

Finding the Least Common Denominator (LCD)

Name Solutions

Fill in the table with multiples of each denominator in order. Look for the smallest common multiple. The first one is done for you. Then build each fraction up to have the common denominator so you can add or subtract.

1. $\frac{1}{3} + \frac{2}{7}$

3 · 1 7 · 2 3 · 3

3	6	9	12	15	18	21
7	14	21				

7 · 1 7 · 2 7 · 3

Least Common Denominator (LCD) = 21

$$\frac{1}{3} \cdot \frac{7}{7} + \frac{2}{7} \cdot \frac{3}{3}$$

$$= \frac{7}{21} + \frac{6}{21}$$

← common denominator

$$= \frac{13}{21}$$

add the numerators

2. $\frac{5}{9} + \frac{7}{18}$

9	18				
18					

LCD = 18

$$\frac{5}{9} \cdot \frac{2}{2} + \frac{7}{18} \cdot \frac{1}{1}$$

$$= \frac{10}{18} + \frac{7}{18}$$

$$= \frac{17}{18}$$

3. $\frac{1}{10} - \frac{1}{12}$

10	20	30	40	50	60
12	24	36	48	60	

LCD =

$$\frac{1}{10} \cdot \frac{6}{6} - \frac{1}{12} \cdot \frac{5}{5}$$

$$= \frac{6}{60} - \frac{5}{60}$$

$$= \frac{1}{60}$$

Shortcuts: How do you find the LCD when

- the denominators have no factors in common?
- one denominator is a multiple of the other denominator?
- the denominators have a common factor?

Practice Adding and Subtracting Fractions

Name Solutions

Perform the indicated operation(s).

$$1. \frac{1}{2} + \frac{2}{3} \quad \text{LCD} = 6$$

$$= \frac{1}{2} \cdot \frac{3}{3} + \frac{2}{3} \cdot \frac{2}{2}$$

$$= \frac{3}{6} + \frac{4}{6} = \frac{7}{6}$$

$$3. \frac{3}{8} + \left(\frac{1}{2} \right) \quad \text{LCD} = 8$$

$$\frac{3}{8} + \frac{1}{2} \cdot \frac{4}{4}$$

$$\frac{3}{8} + \frac{4}{8} = \frac{7}{8}$$

$$5. -\frac{2}{1} + \frac{5}{7} \quad \text{LCD} = 7$$

$$-\frac{2}{1} \cdot \frac{7}{7} + \frac{5}{7}$$

$$-\frac{14}{7} + \frac{5}{7} = -\frac{9}{7}$$

$$7. \frac{18}{11} - \frac{7}{11} = \frac{11}{11} = 1$$

$$9. \frac{3}{4} + \frac{1}{6} - \frac{7}{3} \quad \text{LCD} = 12$$

$$\frac{3}{4} \cdot \frac{3}{3} + \frac{1}{6} \cdot \frac{2}{2} - \frac{7}{3} \cdot \frac{4}{4}$$

$$\frac{9}{12} + \frac{2}{12} - \frac{28}{12}$$

$$\frac{11}{12} - \frac{28}{12} = -\frac{17}{12}$$

$$2. \frac{3}{8} - \frac{1}{3} \quad \text{LCD} = 24$$

$$\frac{3}{8} \cdot \frac{3}{3} - \frac{1}{3} \cdot \frac{8}{8}$$

$$= \frac{9}{24} - \frac{8}{24} = \frac{1}{24}$$

$$4. \frac{7}{12} - \frac{4}{15} \quad \text{LCD} = 60$$

$$\frac{7}{12} \cdot \frac{5}{5} - \frac{4}{15} \cdot \frac{4}{4}$$

$$\frac{35}{60} - \frac{16}{60} = \frac{19}{60}$$

$$6. -\frac{5}{8} + \left(\frac{7}{6} \right) \quad \text{LCD} = 24$$

$$-\frac{5}{8} \cdot \frac{3}{3} + \frac{7}{6} \cdot \frac{4}{4}$$

$$= -\frac{15}{24} + \frac{28}{24} = \frac{13}{24}$$

$$8. \left(-\frac{1}{2} \right) + \frac{8}{16} \quad \text{LCD} = 16$$

$$-\frac{1}{2} \cdot \frac{8}{8} + \frac{8}{16}$$

$$= -\frac{8}{16} + \frac{8}{16} = \frac{0}{16} = 0$$

$$10. \frac{4}{5} - \frac{3}{3} + \frac{5}{15} \quad \text{LCD} = 15$$

$$\frac{12}{15} - \frac{10}{15} + \frac{1}{15}$$

$$\frac{2}{15} + \frac{1}{15}$$

$$\frac{3}{15} \div 3 = \frac{1}{5}$$