

4.4

Page 256.

Determine LCD if the given numbers are denominators.

#20. 15,3 LCD = 15

#22. 10,4

Denominator	Factors	Factors
10	2	5
4	2 ²	

LCD = 2² · 5 = 20

#24. 14,21

Denominator	Factor	Factor	Factor
14	2	1	7
21	1	3	7

LCD = 2 · 3 · 7 = 42

#26. 25,30

Denominator	Factor	Factor	Factor
25	1	1	5 ²
30	2	3	5

LCD = 2 · 3 · 5² = 150

#38. $\frac{71}{100} - \frac{1}{10} = \frac{71}{100} - \frac{10}{100} = \frac{71-10}{100} = \frac{61}{100}$

#46. $\frac{7}{8} - \frac{5}{6} = \frac{7 \cdot 3}{24} - \frac{5 \cdot 4}{24} = \frac{21}{24} - \frac{20}{24} = \frac{21-20}{24} = \frac{1}{24}$

#48. $\frac{3}{8} - \left(-\frac{1}{6}\right) = \frac{3}{8} + \frac{1}{6} = \frac{3 \cdot 3}{24} + \frac{1 \cdot 4}{24} = \frac{9}{24} + \frac{4}{24} = \frac{13}{24}$

#54. $-\frac{7}{20} - \frac{1}{5} = -\frac{7}{20} - \frac{1 \cdot 4}{5 \cdot 4} = -\frac{7}{20} - \frac{4}{20} = \frac{-7-4}{20} = -\frac{11}{20}$

#56. $-6 + \frac{5}{8} = \frac{-6}{1} + \frac{5}{8} = \frac{-6 \cdot 8}{1 \cdot 8} + \frac{5}{8} = \frac{-48}{8} + \frac{5}{8} = \frac{-48+5}{8} = \frac{-43}{8}$

#68. $\frac{1}{10} + \frac{1}{8} + \frac{1}{5}$
 $= \frac{4}{40} + \frac{5}{40} + \frac{8}{40}$
 $= \frac{4+5+8}{40} = \frac{17}{40}$

#78. $\frac{8}{9} - \frac{7}{12} = \frac{32}{36} - \frac{21}{36} = \frac{11}{36}$

#80. Find the sum of $\frac{9}{48}$ and $\frac{7}{40}$

The sum $\frac{9}{48} + \frac{7}{40} = \frac{9 \cdot 5}{48 \cdot 5} + \frac{7 \cdot 6}{40 \cdot 6} = \frac{45}{240} + \frac{42}{240} = \frac{45+42}{240} = \frac{87}{240}$

Number	Prime Factor	Prime Factor	Prime Factor
48	2 ⁴	3	5 ⁰ = 1
40	2 ³	3 ⁰ = 1	5

LCD = 2⁴ · 3 · 5 = 4 · 4 · 3 · 5 = 12 · 20 = 240

OR

$$\frac{9}{48} + \frac{7}{40} = \frac{9 \cdot 40}{48 \cdot 40} + \frac{7 \cdot 48}{40 \cdot 48} = \frac{360}{48 \cdot 40} + \frac{336}{40 \cdot 48} = \frac{360+336}{48 \cdot 40} = \frac{696}{48 \cdot 40}$$

$$= \frac{696 \div 4}{48 \cdot 40 \div 4} = \frac{174}{48 \cdot 10} = \frac{174 \div 2}{48 \cdot 10 \div 2} = \frac{87}{48 \times 5} = \frac{87}{240} = \frac{29}{80}$$

#82. Find the sum of $\frac{11}{24}$ and $\frac{7}{26}$ increased by $\frac{5}{48}$.

$$\frac{11}{24} + \frac{7}{26} + \frac{5}{48} = \frac{11 \cdot 26}{24 \cdot 26} + \frac{7 \cdot 24}{26 \cdot 24} + \frac{5 \cdot 13}{48 \cdot 13}$$

$$= \frac{11 \cdot 26}{624} + \frac{7 \cdot 24}{624} + \frac{5 \cdot 13}{624}$$

$$= \frac{11 \cdot 26}{624} + \frac{7 \cdot 24}{624} + \frac{5 \cdot 13}{624}$$

$$= \frac{519}{624} = \frac{173}{208}$$

Number	Prime Factor	Prime Factor	Prime Factor
24	2^3	3	$13^0 = 1$
26	2	$3^0 = 1$	13
48	2^4	3	$13^0 = 1$

$$\text{LCD} = 2^4 \cdot 3 \cdot 13 = 2^3 \cdot 2 \cdot 3 \cdot 13 = 624$$

#84. Magazine Layouts The page design for a magazine cover includes a blank strip at the top of the page, called header, and a blank strip at the bottom of the page, called a footer. In the illustration, how much page length is lost because of the header and footer.

$$\frac{3}{4} + \frac{1}{8} = \frac{3 \cdot 2}{4 \cdot 2} + \frac{1}{8} = \frac{6}{8} + \frac{1}{8} = \frac{7}{8}$$