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Teacher Notes

I sincerely hope that you and your students enjoy this multiplication unit! This unit has been designed around the Common Core Standards, but you should find the content useful in any fourth grade classroom. In this unit you will find performance tasks to conceptually teach new skills through the workshop model, as well as work station activities and games for review.

I have included a suggested pacing guide below. I like to supplement my math workshop lessons with a brief skill practice sheet each day. I plan to incorporate Tuesday's and Thursday's lessons into my math work stations. Even if you choose to not implement math work stations, I think you will find the games useful in any setting! As always, feel free to contact me if you have any questions. ashleigh_60@hotmail.com

Unit at a Glance

Multiples & Factors	Lesson 1 What are Multiples Skill: Multiples Practice 1	Lesson 2 Multiples Booklet Skill: Multiples Practice 2	Lesson 3 What are Factors Skill: Factors Practice 1	Lesson 4 Rolling Factors and Multiples Skill: Factors Practice 2	Lesson 5 Prime and Composite Numbers Skill: Multiples and Factors Practice
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Lesson 1: What are Multiples

Materials:

- Counters (if counters are too large, use cm cubes)
- Finding Multiples printable

Standard: 4.OA.4: Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a whole number is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.

Mini-lesson

Today is our first day in our new multiplication unit. We are going to begin the unit by learning about multiples. You may have learned about multiples last year, so would anyone like to share what a multiple is? Give students time to respond. *A multiple is when we skip count by a whole number. Let's all skip count by 3s until we reach 30.*

Show students the Finding Multiples printable and distribute counters. Ask students to use the counters to cover all of the multiples of three through 30. Have students look at the pattern on their hundreds chart. Ask students to predict other numbers that are multiples of three and have them explain how they made their prediction. After students have had the opportunity to respond, have them cover the remaining multiples of three. Discuss what observations can be made about the multiples.

Work Time

Allow students to work in pairs or groups. They should complete the same steps in the mini lesson on the numbers 4, 6, 8, and 9. Students should cover the multiples through 50 with counters and then predict the other multiples. Then, students will finish covering the board and record their observations.

Closing

Select a few students to share their hundreds charts and observations with the class. Use this time to ask questions such as: What do you notice about this sequence? Allow students to share how their observations are alike and different with each other.

Intervention

- Replace multiples of six and nine with multiples of two and five.

Extension

- Have students investigate patterns for two digit numbers.

Essential Questions

- What are multiples?
- How is skip counting related to multiples?

Formative Assessment

- Observe students as they work. Students should be able to explain what patterns they see in various sequences, as well as make reasonable predictions.

Name _____ Date _____

WHAT ARE MULTIPLES

Place counters on the hundreds chart to find multiples of 3, 4, 6, and 9. Record your observations in the space below.

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

Multiples of 4

Prediction: _____

Observations: _____

_____

_____

Multiples of 6

Prediction: _____

Observations: _____

_____

_____

Multiples of 8

Prediction: _____

Observations: _____

_____

_____

Multiples of 9

Prediction: _____

Observations: _____

_____

_____

Lesson 16: Multiply 2-Digit Numbers by Multiples of 10

Standard: 4.NBT.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Materials:

- Multiplication recording sheet

Mini Lesson

I have been so impressed with the progress you have mode with multiplying larger numbers! In fact, you're doing so well I think you're ready for one last challenge within this multiplication unit. This week, you will learn to multiply 2-digit numbers by 2-digit numbers. Just like 3 and 4-digit multiplication, there are several different ways to solve these multiplication problems. I use this time to give a brief anecdote about how as a student I only learned one way, but it never made sense to me. I could do it, but I didn't understand HOW or WHY the strategy worked. I like to spend a couple minutes discussing why the understanding is important.

Begin this portion of the unit, by modeling how to multiply 2-digit numbers by multiples of 10. Use the following page to show examples of how the associative property can be used to multiply multiples of ten. Spend a few minutes allowing students to practice multiply by multiples of ten with guided practice and assistance.

Work Time

Students can complete this activity individually or with a partner. Students will multiply six different 2-digit numbers by multiples of ten. They should show their work.

Closing

Allow students to share the results of their work. Ask students to describe how the associative property allowed them to multiply these numbers.

Intervention

- Work with students in a small group.
- Allow students to only focus on area models and partial product, rather than attempted the algorithm.

Extension

- Have students write multiplication word problems to represent the multiplication problems on the back of their paper.

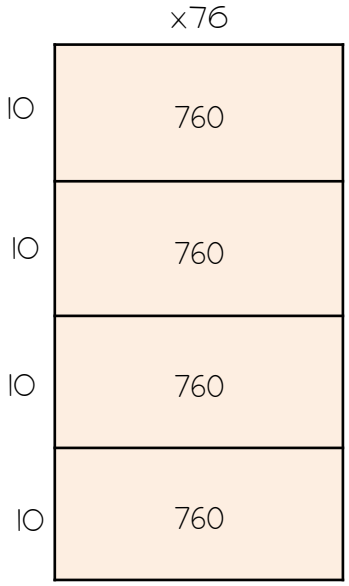
Essential Questions

- What patterns do I notice when I am multiplying whole numbers that can help me multiply more efficiently?
- What real life situations require multiplication?

Formative Assessment

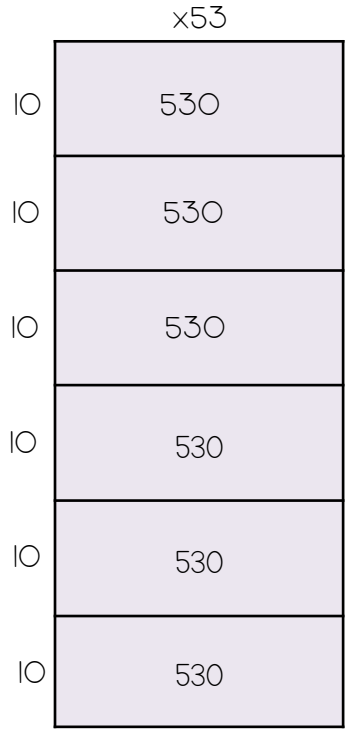
- Ask students to explain how they know the answer is correct.
- Have students explain what strategies they used to solve the problem.

76
x40



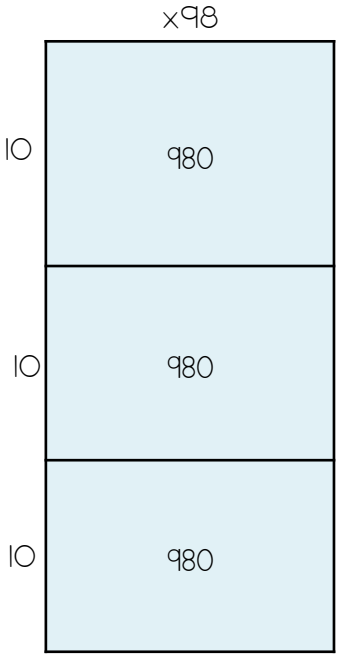
(4x10)x76
(76x4)x10
(10x76)x4

53
x60



(6x10)x53
(53x6)x10
(10x53)x6

98
x30



(3x10)x98
(98x3)x10
(10x98)x3

10

Name _____ Date _____

MULTIPLY 2-DIGIT NUMBERS BY MULTIPLES OF 10

Use the associative property to multiply the following numbers by multiples of ten. Be sure to show and explain your thinking.

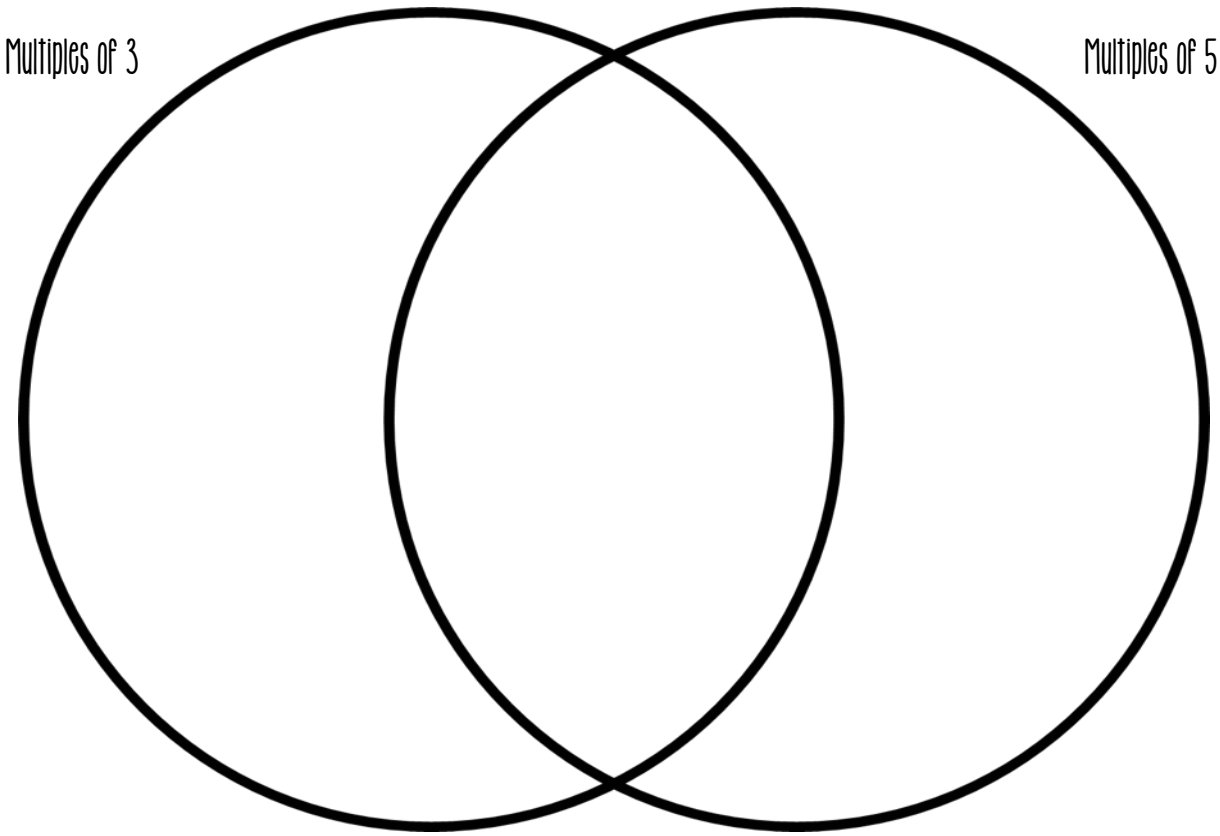
34x30	53x50	63x80
74x40	62x70	43x90

Name_____ Date_____

MULTIPLES PRACTICE 1

1. Write the multiples of 4 through 100.	2. Write the multiples of 6 through 100.
3. Write the multiples of 12 through 100.	4. Write the multiples of 9 through 100.

Use the Venn-Diagram to compare and contrast multiples of 3 and 5 through 100.



Name _____ Date _____

AREA MODELS

64x34

	60	4
30		
4		

63x94

	60	3
90		
4		

75x58

	70	5
___		
___		

54x67

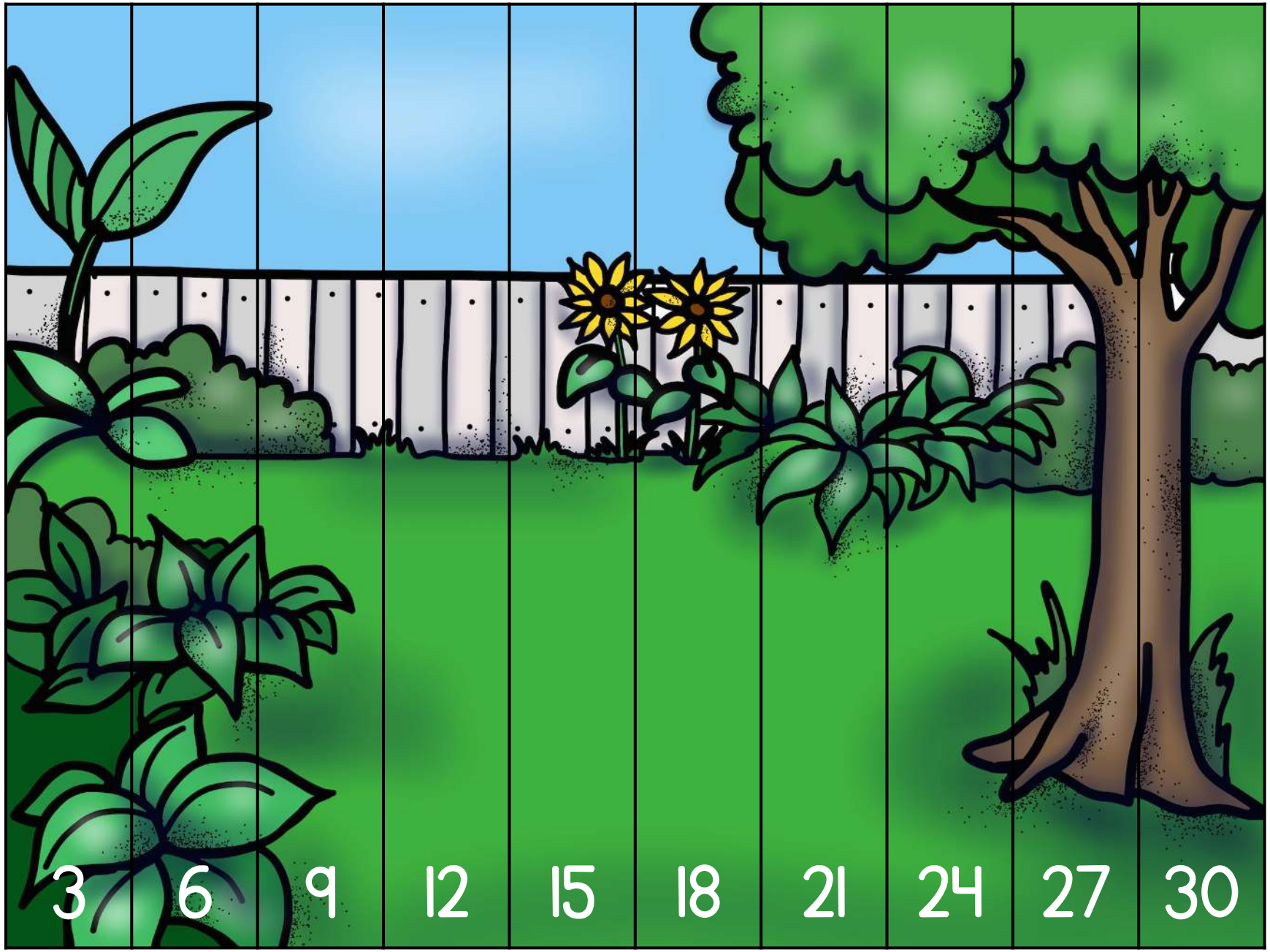
	50	4
___		
___		

74x96

	___	___
___		
___		

73x35

	___	___
___		
___		


3
6
9
12
15
18
21
24
27
30

NUMBER RIDDLES-1

5 3 7

What is the smallest product you can make using the digits above?

NUMBER RIDDLES-2

5 7 3

Arrange the digits above to create a multiplication problem with a product closest to 100.

NUMBER RIDDLES-3

7 6 2

What is the largest product you can make using the digits above?

NUMBER RIDDLES-4

Use the digits 1, 2, 3, and 4 to write a 2-digit by 2-digit multiplication problem with the largest product possible.

NUMBER RIDDLES-5

- I am a 3-digit number between 600 and 850.
- My hundreds digit is divisible by 2 but not 5.
- My tens digit is a multiple of 4.
- My ones digit is ½ of my tens digit.
- All of my digits are different.
- The sum of my digits is 18.
- What number am I?

NUMBER RIDDLES-6

- I am a 2-digit number between 40 and 70.
- My ones digit is two more than my tens digit.
- I am a prime number
- What number am I?