Unit 15 Rounding Decimals and Writing Decimals as Fractions

1. **Rounding** to a specific place makes using decimal numbers easier.
   A. A rounded number is approximately equal to (≈) the number it represents.
   B. Rounding procedures
      1. Determine the number of places desired in the answer.
      2. Round up if the digit to the right is greater than or equal to 5.
      3. Do not round up if the digit to the right is less than 5.
      4. Eliminate all numbers to the right of the required place value.
   C. Examples:

Round 1.4647 to tenths.

tenths is the desired place value

1. 4 6 4 7 ≈ 1.5

because the number to the right is ≥ 5

Round 1.4647 to hundredths.

hundredths is the desired place value

1. 4 6 4 7 ≈ 1.46

because the number to the right is < 5

Round 1.4647 to thousandths.

thousandths is the desired place value

1. 4 6 4 7 ≈ 1.465

because the number to the right is ≥ 5

Round 1.4647 to units.

units is the desired place value

1. 4 6 4 7 ≈ 1.0

because the number to the right is < 5

2. **Repeating decimals**
   A. 1/3 repeats as .3333 forever. 1/3 = $.\overline{3}$ where $.\overline{3}$ means .3 repeats forever.
   1/3 rounded to two places is .33 and 1/3 rounded to three places is .333.
   B. 2/3 repeats as .6666 forever. 2/3 = $.\overline{6}$ where $.\overline{6}$ means .6 repeats forever.
   2/3 rounded to two places is .67 and 2/3 rounded to three places is .667.
   C. Calculations using rounded repeating decimals are approximations of the correct answer.

3. **Writing decimals as fractions**
   A. Procedures
      1. Write the decimal's fraction equivalent (tenths, hundredths, thousandths, etc.).
      2. Reduce to lowest terms.
   B. Examples:

.4 means $\frac{4}{10} = \frac{2}{5}$

.25 means $\frac{25}{100} = \frac{1}{4}$

.375 means $\frac{375}{1{,}000} = \frac{3}{8}$

2.75 means $2\frac{75}{100} = 2\frac{3}{4}$