

Grade 4 Mathematics

Number and Number Relations: Lesson 5

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 5:

- In this lesson, the tutor and the students will
 - ✓ use skip counting to help understand multiplication,
 - ✓ understand the concept of multiplication,
 - ✓ practice multiplication facts, and
 - ✓ count money (coins).

Equipment/Materials Needed:

- About 20 counters, beans, cubes, etc. If possible, party favor places have cute little animals or toys that are great to have the students use as counters. Barbie doll clothes also work.
- Copies of Student Sheets 14 and 15
- About 5 of each coin - penny, nickel, dime, and quarter – real or play money
- Paper and pencils

Preparations before beginning Lesson 5:

- Gather 30 counters and 5 of each coin.
- Run off 1 copy of Students Sheets 14 and 15 for each student.
- Have paper and pencils available.

Lesson 5: Number and Number Relations

When children are learning the multiplication facts, they usually start thinking of multiplication as repeated addition. Next they move to the idea of skip counting, and then to using strategies. In this lesson, we will look at skip counting and strategies.

Say:

Do you know what I mean when I say *skip counting*? (Some will say counting by 2's or 3's, etc.) When you count by ones, you count every number. When you count by any other number, you skip some numbers. If you count by 2's, you say 2, 4, 6, 8, etc. You do not say the numbers 3, 5, 7, etc. This process is called *skip counting*. When you are skip counting, you are really saying the multiplication facts. 2 = one 2; 4 = two 2's; 6 = three two's; etc. When we skip count by a number, all of the numbers we say are "multiples" of that number.

⇒ Give students a copy of Student Sheet 14, the hundreds chart. Assign each student in the group two different numbers to use to skip count.

Say:

We are going to practice skip counting. As you count by your first number, color in the numbers you say on the top chart. When you skip count by the second number, color in each number on the bottom chart. (Allow time to do this activity.) Ask each student, "What patterns do you see on your charts?" (Sample responses: On the 2's chart, they may say, "all even numbers are colored; the colored numbers form columns; every other number is colored." For the 3's chart, they may say, "On the rows, two numbers are not colored, then one is colored; or the colored squares form diagonals; or on a diagonal, the tens digit gets larger but the ones digit gets smaller." Just get them to talk patterns.) Show your charts. Can anyone find any other patterns? (Allow them to tell any of the patterns that they see.)

Say:

Put the hundreds charts away. I am going to ask you some skip counting questions. If you skip count by 5's, will you say the number 24? (No.) Why not? (24 is not a multiple of 5.) How about 35? (Yes.) 75? (Yes.) 79? (No.) Ask questions such as, "What is the 3rd multiple of 5?" (15)

“ If I skip count by 5’s, what is the 3rd number that I would say?” (15)
“If I skip count by 5’s, 3 times, what number will I say?” (5, 10, 15) Ask similar questions about other numbers.

Say:

We are going to play “I am thinking of a number.” I will tell you some things about my number and you have to guess it. Suppose I say, “My number is between 5 and 10. If I skip count by 2’s and by 3’s, I will say my number.” What is my number? (6)

Use the following prompt: “I am thinking of a number.”

- A. **My number is between 15 and 20. If I count by 3’s, I will say my number. If I count by 6’s, I will say my number. What number am I thinking of? (18)**
- B. **My number is between 20 and 30. If I count by 7’s, I will say my number. If I count by 4’s, I will say my number. What number am I thinking of? (28)**
- C. **My number is between 20 and 30. If I count by 7’s, I will say my number. If I count by 2’s, I will say my number. What number am I thinking of? (28)**
- D. **My number is between 55 and 60. If I count by 7’s, I will say my number. If I count by 8’s, I will say my number. What number am I thinking of? (56)**
- E. **My number is between 70 and 80. If I count by 9’s, I will say my number. If I count by 8’s, I will say my number. What number am I thinking of? (72)**

Say:

Counting money involves skip counting. You count by 5’s, 10’s, 25’s, or 50’s and also count by 1’s.

⇒ Use nickels to help students skip count by 5’s. Then add a few pennies in with the nickels. This activity forces them to count by 5’s and then at a certain amount, begin counting on by ones.

Say:

Let’s count some money. Count as I place each coin. Put 3 nickels down one at a time, then 3 pennies. (5, 10, 15, 16, 17, 18) Place 3 dimes and 4 nickels. **Count as I place each one.** (10, 20, 30, 35, 40, 45, 50)

⇒ Give Student Sheet 15 to the students. This sheet assigns a value to a geometric figure. Some are worth 10¢, some worth 5¢, and some worth 1¢. Students must figure out the value of the entire figure. Encourage them to use skip counting.

Answers:

Note: Some children will count the square around the figure as a rectangle. This identification is okay. A square is a special type of rectangle, so either answer is okay; but have them explain what they were thinking.

1) 70¢ or 80¢ 2) 76¢ or 86¢ 3) 47¢ or 57¢ 4) 26¢ or 36¢

You may want to review some strategies for memorizing the multiplication facts. If you do review them, do them in the order of 2's, 5's, 0's, 1's, and 9's.

Say:

Let's look at some ways to help remember the multiplication facts.

❖ 2 facts

Say:

The 2 facts are the same as doubles in addition. Tell me what the doubles facts are? the spider ($4 + 4$ or 2×4), the hands ($5 + 5$ or 2×5), the dozen eggs ($6 + 6$ or 2×6), weeks on a calendar ($7 + 7$ or 2×7), rows in a crayon box ($8 + 8$ or 2×8), an 18-wheeler ($9 + 9$ or 2×9 .)

❖ 5 facts

Say:

You can think of the 5 facts as nickels: 1 nickel = 5 cents, 2 nickels = 10 cents, etc.; or you can think of them as the 5-minute hands on a clock. The number 1 on the clock means 1 group of 5 minutes. The 2 on the clock means 2 groups of 5 minutes or 10 minutes.

❖ 0 and 1 facts

Say:

Zero facts usually are easy to see. If we multiply zero times any number, we get zero. The main problem is confusing addition with zero and multiplication with zero. What happens if we multiply a number by 1? (We get that same number.) Don't confuse these rules with addition rules.

❖ 9 facts

Say:

The nine facts are usually easy if you see patterns. One pattern is that the sum of digits in the products will always equal 9.

Ex. $2 \times 9 = 18$, $1 + 8 = 9$; $3 \times 9 = 27$, $2 + 7 = 9$.

The other pattern is seen in the ones and tens digits.

⇒ Write the following on the board.

$$1 \times 9 = 9$$

$$2 \times 9 = 18$$

$$3 \times 9 = 27$$

$$4 \times 9 = 36$$

Say:

Notice that the tens digit is always 1 less than the number that you are multiplying by 9. The ones digit will add with the tens digit to give 9. So for 5×9 , the tens digit will be 4 and the ones digit will be $9 - 4$, or 5. So the answer is 45.

Say:

I am going to call out some multiplication facts. I want you to think about how you knew or found the answer. (Allow some of the children to explain their thinking.)

1. 5×8 (40, possibly skip counted by 5, thinking of 5 nickels)

2. 6×2 (12, doubles facts or $6 + 6$)

3. 9×7 (63; patterns of 9; sum of digits = 9. Tens digit is one less than 7.)

4. 6×4 (24; some may say think 6×2 , then double it. This method is a good strategy for 4's. Some may think $6 \times 5 = 30$, but I only needed 4 groups of 6, so subtract 6.)

5. 8×0 (0; anything times 0 is zero.)

6. 1×6 (6; 1 group of 6 is still 6; 1 times any number is that number.)

7. 4×3 (12; some may think 2×3 , double that. Some may think $4 \times 2 = 8$ and I need 1 more group of 4.)

⇒ Have one student summarize today's lesson.

Student Sheet 14 (Number: Lesson 5)

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

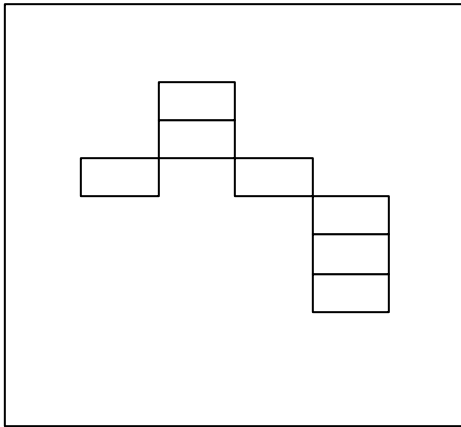
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Student Sheet 15 (Number: Lesson 5)

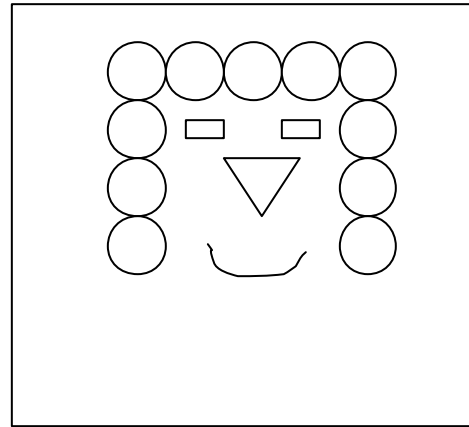
Let: Rectangles = 10¢
Circles = 5¢
Triangles = 1¢

How much is each figure worth?

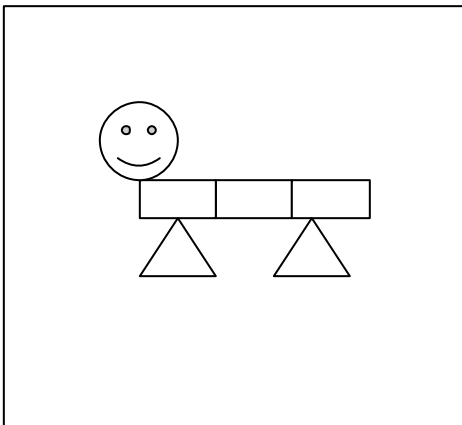
1.



2.



3.



4.

