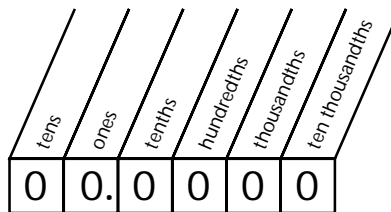


Decimals and Fractions

Many numbers you will use in science class and other places will be decimal numbers. Like fractions, **decimals** are used to show *how much*, or *what part*, of a whole. A decimal point (.) separates the whole number part of a decimal number on the left from the fraction part on the right. The value of a decimal number is determined by its *place value*. The chart on the right shows the place values for the decimal system. The first place after the decimal point shows parts of ten, or tenths, the second place shows hundredths, and so on. For example, 3.74 is the same as $3 + \frac{7}{10} + \frac{4}{100}$. Any fraction can be changed into a decimal number, and vice versa.



PROCEDURE: *To change a fraction into a decimal*, divide the numerator of the fraction by the denominator. If you have a mixed number (a whole number with a fraction), put the whole-number part of your number before the decimal point.

SAMPLE PROBLEM A: Change $24\frac{3}{20}$ into a decimal number.

Step 1: Divide the numerator of the fraction by the denominator. Notice that 20 does not divide evenly into 3. Therefore, you will need to add zeros after a decimal point in the numerator so that you can divide into it. The answer will be a decimal to show what part of 20 will divide into 3.

$$\begin{array}{r} 0.15 \\ 20 \overline{)3.00} \\ \underline{-20} \\ 100 \\ \underline{-100} \\ 0 \end{array}$$

Step 2: Because $24\frac{3}{20}$ is a mixed number, put the whole number before the decimal point.

$$24\frac{3}{20} = 24.15$$

PROCEDURE: *To change a decimal into a fraction*, put the decimal over its place value and reduce.

SAMPLE PROBLEM B: Convert 0.25 into a fraction. Because 0.25 is in the *hundredths* place, put 25 over 100 and reduce.

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

1. Change the fractions and mixed numbers into decimal numbers.

a. $\frac{5}{10} =$ _____

b. $7\frac{66}{100} =$ _____

c. $\frac{15}{25} =$ _____

d. $\frac{165}{55} =$ _____

2. Convert each decimal number to a fraction or a mixed number.

a. 0.13 = _____

b. 8.405 = _____

c. 2.98 = _____

d. 0.0001 = _____