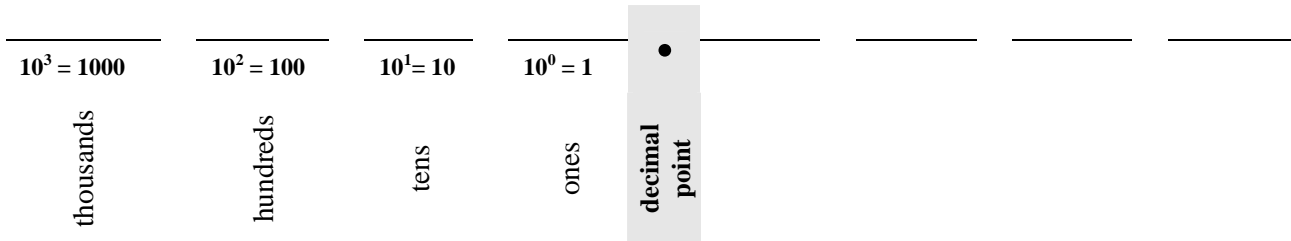


## Math 365 Lecture Notes Section 6.1 – Introduction to Decimals

### ★ The Base Ten Number System and Decimals



**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?

$$\frac{10}{66}$$

$$\frac{12}{75}$$

$$\frac{9}{350}$$

$$\frac{21}{1050}$$

$$\frac{11}{2^3 \cdot 5^4}$$

$$\frac{378}{25}$$

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  $\frac{1}{8}$

d) 0.532 and 0.55