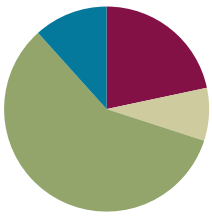
Lesson 1

Objective: Interpret a multiplication equation as a comparison.

Related Topics: More Lesson Plans for the Common Core Math

Suggested Lesson Structure



Fluency Practice	(13 minutes)
Application Problem	(5 minutes)
Concept Development	(35 minutes)
Student Debrief	(7 minutes)
Total Time	**(60 minutes)**

Fluency Practice (13 minutes)

- Multiply and Divide by 10 **4.NBT.1** (10 minutes)
- Place Value **4.NBT.2** (3 minutes)

Sprint: Multiply and Divide by 10 (10 minutes)

Materials: (S) Multiply and Divide by 10 Sprint

Note: Reviewing this fluency will acclimate students to the Sprint routine, a vital component of the fluency program.

Place Value (3 minutes)

Materials: (S) Personal white boards, place value chart

Note: Reviewing and practicing place value skills in isolation will prepare students for success in multiplying different place value units during the lesson.

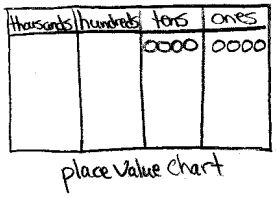
T: (Project place value chart to the thousands.) Show 4 ones in number disks. Write the number below it.
S: (Students draw 4 ones disks and write 4 below it.)
T: Show 4 ten disks and write the number below it.
S: (Students draw 4 ten disks and write 4 at the bottom of the tens column.)
T: Say the number in unit form.
S: 4 tens 4 ones.

NOTES ON MULTIPLE MEANS FOR ACTION AND EXPRESSION:

For the place value fluency drill, students may represent ones, etc., using counters rather than drawing.

Others may benefit from the opportunity to practice simulataneously speaking and showing units (e.g., tens).

Provide sentence frames to support oral response, such as "_____tens_____ones is _____ (standard form) _____."

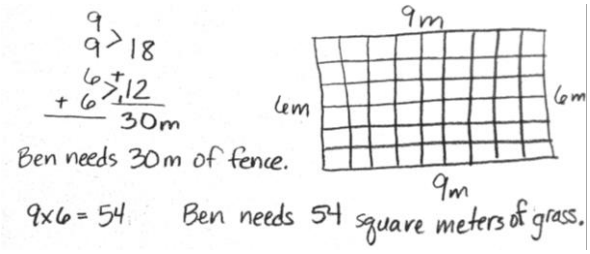


T: Say the number in standard form.
S: 44.

Continue for the following possible sequence: 2 tens 3 ones, 2 hundreds 3 ones, 2 thousands 3 hundreds, 2 thousands 3 tens, and 2 thousands 3 hundreds 5 tens and 4 ones.

Application Problem (5 minutes)

Ben has a rectangular area 9 meters long and 6 meters wide. He wants a fence that will go around it as well as grass sod to cover it. How many meters of fence will he need? How many square meters of grass sod will he need to cover the entire area?



NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Enhance the relevancy of the Application Problem by substituting names, settings, and tasks to reflect your students and their experiences.

Set individual student goals and expectations. While some students may successfully solve for area and perimeter in 5 minutes, others may solve for one, while others may solve for both and compose their own Application Problem.

Note: As the first lesson of the year, this application problem reviews area and perimeter, multiplication, and addition—all important concepts from Grade 3. This problem can be extended after the Concept Development by asking students to find an area 10 times as much as the grass sod, or to find a perimeter 10 times as wide and 10 times as long.

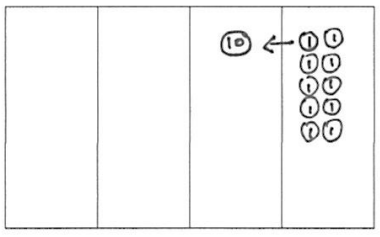
Concept Development (35 minutes)

Materials: (T) Base ten disks: ones, tens, hundreds, and thousands (S) Personal white boards

Problem 1

1 ten is 10 times as many as 1 one.

T: (Have a place value chart ready. Draw or place 1 unit into the ones place.)
T: How many units do I have?
S: 1.
MP.6
T: What is the name of this unit?
S: A one.
T: Count the ones with me. (Draw ones as they do so.)
S: 1 one, 2 ones, 3 ones, 4 ones, 5 ones...10 ones.



T: 10 ones. What larger unit can I make?

S: 1 ten.

MP.6

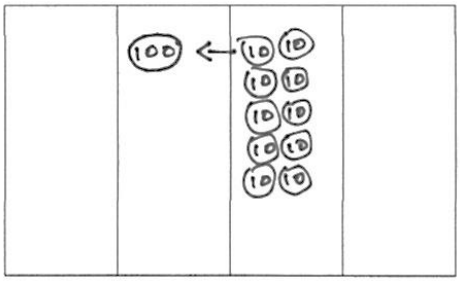
T: I change 10 ones for 1 ten. We say, "1 ten is 10 times as much as 1 one." Tell your partner what we say and what that means. Use the model to help you.

S: 10 ones make 1 ten. → 10 times 1 one is 1 ten or 10 ones. → We say 1 ten is 10 times as many as 1 one.

Problem 2

One hundred is 10 times as much as 1 ten.

Quickly repeat the above process with 10 copies of 1 ten.



Problem 3

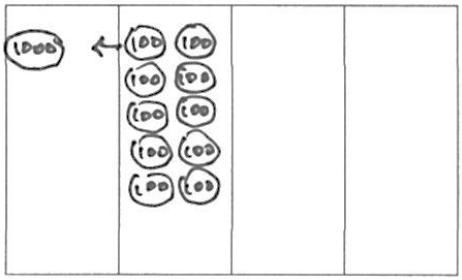
One thousand is 10 times as much as 1 hundred.

Quickly repeat the above process with 10 copies of 1 hundred.

T: Discuss the patterns you have noticed with your partner.

S: 10 ones makes 1 ten. 10 tens make 1 hundred. 10 hundreds make 1 thousand. → Every time we get 10 we bundle and make a bigger unit. → We copy a unit 10 times to make the next larger unit. → If we take any of the place value units, the next unit on the left is ten times as many.

T: Let's review the multiplication pattern that matches our models and 10 times as many words.

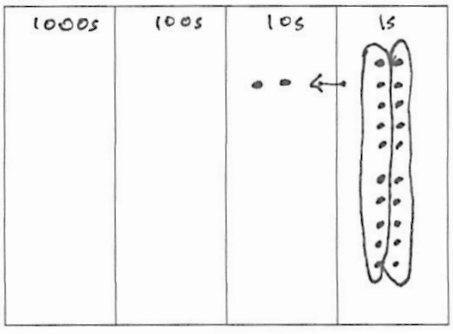


Display the following information for student reference:

1 ten = 10 x 1 one	(Read, as "1 ten is 10 times as much as 1 one.")
1 hundred = 10 x 1 ten	(Say, "1 hundred is 10 times as much as 1 ten.")
1 thousand = 10 x 1 hundred	(Say, "1 thousand is 10 times as much as 1 hundred.")

Problem 4

Model on the place value chart and as equations 10 times as much as 2 ones.



Note: Number disks are used as models throughout the curriculum and can be represented in two different ways. A disk with a value labeled inside of it, such as in Problem 1, should be drawn or placed on a place value chart with no headings. The value of the disk in its appropriate column indicates the column heading. A number disk drawn as a dot should be used on place value charts with headings, as in Problem 4. The dot is a faster way to represent the number disk and is used as students move further away from a concrete stage of learning.

T: Draw place value disks as dots. Because you are using dots, label your columns with the unit value.

T: Represent 2 ones. Solve to find 10 times as many as 2 ones. Work together.

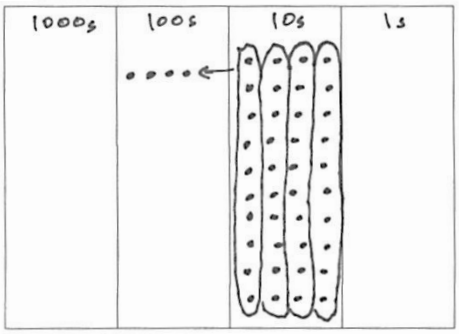
S: (Students work. Circulate as they do so.)

T: 10 times as many as 2 ones is?

S: 20 ones → 2 tens.

T: Explain this number sentence to your partner using your model.

10 × 2 ones = 20 ones = 2 tens



Repeat the process with 10 times as many as 4 tens.

10 × 4 tens = 40 tens = 4 hundreds

Problem 5

Model as an equation 10 times as many as 7 hundreds.

T: Write an equation and solve for 10 times as many as 7 hundreds.

Circulate and assist students as necessary.

T: Show me your boards. Read your equation.

S: 10 times 7 hundreds equals 70 hundreds equals 7 thousands.

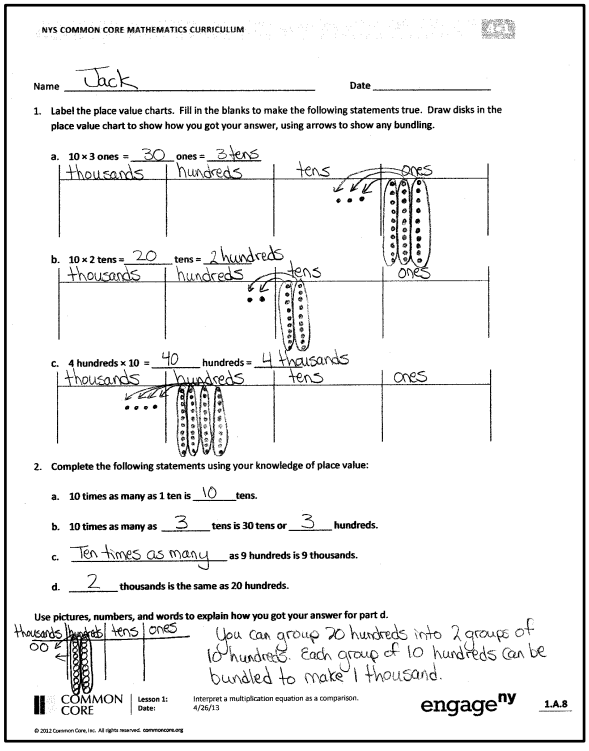
10 × 7 hundreds = 70 hundreds = 7 thousands

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. Some problems do not specify a method for solving. This is an intentional reduction of scaffolding that invokes MP.5, Use Appropriate Tools Strategically. Students should solve these problems using the RDW approach used for Application Problems.

For some classes, it may be appropriate to modify the assignment by specifying which problems students should work on first. With this option, let the careful sequencing of the Problem Set guide your selections so that problems continue to be scaffolded. Balance word problems with other problem types to ensure a range of practice. Assign incomplete problems for homework or at another time during the day.

Challenge quick finishers to write their own 10 times as many statements similar to Problems 2 and 5.



NYS COMMON CORE MATHEMATICS CURRICULUM

Name Jack Date

1. Label the place value charts. Fill in the blanks to make the following statements true. Draw disks in the place value chart to show how you got your answer, using arrows to show any bundling.

a. 10 × 3 ones = 30 ones = 3 tens

b. 10 × 2 tens = 20 tens = 2 hundreds

c. 4 hundreds × 10 = 40 hundreds = 4 thousands

2. Complete the following statements using your knowledge of place value:

a. 10 times as many as 1 ten is 10 tens.

b. 10 times as many as 3 tens is 30 tens or 3 hundreds.

c. Ten times as many as 9 hundreds is 9 thousands.

d. 2 thousands is the same as 20 hundreds.

Use pictures, numbers, and words to explain how you got your answer for part d.

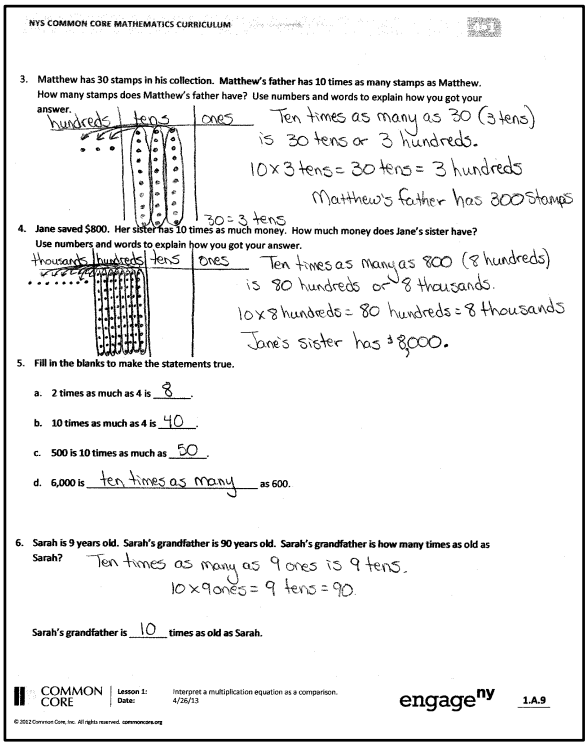
You can group 20 hundreds into 2 groups of 10 hundreds. Each group of 10 hundreds can be bundled to make 1 thousand.

COMMON CORE | Lesson 1: Date: 4/26/13 Interpret a multiplication equation as a comparison. engage^ny 1.A.8

Student Debrief (7 minutes)

Lesson Objective: Interpret a multiplication equation as a comparison.

Invite students to review their solutions for the Problem Set and the totality of the lesson experience. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set. You may choose to use any combination of the questions below to lead the discussion.



NYS COMMON CORE MATHEMATICS CURRICULUM

3. Matthew has 30 stamps in his collection. Matthew's father has 10 times as many stamps as Matthew. How many stamps does Matthew's father have? Use numbers and words to explain how you got your answer.

hundreds | tens | ones

Ten times as many as 30 (3 tens) is 30 tens or 3 hundreds.
10 × 3 tens = 30 tens = 3 hundreds
Matthew's father has 300 stamps

30 = 3 tens

4. Jane saved $800. Her sister has 10 times as much money. How much money does Jane's sister have? Use numbers and words to explain how you got your answer.

thousands | hundreds | tens | ones

Ten times as many as 800 (8 hundreds) is 80 hundreds or 8 thousands.
10 × 8 hundreds = 80 hundreds = 8 thousands
Jane's sister has $8,000.

5. Fill in the blanks to make the statements true.

a. 2 times as much as 4 is 8.
b. 10 times as much as 4 is 40.
c. 500 is 10 times as much as 50.
d. 6,000 is ten times as many as 600.

6. Sarah is 9 years old. Sarah's grandfather is 90 years old. Sarah's grandfather is how many times as old as Sarah?

Ten times as many as 9 ones is 9 tens.
10 × 9 ones = 9 tens = 90.

Sarah's grandfather is 10 times as old as Sarah.

COMMON CORE | Lesson 1: Date: Interpret a multiplication equation as a comparison. 4/26/13 engage^ny 1.A.9

- What relationship do you notice between the problem of Matthew's stamps and 1(a) and 1(b)?
- How did Problem 1(c) help you to solve Problem 4 about Jane's savings?
- In Problem 5 which solution proved most difficult to find? Why?
- How does the answer about Sarah's age and her grandfather's age relate to our lesson's objective?
- What are some ways you could model 10 times as many? What are the benefits and drawbacks of each way of modelling? (Money, base ten materials, disks, labeled drawings of disks, dots on a labeled place value chart, tape diagram.)
- Take 2 minutes to explain to your partner what we learned about the value of each unit as we move from right to left.
- Write and complete the following statements in your math journal:

_____ ten is _____ times as many as _____ one

_____ hundred is _____ times as many as _____ ten

_____ thousand is _____ times as many as _____ hundred

Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students' understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.

A

Correct _____

Multiply or divide.

1	2 x 10 =		23	__ x 10 = 100	
2	3 x 10 =		24	__ x 10 = 20	
3	4 x 10 =		25	__ x 10 = 30	
4	5 x 10 =		26	100 ÷ 10 =	
5	1 x 10 =		27	50 ÷ 10 =	
6	20 ÷ 10 =		28	10 ÷ 10 =	
7	30 ÷ 10 =		29	20 ÷ 10 =	
8	50 ÷ 10 =		30	30 ÷ 10 =	
9	10 ÷ 10 =		31	__ x 10 = 60	
10	40 ÷ 10 =		32	__ x 10 = 70	
11	6 x 10 =		33	__ x 10 = 90	
12	7 x 10 =		34	__ x 10 = 80	
13	8 x 10 =		35	70 ÷ 10 =	
14	9 x 10 =		36	90 ÷ 10 =	
15	10 x 10 =		37	60 ÷ 10 =	
16	80 ÷ 10 =		38	80 ÷ 10 =	
17	70 ÷ 10 =		39	11 x 10 =	
18	90 ÷ 10 =		40	110 ÷ 10 =	
19	60 ÷ 10 =		41	30 ÷ 10 =	
20	100 ÷ 10 =		42	120 ÷ 10 =	
21	__ x 10 = 50		43	14 x 10 =	
22	__ x 10 = 10		44	140 ÷ 10 =	

B Improvement _____ # Correct _____

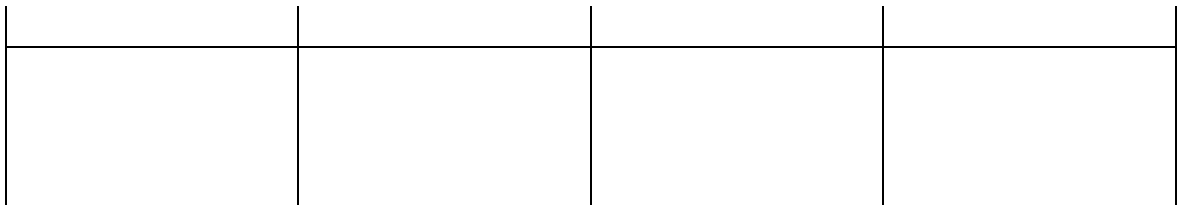
Multiply or divide.

1	1 x 10 =		23	__ x 10 = 20	
2	2 x 10 =		24	__ x 10 = 100	
3	3 x 10 =		25	__ x 10 = 30	
4	4 x 10 =		26	20 ÷ 10 =	
5	5 x 10 =		27	10 ÷ 10 =	
6	30 ÷ 10 =		28	100 ÷ 10 =	
7	20 ÷ 10 =		29	50 ÷ 10 =	
8	40 ÷ 10 =		30	30 ÷ 10 =	
9	10 ÷ 10 =		31	__ x 10 = 30	
10	50 ÷ 10 =		32	__ x 10 = 40	
11	10 x 10 =		33	__ x 10 = 90	
12	6 x 10 =		34	__ x 10 = 70	
13	7 x 10 =		35	80 ÷ 10 =	
14	8 x 10 =		36	90 ÷ 10 =	
15	9 x 10 =		37	60 ÷ 10 =	
16	70 ÷ 10 =		38	70 ÷ 10 =	
17	60 ÷ 10 =		39	11 x 10 =	
18	80 ÷ 10 =		40	110 ÷ 10 =	
19	100 ÷ 10 =		41	120 x 10 =	
20	90 ÷ 10 =		42	120 ÷ 10 =	
21	__ x 10 = 10		43	13 x 10 =	
22	__ x 10 = 50		44	130 ÷ 10 =	

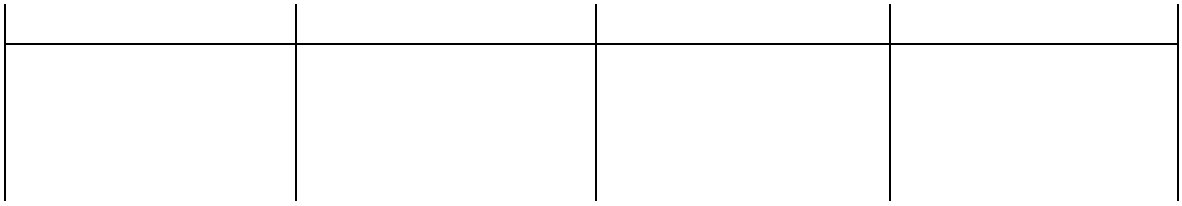
Name _____ Date _____

1. Label the place value charts. Fill in the blanks to make the following statements true. Draw disks in the place value chart to show how you got your answer, using arrows to show any bundling.

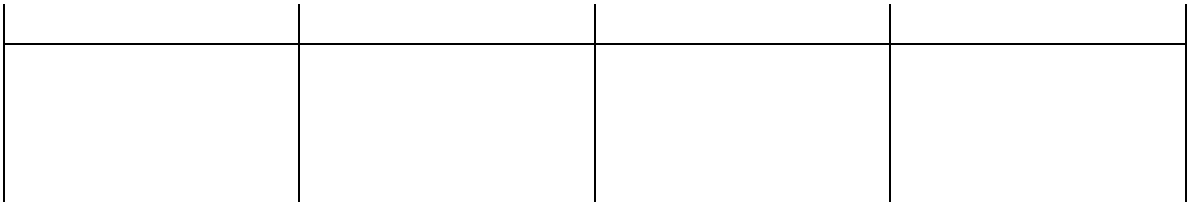
   a. 10 × 3 ones = _____ ones = _____



   b. 10 × 2 tens =_____ tens = _____



   c. 4 hundreds × 10 = _____ hundreds = _____



2. Complete the following statements using your knowledge of place value:

   a. 10 times as many as 1 ten is _____tens.

   b. 10 times as many as _____ tens is 30 tens or _____ hundreds.

   c. _____ as 9 hundreds is 9 thousands.

   d. _____ thousands is the same as 20 hundreds.

Use pictures, numbers, and words to explain how you got your answer for Part (d).

3. Matthew has 30 stamps in his collection. Matthew's father has 10 times as many stamps as Matthew. How many stamps does Matthew's father have? Use numbers and words to explain how you got your answer.

4. Jane saved $800. Her sister has 10 times as much money. How much money does Jane's sister have? Use numbers and words to explain how you got your answer.

5. Fill in the blanks to make the statements true.

   a. 2 times as much as 4 is _____.

   b. 10 times as much as 4 is _____.

   c. 500 is 10 times as much as _____.

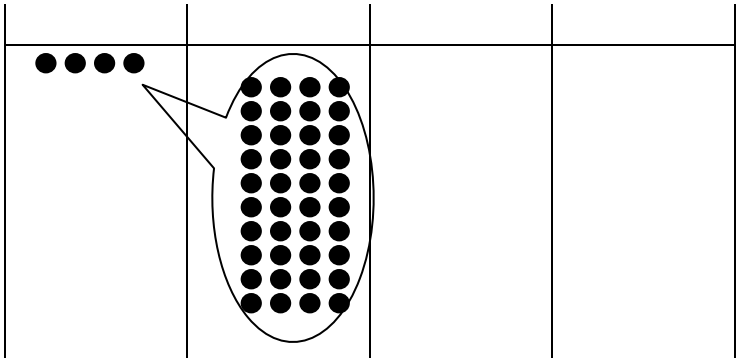
   d. 6,000 is _____ as 600.

6. Sarah is 9 years old. Sarah's grandfather is 90 years old. Sarah's grandfather is how many times as old as Sarah?

   Sarah's grandfather is _____ times as old as Sarah.

Name _____ Date _____

1. Use the number disks in the place value chart below to complete the following problems.



a. Label the place value chart.

b. Tell about the movement of the disks in the place value chart by filling in the blanks to make the following equation true and match what is happening in the place value chart.

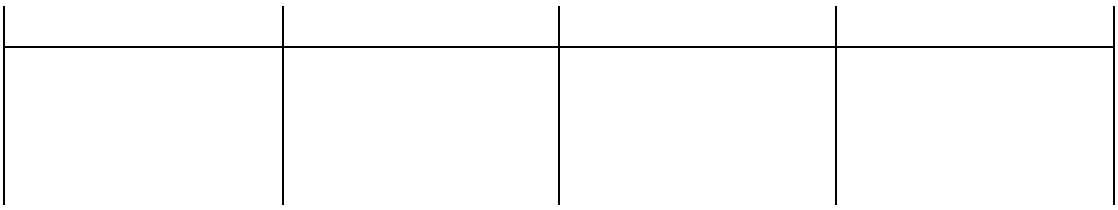
_____ × 10 = _____ = _____

c. Write a statement about this place value chart using the words "10 times as many."

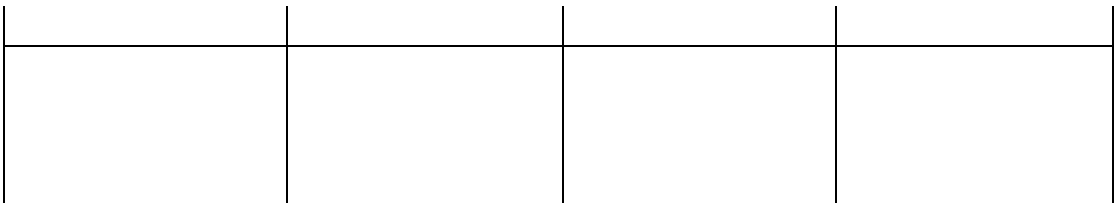
Name _____ Date _____

1. Label the place value charts. Fill in the blanks to make the following statements true. Draw disks in the place value chart to show how you got your answer.

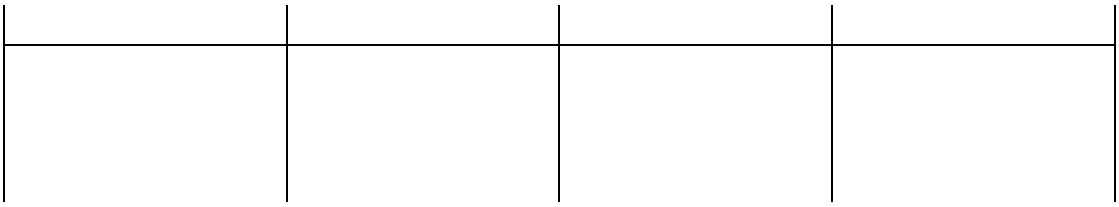
   a. 10 × 4 ones = _____ ones = _____



   b. 10 × 2 tens =_____ tens = _____



   c. 5 hundreds × 10 = _____ hundreds = _____



2. Complete the following statements using your knowledge of place value:

   a. 10 times as many as 1 hundred is _____ hundreds or _____ thousand.

   b. 10 times as many as _____ hundreds is 60 hundreds or _____ thousands.

   c. _____ as 8 hundreds is 8 thousands.

   d. _____ hundreds is the same as 4 thousands.

Use pictures, numbers, and words to explain how you got your answer for Part (d).

3. Katrina has 60 GB of storage on her tablet. Katrina's father has 10 times as much storage on his computer. How much storage does Katrina's father have? Use numbers and words to explain how you got your answer.

4. Katrina saved $200 to purchase her tablet. Her father spent 10 times as much money to buy his new computer. How much did her father's computer cost? Use numbers and words to explain how you got your answer.

5. Fill in the blanks to make the statements true.

   a. 4 times as much as 3 is _____.

   b. 10 times as much as 9 is _____.

   c. 700 is 10 times as much as _____.

   d. 8,000 is _____ as 800.

6. Tomas's grandfather is 100 years old. Tomas's grandfather is 10 times as old. How old is Tomas?