Subject: Mathematics	**Grade**: Four (4)	**Strand**: Number	**Duration:** 60 Minutes
Topic: Decimal – tenths	**Focus Question**: How do I know the value of a number?		
Standard:	Know the value of numerals, associate them with their names, numbers, ordinals and use concrete objects to model patterns, expressions and numbers.		
Attainment Targets:	Demonstrate the understanding of fractional ideas.		
Benchmarks:	Read and write number names for decimal fractions (tenths and hundredths)		
Materials:	Base Ten Blocks		

Specific Objectives

o *By the end of the lesson, students will be able to:*

- Make connections between the decimal form of numbers and fractional numbers with a Denominator of 10;

- Identify the place value of digits in decimal numbers showing tenths;

- Decompose decimal numbers in a variety of ways.

Prior Learning:

o *Students should already be able to:*

- Name parts of a using fractions i.e. halves through tenths.

- Distinguish between value, place value and face value of a number.

- Explain the concept of reading and writing whole numbers.

Content Summary

o The place value system can be extended to show quantities less than 1 by including tenths, hundredths, thousandths, etc.

o Quantities less than 1 are represented using decimal numbers and are written using a decimal point.

o In numbers with decimal points, the digits to the right of the decimal point have values less than 1 and those to the left of the decimal point have values that are more than 1.

o From the decimal point and moving to the right, the value of each digit decreases by powers of 10 (10, 100, 1000, etc).

o A tenth is one of 10 equal divisions of the whole.

Engage

o Revise unit fractions, specifically '*tenths'*:

- Place students in groups of 3 – 4.

- Tell students that there are 35,529 ten-letter words in the English Language! Give each group a sample of a 10-letter word (see below). Allow students to count the number of consonants and vowels in the word and to write each as a fraction of the total number of letters.

A	D	V	E	R	T	I	S	E	D

- Give each group a sample of some 10 letter words for them to work with (complete list of 10-letter words is at http://www.bestwordlist.com/10letterwords.htm, but a sample that you can use for the lesson is shown below).

1. AUTOMOBILE	6. CANTALOUPE	11. EVACUATION	16. PRECAUTION
2. BLACKBOARD	7. CAPITALISE	12. FRESHWATER	17. REGULATION
3. BRAINPOWER	8. CAPTIVATED	13. FULFILLING	18. TAMBOURINE
4. BREAKAWAYS	9. DEDUCTIONS	14. FURNISHING	19. TRAMPOLINE
5. CALCULATOR	10. DELIBERATE	15. PRECARIOUS	20. TURNTABLES

- Tell each group to look through the list and find at least 2 words in which
  - 3-tenths of the letters are vowels and 7-tenths of the letters are consonants
  - 5-tenths of the letters are vowels and 5-tenths of the letters are consonant
 - 4-tenths of the letters are vowels and 6-tenths of the letters are consonant

Explore

o Revisit the place value system by exploring the '10-make-1' principle:

- Use base 10 pieces to remind students how 100 can be decomposed into 10 tens and how 10 can be decomposed into 10 ones.

- Introduce decimals by asking students to consider what would happen if 1 whole was divided into 10 equal parts. Give students a 'flat' and 10 'longs' from a set of base 10 pieces (if these are not available, then teachers can draw/shade squares to show the whole and tenths) for them to figure out how to represent a whole and its equivalent 10 parts.

- Discuss the value of each long if the whole is represented by a flat. Ensure that students understand that a long is 'one-tenth' of the flat, 2 longs are 'two-tenths' of the whole, 3 longs are 'three-tenths' of the whole, etc. (It is useful if the teacher ensures that the language used to refer to the longs is '2-tenths', '3-tenths' etc. and not '2 over 10' or '3 over 10' etc.).

- Identify the need to extend the place value chart (that shows only whole numbers) by asking students to identify the column on the chart in which they would write numbers less than 1 – those that show tenths.

Explain

o   Introduce students to the decimal form of writing numbers by showing them a place value chart with tenths. Allow students to use their base 10 pieces to model the number '**two and four tenths**':

Tens	Ones		Tenths ($\frac{1}{10}$)
	2	•	4
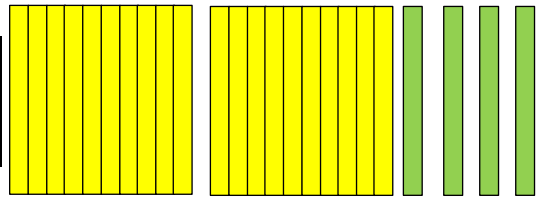
- Use this example and others, if necessary, for students to demonstrate their understanding of:
  - the role of the decimal point in naming numbers smaller than 1;
  - the values of digits to the left and to the right of the decimal point
  - relationship between 2.4 and two and four tenths ($2\frac{4}{10}$);
  - value of the digit in the 'tenths' column;

o   Allow students to use their base 10 pieces to explain why 2.4 is the same as '*24 tenths*' (decompose each whole into tenths). Explore other examples; in each case emphasize the relationship between the decimal and fractional representations of numbers.
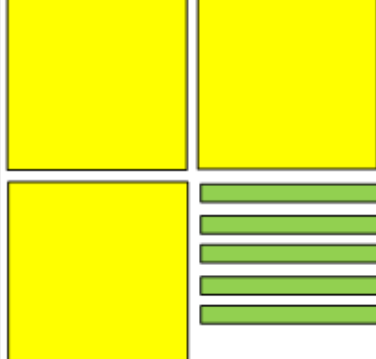
Extension

Hundredths is another decimal representation smaller than one, and even smaller than tenths. In the number 7.9<u>8</u>, the 8 represents 8 hundredths. Why do you think this position is called hundredths?

Evaluation

Students' Evaluation
1.   Some flats and longs are shown in each question below. Write each as a fraction and as a decimal

2. What number is described in each statement below?

   a. A number that has 3 wholes and 3 tenths

      Fraction: _____   Decimal: _____

   b. A number that has 27 tenths

      Fraction: _____   Decimal: _____

   c. A number that has 9 tenths

      Fraction: _____   Decimal: _____

   d. A number that has 2 wholes and 16 tenths

      Fraction: _____   Decimal: _____

3. Write each of the following numbers on a place value chart. Draw flats and longs to represent each number.

   a. $\frac{24}{10}$

   b. Two and three tenths

   c. 3.6

Teacher Evaluation

What percentage of students able to:	0% - 50%	51% - 80%	81% - 100%
Make connections between the decimal form of numbers and fractional numbers with a Denominator of 10;			
Identify the place value of digits in decimal numbers showing tenths;			
Decompose decimal numbers in a variety of ways.			

Comments:
Areas of strengths

Areas of weaknesses

Actions to be taken