

4.4 Adding and Subtracting Fractions, Least Common Denominator, and Equivalent Fractions

* Finding the Least Common Denominator (LCD)

Def. The **least common denominator** of a list of fractions is the smallest positive number divisible by all the denominators in the list.

1. Write the prime factorization of each denominator.
2. Collect each prime factor that raised to the greatest exponent.
3. Multiply the collected factors in step 2 to get the LCD.

Ex 1. Find LCD of the following fractions.

a. $\frac{7}{8}, \frac{11}{16}$

b. $\frac{2}{9}, \frac{4}{6}$

c. $\frac{4}{12}, \frac{1}{8}$

d. $\frac{5}{7}, \frac{4}{5}$

e. $\frac{1}{6}, \frac{3}{8}, \frac{5}{12}$

f. $\frac{5}{21}, \frac{1}{14}, \frac{5}{6}$

g. $\frac{23}{25}, \frac{1}{30}$

h. $\frac{-3}{40}, \frac{11}{108}$

i. $\frac{7}{20}, \frac{1}{24}, \frac{13}{45}$

j. $\frac{1}{36}, \frac{1}{80}$

j. $\frac{1}{26}, \frac{1}{40}, \frac{1}{65}$

k. $\frac{1}{6a^3}, \frac{1}{12a}$

l. $\frac{1}{9m^2n}, \frac{1}{12m^4}$

* Writing Equivalent Fractions

Recall



To write an equivalent fraction, **multiply** the numerator and denominator by the **same** number.

Ex 2. Write an equivalent fraction with the given denominator.

a. $\frac{7}{8} = \frac{\quad}{56}$

b. $\frac{1}{6} = \frac{\quad}{72}$

c. $\frac{3x}{7} = \frac{\quad}{42}$

d. $4 = \frac{\quad}{6}$

e. $\frac{9}{4x} = \frac{\quad}{36x^2}$

f. $\frac{5}{12x} = \frac{\quad}{60xy}$