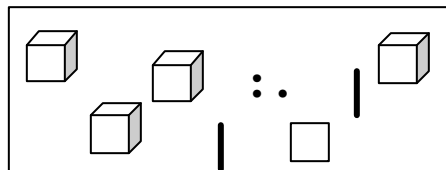
3. _____



4. _____



5. _____



Student Sheet 2 (Number: Lesson 1)

	Thousands	Hundreds	Tens	Ones
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				

Student Sheet 3 (Number: Lesson 1)

0-99 Chart

0	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

Student Sheet 4 (Number: Lesson 1)

0-199 Chart

0	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	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

Student Sheet 5 (Number: Lesson 1)

Think about the 0-99 chart. What numbers are missing in each problem?

1.

20	

2.

	45

3.

77		

4.

	51	

5.

16		

6.

	89	

Think about the 0-199 chart. What numbers are missing in each problem?

1.

122	

2.

	155

3.

171		

4.

	133	

5.

115		

6.

	187	