

Name KEY

Section _____

SUBTRACTING FRACTIONS

To subtract fractions with the same denominator, subtract the numerators. The denominator remains the same.

$$\frac{4}{5} - \frac{1}{5} = \frac{3}{5}$$

I. Solve the following.

$$a) \frac{3}{5} - \frac{1}{5} = \frac{2}{5} \quad b) \frac{6}{7} - \frac{2}{7} = \frac{4}{7} \quad c) \frac{11}{22} - \frac{8}{22} = \frac{3}{22} \quad d) \frac{9}{11} - \frac{1}{11} = \frac{8}{11}$$

To add or subtract fractions with different denominators, use the least common multiple of the denominators as the common denominator. Then, write equivalent fractions with this common denominator. Solve.

$$\frac{5}{6} - \frac{1}{4} = \frac{10}{12} - \frac{3}{12} = \frac{7}{12}$$

II. Solve the following. Reduce answers to their lowest form.

$$a) \frac{\overset{x^3}{7} \frac{\overset{x^3}{21}}{\overset{x^3}{10}} - \frac{\overset{x^5}{1} \frac{\overset{x^5}{5}}{\overset{x^5}{30}}}{\overset{x^3}{3}} = \frac{\overset{x^3}{16} \frac{\overset{x^3}{21}}{\overset{x^3}{30}} = \frac{\overset{x^3}{8}}{\overset{x^3}{15}}$$

$$c) \frac{\overset{x^4}{3} \frac{\overset{x^4}{8}}{\overset{x^4}{12}} - \frac{\overset{x^3}{3}}{\overset{x^3}{12}}}{\overset{x^4}{4}} = \frac{\overset{x^3}{5}}{\overset{x^3}{12}}$$

$$e) \frac{\overset{x^7}{3} \frac{\overset{x^7}{14}}{\overset{x^7}{21}} - \frac{\overset{x^3}{2} \frac{\overset{x^3}{6}}{\overset{x^3}{21}}}{\overset{x^7}{7}} = \frac{\overset{x^7}{8}}{\overset{x^7}{21}}$$

$$g) \frac{\overset{x^2}{4} \frac{\overset{x^2}{8}}{\overset{x^2}{6}} - \frac{\overset{x^3}{1} \frac{\overset{x^3}{3}}{\overset{x^3}{12}}}{\overset{x^2}{12}} = \frac{\overset{x^2}{5}}{\overset{x^2}{12}}$$

$$b) \frac{\overset{x^7}{1} \frac{\overset{x^7}{7}}{\overset{x^7}{14}} - \frac{\overset{x^2}{2} \frac{\overset{x^2}{4}}{\overset{x^2}{14}}}{\overset{x^7}{7}} = \frac{\overset{x^7}{3}}{\overset{x^7}{14}}$$

$$d) \frac{\overset{x^5}{6} \frac{\overset{x^5}{25}}{\overset{x^5}{30}} - \frac{\overset{x^6}{5} \frac{\overset{x^6}{12}}{\overset{x^6}{30}}}{\overset{x^5}{6}} = \frac{\overset{x^5}{13}}{\overset{x^5}{30}}$$

$$f) \frac{\overset{x^6}{9} \frac{\overset{x^6}{54}}{\overset{x^6}{60}} - \frac{\overset{x^5}{3} \frac{\overset{x^5}{15}}{\overset{x^5}{60}}}{\overset{x^6}{12}} = \frac{\overset{x^6}{39} \frac{\overset{x^6}{13}}{\overset{x^6}{20}}}{\overset{x^6}{60}}$$

$$h) \frac{\overset{x^2}{8} \frac{\overset{x^2}{16}}{\overset{x^2}{22}} - \frac{\overset{x^{11}}{1} \frac{\overset{x^{11}}{11}}{\overset{x^{11}}{22}}}{\overset{x^2}{11}} = \frac{\overset{x^2}{5}}{\overset{x^2}{22}}$$

$$\begin{array}{l} 60 \\ \diagdown \\ 1 \times 60 \\ 2 \times 30 \\ \textcircled{3} \times 20 \\ 4 \times 15 \end{array} \quad \begin{array}{l} 30 \\ \diagdown \\ 1 \times 30 \\ \textcircled{3} \times 13 \end{array}$$

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To subtract mixed numbers, subtract the fractions (make common denominators if necessary) and then subtract the whole numbers. Reduce your final answer if necessary. It is helpful to line up your question vertically before solving.

$$\begin{array}{r} 2\frac{2}{4} \\ - 1\frac{1}{3} \\ \hline \end{array}$$

$$\begin{array}{r} 2\frac{6}{12} \\ - 1\frac{4}{12} \\ \hline \end{array}$$

$$\underline{\hspace{2cm}}, \underline{\hspace{2cm}}$$

$$1\frac{2}{12}, 1\frac{1}{6}$$

III. Solve the following. Reduce answers to their lowest form.

a) $5\frac{7}{12} - 3\frac{1}{3}$

$$\begin{array}{r} 5\frac{7}{12} \\ - 3\frac{1}{3} \\ \hline 2\frac{10}{12} \\ - 1\frac{4}{12} \\ \hline 1\frac{6}{12} \\ = 2\frac{1}{4} \end{array}$$

b) $8\frac{5}{7} - 3\frac{1}{2}$

$$\begin{array}{r} 8\frac{5}{7} \\ - 3\frac{1}{2} \\ \hline 5\frac{10}{14} \\ - 3\frac{7}{14} \\ \hline 2\frac{3}{14} \\ = 2\frac{3}{14} \end{array}$$

c) $6\frac{7}{8} - 1\frac{1}{3}$

$$\begin{array}{r} 6\frac{7}{8} \\ - 1\frac{1}{3} \\ \hline 5\frac{13}{24} \end{array}$$

d) $8\frac{4}{5} - 3\frac{4}{15}$

$$\begin{array}{r} 8\frac{4}{5} \\ - 3\frac{4}{15} \\ \hline 5\frac{8}{15} \end{array}$$

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Sometimes when subtracting mixed numbers, you will need to borrow from the whole number to subtract the fractions. Reduce answer to simplest form.

$$7\frac{1}{3} - 3\frac{5}{6}$$

$$7\frac{2}{6}$$

$$6\frac{2}{6} + \cancel{\frac{6}{6}}$$

$$6\frac{8}{6}$$

$$- 3\frac{5}{6}$$

$$- 3\frac{5}{6}$$

$$- 3\frac{5}{6}$$

$$- 3\frac{5}{6}$$

$$\underline{\underline{3\frac{3}{6}, 3\frac{1}{2}}}$$

IV. Solve the following. Reduce answers to their lowest form.

a) $8\frac{3}{12} - 2\frac{2}{3}$

$$8\frac{3}{12} - 2\frac{8}{12} = 15\frac{12}{12}$$

$$- 2\frac{8}{12}$$

$$7\frac{15}{12}$$

$$- 2\frac{8}{12}$$

$$\boxed{5\frac{7}{12}}$$

b) $4\frac{1}{6} - 1\frac{1}{2}$

$$3\frac{4}{6} - 1\frac{3}{6} = 2\frac{1}{6}$$

$$- 1\frac{3}{6}$$

$$2\frac{4}{6}$$

$$\boxed{2\frac{2}{3}}$$

c) $7\frac{1}{5} - 4\frac{2}{3}$

$$6\frac{7}{5} - 4\frac{2}{3} = 6\frac{21}{15} - 4\frac{10}{15} = 2\frac{11}{15}$$

d) $5\frac{2}{7} - 3\frac{1}{2}$

$$4\frac{5}{7} - 3\frac{1}{2} = 4\frac{10}{14} - 3\frac{7}{14} = 1\frac{3}{14}$$

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e) $7\frac{1}{7} - 3\frac{2}{3}$

$$\begin{array}{r}
 6\cancel{7}^{\times 3} \\
 -3\cancel{2}^{\times 7} \\
 \hline
 3 \\
 21 \\
 \hline
 21 \\
 21 \\
 \hline
 21
 \end{array}$$

$$\boxed{3\frac{10}{21}}$$

f) $5\frac{2}{6} - 2\frac{2}{3}$

$$\begin{array}{r}
 4\cancel{5}^{\times 2} \\
 -2\cancel{2}^{\times 2} \\
 \hline
 4 \\
 12 \\
 \hline
 4 \\
 12 \\
 \hline
 12
 \end{array}$$

$$\boxed{2\frac{2}{3}}$$

g) $9\frac{1}{12} - 4\frac{3}{4}$

$$\begin{array}{r}
 8\cancel{9}^{\times 3} \\
 -4\cancel{12}^{\times 3} \\
 \hline
 4 \\
 12 \\
 \hline
 12
 \end{array}$$

$$\boxed{4\frac{1}{3}}$$

h) $7\frac{2}{5} - 1\frac{1}{2}$

$$\begin{array}{r}
 6\cancel{7}^{\times 2} \\
 -1\cancel{2}^{\times 5} \\
 \hline
 5 \\
 10 \\
 \hline
 10
 \end{array}$$

$$\boxed{5\frac{9}{10}}$$

i) $8\frac{2}{8} - 4\frac{3}{4}$

$$\begin{array}{r}
 7\cancel{8}^{\times 3} \\
 -4\cancel{2}^{\times 8} \\
 \hline
 3 \\
 24 \\
 \hline
 24
 \end{array}$$

$$\boxed{3\frac{7}{12}}$$

j) $3\frac{1}{3} - 1\frac{3}{4}$

$$\begin{array}{r}
 2\cancel{3}^{\times 4} \\
 -1\cancel{2}^{\times 3} \\
 \hline
 1 \\
 12 \\
 \hline
 12
 \end{array}$$

$$\boxed{1\frac{7}{12}}$$

k) $5\frac{1}{5} - 1\frac{2}{3}$

$$\begin{array}{r}
 4\cancel{5}^{\times 3} \\
 -1\cancel{2}^{\times 5} \\
 \hline
 3 \\
 15 \\
 \hline
 15
 \end{array}$$

$$\boxed{3\frac{8}{15}}$$

l) $10\frac{1}{4} - 4\frac{3}{5}$

$$\begin{array}{r}
 9\cancel{10}^{\times 5} \\
 -4\cancel{3}^{\times 4} \\
 \hline
 5 \\
 20 \\
 \hline
 20
 \end{array}$$

$$\boxed{5\frac{13}{20}}$$