Thse TAKS Tutor
5th Grade
TAKS Objective 1—Number, Operation, and Quantitative Reasoning

Objective 5.1: The student uses place value to represent whole numbers and decimals. The student is expected to:

(A) use place value to read, write, compare, and order whole numbers through the billions place; and

(B) use place value to read, write, compare, and order decimals through the thousandths place.

This objective has eight targets:

- use place value to read whole numbers through the billions place;
- use place value to write whole numbers through the billions place;
- use place value to compare whole numbers through the billions place;
- use place value to order whole numbers through the billions place;
- use place value to read decimals through the thousandths place;
- use place value to write decimals through the thousandths place;
- use place value to compare decimals through the thousandths place;
- use place value to order decimals through the thousandths place.

Overview: ***Place value***, the value of the place of a digit within a numeral, is one of the most important concepts in math. At the beginning of fifth grade, students should be confident with place value through the millions period. Fifth grade adds the billions period (testing only through the billions place), and the thousandths place in the decimal period.

Sequencing is another vital number skill. Students should be able to put numbers in order from least to greatest and greatest to least; fifth graders should also be able to arrange the words associated with a set of numbers, like populations, sizes, distances, weights, or other measurements.

A focus of fifth grade is problem solving with ***fractions and decimals***. Students should be able to recognize common equivalent fractions, whole numbers expressed as fractions, numbers greater or less than one expressed as fractions, as well as to compare several pairs of fractions when solving problems.

Fifth graders must know how to ***solve problems using information expressed as a range of numbers*** ("If Todd read between 5 and 8 books per week for six weeks, which number below represents an amount of books he could have read?").

Finally, students should be able to ***round*** numbers before computing to solve problems, or use compatible numbers (numbers that are easy to compute mentally, like 50 instead of 52).

DUPLICATE AS HANDOUT (LOCATED IN ACTIVITY FOLDER PAGE 1A)

Lesson 5.1A

Place Value Chart

We can make a place value chart to help us understand the value of a digit in a number. A place value chart is divided into periods. Ours needs to go from the ones place to the hundred billions place.
Here is a place value chart:

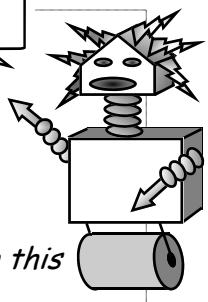
hundred billions	ten billions	billions ,	hundred millions	ten millions	millions ,	hundred thousands	ten thousands	thousands ,	hundreds	tens	ones

Here is a shorter way to create a place value chart:

HB	TB	B	HM	TM	M	HTh	TTh	Th	H	T	O

First draw twelve vertical lines, one for each of the places through hundred billions.
Next, label the columns with the abbreviations for the places, beginning with the ones place, and ending with the hundred billions place.
Then separate the lines into periods with a comma. That's it! You're done!
Now use the chart by filling in one digit per column. You can practice with a friend on the back of this paper.

MathSpeak!



Place Value- the value given to a place a digit occupies in a numeral.

Example: 1<u>5</u>2-The 5 is in the tens place, so its value is 5 tens or 50.

Period- a group of digits separated by commas in a written number

Example: <u>125</u>,678 - The underlined digits represent the thousands period in this number. The remaining digits are in the ones period.

Lesson 5.1A

Mathematics Vocabulary:

Place value – the value of the place of a digit in a numeral.
*Example: 1*25,687— the underlined digit is in the hundred thousands place.*

Period - a group of digits separated by commas in a written number.
Example: 125,687- the underlined digits represent the thousands period in the list of numbers.

Represents – stands for
Example: The 9 in 196 represents 9 tens.

Value – how much a digit is worth in the place it is holding.
Example: The value of the 9 in 196 is 9 tens, or 90.

Whole numbers – the counting numbers and zero.
Example: 14, 286, and 75,903 are counting numbers.

Standard form - a number written using numerals.
Example - 4,321 is the way to write four thousand, three hundred twenty-one in standard form.

Expanded form - a number written as the sum of its various place values.
Example: 4,000 + 300 + 20 + 1 = 4,321.

Word form - a way of writing a number using words
Example: Four thousand, three hundred twenty-one is the way to write 4,321 in word form.

Inequality - statement comparing two numbers or quantities using "greater than" or "less than".
Example: 4,321 > 3,421 or 3,421 < 4,321.

Teaching Notes Getting Started

Instructional Focus:

Identify place value of digits within a number in order to read whole numbers through the billions place.

1. Display **Transparency 1**, (page 1 in the Transparency packet, page 4 in the student book). Introduce the billions period; review the millions, thousands and

When labeling the place value chart, start with the ones place and end with the hundred billions place. This will reinforce the concept that place value increases from right to left.

ones period and place values on the chart.

2. Explain that a place value chart can be created to assist with determining the value of a digit in a given number. Identify the abbreviations for each place in the chart.
3. Demonstrate how to use the chart by writing several numbers and identifying the value of each digit. For example, write 25 on the chart. Point out that the 2 is under the "T" on the chart (the tens' place) and has a value of 2 tens. Then use the same procedure to identify the value of the 5.
4. Have students make individual place value charts. Write the number 300 on the board. Have students fill in the number on their place value charts and identify the value of each digit.
5. Continue the exercise, using numbers up to ten digits.

Instructional Focus:

Use place value to write whole numbers through the billions place.

1. Write the number 7,602,835,419 on **Transparency 1**. **Ask** volunteers to name the value of each digit in its place starting with the ones place and continuing from right to left (the 9 in the ones place has a value of 9; the 1 in the tens place has a value of 10, etc.).

B	HM	TM	M	HTh	TTh	Th	H	T	O
7	6	0	2	8	3	5	4	1	9

2. As the students name the values, write the numbers as an addition problem: 600,000,000 + 9 + 10 + 400 + 7,000,000,000 + 5000 + 30,000 + 800,000 + 2,000,000. Explain that this way of writing a number is called "expanded form".
3. Practice writing several more numbers in expanded form, being sure to use numbers through the billions place.

Extension activities:

- Use numbers that have zeroes in places other than the ones place. These numbers are often confusing to students as they write in expanded form.
- Reverse the process by writing the numbers in expanded form and having students translate the number to standard form.
- Write the expanded form number out of order, and have students use addition to write the number appropriately in standard form or word form.

Lesson 5.1A

Example: 400 + 9 + 600,000 + 50,000,000 + 20 =

$$\begin{array}{r} 400 \\ 9 \\ 600{,}000 \\ 50{,}000{,}000 \\ +\quad 20 \\ \hline 50{,}600{,}409 \end{array}$$

Instructional Focus:

Identify place value of digits within a number in order to compare whole numbers through the billions place.

1. Draw a place value chart like the one on Transparency 1, and enter two numbers like this:

   1,964,073,528 1,964,037,582
2. Compare the numbers digit by digit from left to right:
   - What is the value of the numbers in the billions place? (the value of both is 1,000,000,000); the number in the hundred millions place? (the value of both is 900,000,000) the number in the ten millions place ?(the value of both is 60,000,000); the number in the millions place? (the value of both is 4,000,000) the hundred thousands place? (the value of both is 0) the ten thousands place? (one is 70,000, the other 30,000).
   - Since the values are different in this digit, the number with the digit of higher value is the greater number.
3. Now make a **verbal statement** comparing the two numbers:

   1,964,073,528 is greater than 1,964,037,582

   Review the symbols for greater than, less than, and equal to. Then, write an inequality that compares the two numbers:

   1,964,073,528 > 1,964,037,582

   Another inequality that compares these two numbers is

   1,964,037,582 < 1,964,073,528
4. Practice this several times, each time with numbers whose digits are the same, but with different place values. For example, compare 732,845 and 732,854; compare 5,046,993 and 5,064,939; compare 2,156 and 2,651.

HINT: Be sure to compare the number one digit at a time, from the LEFT (the digit with the greatest place value) to the RIGHT (digit of least place value).

Week-Long Activity One

- Ten-sided number cubes labeled 0 - 9
- Colorful note cards (or card stock cut into 3X5 cards)
- Pencil
- Student math journals

Directions: **Day One -** Generate Decimal Numbers

1. Work in pairs or threes to share supplies. Students should copy this table into their math journals:

0.1	0.01	0.001

2. Next, roll the die, and record the result in the table. For example, if the number rolled is 4, it could be recorded as 0.4 in the tenths column, 0.04 in the hundredths column, or 0.004 in the thousandths column. Continue rolling the die and recording the results until the table is full. Students should check their work and a partner's to be sure the decimal numbers are written correctly.

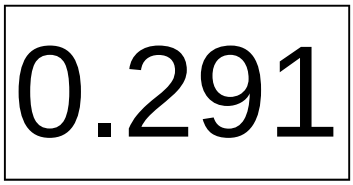
Example:

0.1	**0.01**	**0.001**
0.6	0.04	0.007
0.2	0.09	0.001
0.0	0.08	0.003
0.9	0.04	0.000
0.3	0.01	0.006

3. Using five colored note cards, write one three-digit number on each card. Add together the columns across one row to get each of the five numbers.

Example: 0.6 + 0.04 + 0.007 = 0.647

0.2 + 0.09 + 0.001 = 0.291



4. Now there are five cards, each with a three-digit decimal number. Students should practice reading the numbers on their own cards, then trade with a friend and read the friend's numbers.

   Example: 0.647 should be read "six hundred forty-seven thousandths".

   Check to be sure that students read the numbers with the zeroes in the tenths and hundredths places correctly: 0.083 should be read "eighty-three thousandths".

5. Students should use these cards to work daily warm-up exercises. Alternatively, teachers may generate a table like the one on the preceding page, and use this common table for the following daily exercises:
   - **Day Two** - Add the five decimal numbers. What is their sum?
   - **Day Three** - Put the five decimal numbers in order from least to greatest (or greatest to least).
   - **Day Four** - Pick two of the five decimal numbers. What is the difference between the two numbers? Read this number to your partner.
   - **Day Five** - Pick two different decimal numbers. Round these to the nearest tenth; to the nearest hundredth.

NOTE: This activity can be updated weekly, and will be adjusted to match the current objective in each section of The TAKS Tutor 5.

TEACHING NOTES
Lesson 5.1A

Review Transparency 1, (pg. 1 in the Transparency packet, pgs. 4 in the student book).

AFTER COMPLETION OF ACTIVITIES, ASSIGN INDEPENDENT PRACTICE

5.1A, PGS. 5 - 6 IN THE STUDENT BOOK, (ANS.: pgs. 24 - 25. in Teacher's manual)

ADDITIONAL INDEPENDENT PRACTICE 5.1A, IN THE STUDENT BOOK:
- **PAGES 7 - 8 (ANS.: pgs. 26 - 27 in Teacher's manual)**

Transparency 1

Lesson 5.1A

1.

1	9	8	7	6	5	4	3	2	1	.	1	2	3
B	HM	TM	M	HTH	TTH	TH	H	T	O	And	Th	Hnths	Tths

1,987,654,321.123

2. **9 is in the ones place and the hundred millions place**
7 is in the tens place and the ten millions place
4 is in the hundreds place, the ten thousands place, and the millions place
3 is in the thousands place and the billions place
0 is in the hundred thousands place

3.

1	9	8	7	6	5	4	3	2	1
B	HM	TM	M	HTH	TTH	TH	H	T	O

1,987,654,321

4.

1	9	8	7	6	5	4	3	2	1
B	HM	TM	M	HTH	TTH	TH	H	T	O

1,987,654,321

5.

1	9	8	7	6	5	4	3	2	1
B	HM	TM	M	HTH	TTH	TH	H	T	O

1,987,654,321

Note: Have students construct a place value chart in order to focus on the numerals being identified.

Name _____ Date _____

Lesson 5.1A

Independent Practice

1. How is thirty-seven and six hundredths written as a numeral?

   A 37.66

   B* 37.06

   C 37.6

   D 37.006

2. What numeral is in the billions place of the following number: 3,374,043,479?

   A 9

   B 4

   C* 3

   D 0

   E None of the above.

3. How is the numeral 2,200,012,300 written in words?

   A two billion, two hundred twelve thousand, three hundred

   B two billion, two hundred million, twelve thousand, thirty

   C two million, two hundred twelve thousand, three hundred

   D two million, two hundred thousand, twelve hundred, three

   E* two billion, two hundred million, twelve thousand, three hundred

4. How is the numeral 8,093,000,004 written in words?

   A* eight billion, ninety-three million, four

   B eight billion, nine hundred three million, four

   C eight million, ninety-three thousand, four

   D eight billion, ninety-three million, forty

5. How is four billion, two million, four hundred thousand, eight hundred written as a numeral?

   A 4,002,400,008

   B 4,200,400,800

   C 4,002,004,800

   D* 4,002,400,800

   E 4,020,004,800

Name _____ Date _____

Lesson 5.1A

Independent Practice

6. How is the numeral 5,020.3 written in words?

   A* five thousand, twenty and three tenths

   B five thousand, twenty and three thousandths

   C five thousand, and three hundredths

   D five thousand, twenty and three hundredths

   E five thousand, two and three tenths

7. How is nine billion, three hundred twenty-one million, two hundred thirteen thousand, one hundred seventy-six written as a numeral?

   A 9,312,213,176

   B* 9,321,213,176

   C 9,312,231,076

   D 9,321,231,176

   E 921,213,170

8. How is six thousand and twelve thousandths written as a numeral?

   A* 6000.012

   B 6000.612

   C 600.12

   D 6000.0012

   E 6000.12

9. What digit is in the ten thousands place in the following number? 663,370

   A 3

   B 0

   C 7

   D* 6

   E None of the above.

10. How is the numeral 5,200.3 written in words?

    A five thousand, twenty and three thousandths

    B five thousand, two and three tenths

    C five thousand, twenty and three hundredths

    D* five thousand, two hundred and three tenths

    E five thousand, and three hundredths

Name _____ Date _____

Lesson 5.1A

Independent Practice

1. What is in the hundred millions place of the following number? 3,974,173,479

   A 1

   B* 9

   C 7

   D 3

   E None of the above.

2. How is the numeral 8.04 written in words?

   A* eight and four hundredths

   B eight and four tenths

   C eight and four thousandths

   D eight and eighty-four hundredths

3. How is six billion, two hundred million, twelve thousand, twenty-four written in numbers?

   A 62. 120,240

   B 6,200, 012,240

   C 62,012,024

   D 6,212.000,024

   E* 6,200,012,024

4. How is the numeral 30.028 written in words?

   A thirty and twenty-eight hundredths

   B thirty and twenty-eight tenths

   C three and twenty-eight thousandths

   D* thirty and twenty-eight thousandths

   E three and twenty-eight hundredths

5. How is four and three hundred twenty-two thousandths written as a numeral?

   A 4.223

   B 4.0022

   C 43300.022

   D* 4.322

   E 4.0322

Name _____ Date _____

Lesson 5.1A

Independent Practice

6. How is the numeral 5,020.3 written in words?

   A* five thousand, twenty and three tenths

   B five thousand, twenty and three thousandths

   C five thousand, and three hundredths

   D five thousand, twenty and three hundredths

   E five thousand, two and three tenths

7. How is nine billion, three hundred twenty-one million, two hundred thirteen thousand, one hundred seventy-six written as a numeral?

   A 9,312,213,176

   B* 9,321,213,176

   C 9,312,231,076

   D 9,321,231,176

   E 921,213,170

8. How is six thousand and twelve thousandths written as a numeral?

   A* 6000.012

   B 6000.612

   C 600.12

   D 6000.0012

   E 6000.12

9. What digit is in the ten thousands place in the following number? 663,370

   A 3

   B 0

   C 7

   D* 6

   E None of the above.

10. How is the numeral 5,200.3 written in words?

    A five thousand, twenty and three thousandths

    B five thousand, two and three tenths

    C five thousand, twenty and three hundredths

    D* five thousand, two hundred and three tenths

    E five thousand, and three hundredths