Math 365 Lecture Notes
Section 6.1 – Introduction to Decimals

☆The Base Ten Number System and Decimals

$10^3 = 1000$	$10^2 = 100$	$10^1 = 10$	$10^0 = 1$	•				
thousands	hundreds	tens	ones	**decimal point**				

Example 1: Complete the following table.

Decimal	Expanded Form	Improper/Proper Fraction	Mixed Number
5.3			
		$\frac{7}{1000}$	
2.0103			$2\frac{103}{10000}$
	$-(3 \bullet 10^0 + 6 \bullet 10^{-1})$		

Example 2: Show how each of the following fractions can be converted to expanded form and then to decimal form.

a) $\frac{486}{10000}$

b) $\frac{2.97}{1000}$

Example 3: Without using a calculator, convert each of the following fractions to decimals.

a) $\frac{3}{250}$

b) $\frac{1}{2^3 \cdot 5^5}$

c) $\frac{9}{5^3}$

Let's Think

A terminating decimal is a decimal that can be written with a finite number of places to the right of the decimal point. Which of the following can be written as a terminating decimal?

$$\frac{10}{66} \qquad \frac{12}{75} \qquad \frac{9}{350} \qquad \frac{21}{1050} \qquad \frac{11}{2^3 \cdot 5^4} \qquad \frac{378}{25}$$

Conclusion: A rational number $\frac{a}{b}$ in simplest form can be written as a terminating decimal if and only if _____

_____

Ordering Terminating Decimals

To order decimals, change to the form $\frac{a}{b}$ where a and b are integers.

a) .36 and .9

b) .4 and .25

c) .1212… and 1/8

d) 0.532 and 0.55