

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.**

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

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  $\frac{54}{21}$ , first notice  $\frac{54}{24} = \frac{9}{4}$ , which is much easier. Then  $\frac{54}{21} = 2.25$ .

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

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

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

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

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

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

(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.

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

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

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

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

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