

Key

Pre-Algebra Chapter 5 Pre-Test

1.) (5 pts each, 10 pts total) (2-1) Find the lowest common denominator (LCD) of each pair of fractions. Write equivalent fractions using the LCD and compare. Use $>$, $<$, or $=$ to compare each statement.

a) $\frac{23}{36}$ and $\frac{4}{6}$

$\frac{23}{36} < \frac{24}{36}$

$\frac{23}{36} = \frac{23}{36}$
 $\frac{4}{6} = \frac{24}{36}$

6: 6, 12, 18, 24, 30, 36
- 36: 36, 72

b) $\frac{5}{8}$ and $\frac{8}{12}$

$\frac{15}{24} < \frac{16}{24}$

$\frac{5}{8} = \frac{15}{24}$
 $\frac{8}{12} = \frac{16}{24}$

8: 8, 16, 24, 32, 40
12: 12, 24, 36

2.) (5 pts) (2-2) Write the decimal as a fraction.

$n = 0.63333\dots$

$100n = 63.3333\dots$

$- 10n = -6.3333\dots$

$90n = 57$

$\frac{90n}{90} = \frac{57}{90}$

$n = \frac{57 \div 3}{90 \div 3} = \frac{19}{30}$

$0.63333\dots = 0.6\overline{3}$ hundredths place

3.) (5 pts each, 10 points total) Convert as required.

a) Write 0.65 as a fraction.

$\frac{65}{100} \div 5 = \frac{13}{20}$

b) Write $\frac{3}{8}$ as a decimal.

$\frac{3}{8} \Rightarrow$
$$\begin{array}{r} 0.375 \\ 8 \overline{) 3.000} \\ \underline{-24} \\ 60 \\ \underline{-56} \\ 40 \\ \underline{-40} \\ 0 \end{array}$$

0.375

4.) (5 pts each, 10 pts total) (5-3) Find each difference. Reduce if needed.

a) $\frac{2}{3} - \frac{9}{15}$

$\frac{2}{3} \xrightarrow{\times 5} \frac{10}{15}$

$3: 3, 6, 9, 12, 15$
 $15: 15, 30$

$\frac{10}{15} - \frac{9}{15} = \boxed{\frac{1}{15}}$

b) $8\frac{1}{3} - 3\frac{5}{6}$

$8\frac{1}{3} - 3\frac{5}{6}$

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

$8\frac{2}{6} - 3\frac{5}{6}$

$7\frac{8}{6} - 3\frac{5}{6}$

$4\frac{3+3}{6+3} = \boxed{4\frac{1}{2}}$

5.) (5 pts each, 10 pts total) (5-3) Find each sum. Write as either an improper fraction or mixed number. Reduce if needed.

a) $\frac{5}{6} + \frac{8}{9}$

$\frac{5}{6} \xrightarrow{\times 3} \frac{15}{18}$

$\frac{8}{9} \xrightarrow{\times 2} \frac{16}{18}$

$6: 6, 12, 18, 24, 30, 36$
 $9: 9, 18, 27, 36$

$\frac{15}{18} + \frac{8}{18} = \frac{23}{18}$

$\boxed{\frac{23}{18} \text{ or } 1\frac{5}{18}}$

b) $7\frac{5}{12} + 2\frac{7}{16}$

$7\frac{5}{12} + 2\frac{7}{16}$

$\frac{5}{12} \xrightarrow{\times 4} \frac{20}{48}$

$\frac{7}{16} \xrightarrow{\times 3} \frac{21}{48}$

$12: 12, 24, 36, 48$
 $16: 16, 32, 48$

$7\frac{20}{48} + 2\frac{21}{48}$

$9\frac{41}{48}$

$\boxed{9\frac{41}{48}}$

6.) (5 pts each, 10 pts total) (5-4) Find the product.

a) $4\frac{1}{3} \times \frac{9}{2}$

$$4\frac{1}{3} = \frac{(4 \times 3) + 1}{3} = \frac{13}{3}$$

$$\frac{13}{3} \times \frac{9}{2} = \boxed{\frac{39}{2}}$$

b) $\frac{4}{7} \times \frac{14}{16}$

$$\frac{4}{7} \times \frac{14}{16} = \frac{2 \div 2}{4 \div 2} = \boxed{\frac{1}{2}}$$

7.) (5 pts each, 10 pts total) (5-4) Find the quotient.

a) $5\frac{1}{4} \div \frac{7}{8}$

$$5\frac{1}{4} = \frac{(5 \times 4) + 1}{4} = \frac{21}{4}$$

$$\frac{21}{4} \div \frac{7}{8}$$

$$3 \frac{21}{4} \times \frac{8}{7} = \frac{6}{1} = \boxed{6}$$

b) $\frac{11}{12} \div \frac{2}{3}$

$$\frac{11}{12} \div \frac{2}{3}$$

$$\frac{11}{12} \times \frac{3}{2} = \boxed{\frac{11}{8}}$$

8.) (5 pts each, 15 points total) (5-7) Solve each equation.

$$a) \quad x + \frac{3}{4} = \frac{7}{12}$$

$$\quad \quad \quad -\frac{3}{4} \quad \quad -\frac{3}{4}$$

$$x = \frac{7}{12} - \frac{3}{4}$$

$$x = \frac{7}{12} - \frac{9}{12} = \frac{-2}{12} = \frac{-1}{6}$$

$$\frac{3}{4} \xrightarrow{\times 3} \frac{9}{12}$$

4: 4, 8, 12
12: 12, 24

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

$$b) \quad y - \frac{1}{7} = \frac{3}{5}$$

$$\quad \quad \quad +\frac{1}{7} \quad \quad +\frac{1}{7}$$

$$y = \frac{3}{5} + \frac{1}{7}$$

$$y = \frac{21}{35} + \frac{5}{35} =$$

$$\boxed{\frac{26}{35}}$$

5: 5, 10, 15, 20, 25, 30, 35

7: 7, 14, 21, 28, 35

$$\frac{3}{5} \xrightarrow{\times 7} \frac{21}{35}$$

$$\frac{1}{7} \xrightarrow{\times 5} \frac{5}{35}$$

$$c) \quad z - 5\frac{1}{2} = 6\frac{7}{10}$$

$$\quad \quad \quad +5\frac{1}{2} \quad \quad +5\frac{1}{2}$$

$$z = \begin{array}{r} 6\frac{7}{10} \\ + 5\frac{1}{2} \\ \hline 11\frac{12}{10} \end{array}$$

$$\frac{1}{2} \xrightarrow{\times 5} \frac{5}{10}$$

2: 2, 4, 6, 8, 10

$$11 + 1\frac{2}{10} = 12\frac{2}{10} = \boxed{12\frac{1}{5}}$$

$$\frac{12}{10} \Rightarrow \frac{10 \sqrt{12}}{-10} \quad | \frac{2}{10}$$

9.) (5 pts each, 10 points total) (5-8) Solve each equation.

$$a) \quad \frac{-8}{3}x = 2\frac{4}{6}$$

$$-\frac{8}{3}x = 2\frac{4}{6}$$

$$2\frac{4}{6} \Rightarrow \frac{(2 \times 6) + 4}{6} = \frac{16}{6}$$

$$-\frac{3}{8} \left(-\frac{8}{3}x \right) = \left(\frac{16}{6} \right) \left(\frac{-3}{8} \right) = \frac{-2}{2} = \boxed{-1}$$

$$b) \quad 7\frac{9}{13}x = \frac{1}{8}$$

$$7\frac{9}{13} \Rightarrow \frac{(7 \times 13) + 9}{13} \quad \frac{91+9}{13} = \frac{100}{13}$$

$$\frac{13}{100} \left(\frac{100}{13}x \right) = \left(\frac{1}{8} \right) \left(\frac{13}{100} \right)$$

$$\boxed{x = \frac{13}{800}}$$

10.) (5 pts each, 10 points total) (5-9) Simplify each expression.

a) $(\frac{a^3 b^5}{c^2})^3$

$$\left(\frac{a^3 b^5}{c^2}\right)^3 = \frac{a^{3 \cdot 3} b^{5 \cdot 3}}{c^{2 \cdot 3}} = \frac{a^9 b^{15}}{c^6}$$

b) $(\frac{x^4 y^6}{2z^2})^4$

$$\left(\frac{x^4 y^6}{2z^2}\right)^4 = \frac{x^{4 \cdot 4} y^{6 \cdot 4}}{2^{1 \cdot 4} z^{2 \cdot 4}} = \frac{x^{16} y^{24}}{2^4 z^8}$$

$$2^4 = 2 \cdot 2 \cdot 2 \cdot 2 = 16$$

$$\frac{x^{16} y^{24}}{16 z^8}$$