Name: _____ Mark: _____

**Fractions to decimals**

To convert from a fraction to a decimal, we can try to find an equivalent fraction where the denominator is a power of 10, which makes conversion to decimals easy.

**Example 1.**

$$\frac{1}{2} = \frac{5}{10} = 0.5,$$
$$\frac{11}{8} = \frac{11 \cdot 125}{1000} = \frac{1375}{1000} = 1.375,$$
$$\frac{23}{20} = \frac{23 \times 5}{100} = \frac{115}{100} = 1.15,$$
$$\frac{17}{625} = \frac{17 \cdot 16}{10000} = \frac{272}{10000} = 0.0272$$

In the event the denominator cannot be multiplied easily to a power of 10 (or you can't find it easily), we can instead use decimal division, stopping when the decimal terminates or repeats.

**Example 2.** $625\overline{)17.0000}$ so $\frac{17}{625} = 0.0272$.

**Example 3.** $15\overline{)7.00}$ so $\frac{7}{15} = 0.4\overline{6}$.

**Example 4.** $7\overline{)11.000000}$ so $\frac{11}{7} = 1.\overline{571428}$.

Be careful not to reverse the order of division! In the last example, we are calculating $\frac{11}{7}$, not $\frac{7}{11}$. Make a sanity check - should your answer be more or less than 1?

Sometimes, all we care about are a few digits, so we may round our answer. Remember that when rounding to a certain number of decimal places, we need to know the *next* digit.

**Example 5.** To round $\frac{2}{7}$ to the nearest hundredth, we need to know *three* decimals places.

$7\overline{)2.000}$ so $\frac{2}{7} \approx 0.29$.

Final note: remember to simplify your fraction before you divide! Sometimes, this may make a lot of difference.

**Example 6.** To do $\frac{54}{24}$, first notice $\frac{54}{24} = \frac{9}{4}$, which is much easier. Then $\frac{54}{24} = 2.25$.

1. Write the following fractions as decimals (no rounding).

   (a) (1 point) $\frac{5}{8}$

   (b) (1 point) $\frac{29}{6}$

   (c) (1 point) $\frac{7}{400}$

   (d) (1 point) $\frac{12}{11}$

   (e) (1 point) $\frac{49}{91}$

   (f)* (1 point) $\frac{718}{1980}$

2. Write the following fractions as decimals rounded to what is indicated.

   (a) (1 point) $\frac{7}{9}$ to 2 decimal places.

   (b) (1 point) $\frac{11}{13}$ to the nearest thousandth.

   (c) (1 point) $\frac{24}{7}$ to 3 decimal places.

   (d) (1 point) $\frac{171}{28}$ to the nearest hundredth.

   (e) (1 point) $\frac{56}{19}$ to the nearest thousandth.

   (f)* (1 point) $\frac{4199}{2000}$ to 3 decimals places.