

1a. $\frac{3}{5} \xrightarrow{\times 5} \frac{15}{25}$

1b. $\frac{4}{7} \xrightarrow{\times 4} \frac{16}{28}$

1c. $\frac{\square}{8} = \frac{13}{52}$

Find
GCF:

$$\begin{array}{r} 1 \overline{) 13} \\ 13 \end{array}$$

$$\begin{array}{r} 2 \overline{) 52} \\ 2 \overline{) 26} \\ 13 \end{array}$$

13: 1×13

52: $2 \times 2 \times 13$

$$\frac{13 \div 13}{52 \div 13} = \frac{1}{4} \xrightarrow{\times 2} \frac{2}{8}$$

2. $\frac{39}{91} = \frac{15}{35}$

Reduce:

$$\begin{array}{r} 3 \overline{) 39} \\ 13 \end{array} \quad \begin{array}{r} 7 \overline{) 91} \\ 13 \end{array}$$

39: 3×13

91: 7×13

$$\frac{39 \div 13}{91 \div 13} = \frac{3}{7}$$

Reduce:

$$\frac{15 \div 5}{35 \div 5} = \frac{3}{7}$$

Compare = Equivalent!

Yes, fractions
are equivalent

2. Or, you can cross multiply:

$$\frac{1365}{39} = \frac{1365}{15}$$

$$\begin{array}{r} 39 \\ \times 35 \\ \hline 1365 \end{array} = \begin{array}{r} 91 \\ \times 15 \\ \hline 1365 \end{array}$$

3a. 36 total marbles

$$\text{Marcia} = 12$$

$$\text{Greg} = 9$$

$$\text{Jan} = 6$$

$$\text{Peter} = 3$$

$$\text{Bobby} = 2$$

$$\underline{32}$$

$$\begin{array}{r} 36 \\ -32 \\ \hline \end{array}$$

4 marbles
for Cindy

3b. Greg has 9 out of
36 marbles:

$$\frac{9 \div 9}{36 \div 9} = \frac{1}{4} \quad \text{Reduce:}$$

4a. $\frac{12}{17} \bigcirc \frac{15}{21}$

Find Common Denominator:
Since no common factors
between 17 and 21, multiply
denominators.

$$\begin{array}{r} 1 \overline{)17} \\ 17 \end{array} \quad \begin{array}{r} 3 \overline{)21} \\ 21 \end{array}$$

$$\begin{array}{l} 17: 1 \times 17 \\ 21: 3 \times 7 \end{array} \left. \begin{array}{l} \text{No} \\ \text{LCD} \end{array} \right\} \begin{array}{r} 17 \\ \times 21 \\ \hline 357 \end{array}$$

$$\frac{12 \times 21}{17 \times 21} = \frac{252}{357} < \frac{15 \times 17}{21 \times 17} = \frac{255}{357}$$

4a. Or, cross multiply:

$$\frac{12}{17} \times \frac{15}{21} \quad \frac{252}{17} \times \frac{15}{21}$$

$$\begin{array}{r} 12 \\ \times 21 \\ \hline 252 \end{array} < \begin{array}{r} 17 \\ \times 15 \\ \hline 255 \end{array}$$

4b. $\frac{8}{23} \bigcirc \frac{17}{47}$

Find common denominator:

$$\begin{array}{r} 23 \overline{) 23} \\ 1 \end{array} \quad \begin{array}{r} 47 \overline{) 47} \\ 1 \end{array}$$

Since no common factors between denominators, multiply them.

$$\begin{array}{r} 23 \\ \times 47 \\ \hline 1081 \end{array} \text{ use as denominator.}$$

$$\frac{8 \times 47}{23 \times 47} = \frac{376}{1081} \quad \frac{17 \times 23}{47 \times 23} = \frac{391}{1081}$$

$\frac{376}{1081} < \frac{391}{1081}$

4b. Or, cross multiply:

$$\frac{8}{23} \times \frac{17}{47} \quad \frac{376}{23 \times 47} \quad \frac{391}{47 \times 23}$$

$$\begin{array}{r} 47 \\ \times 8 \\ \hline 376 \end{array} \quad \begin{array}{r} 23 \\ \times 17 \\ \hline 391 \end{array}$$

$\frac{376}{1081} < \frac{391}{1081}$

4c. $\frac{22}{7} \bigcirc \frac{41}{13}$

Find common denominator:

$$\begin{array}{r} 13 \\ \times 7 \\ \hline 91 \end{array} \leftarrow \text{use as new denominator.}$$

$$\frac{22 \times 13}{7 \times 13} = \frac{286}{91} \quad \frac{41 \times 7}{13 \times 7} = \frac{287}{91}$$

$\frac{286}{91} < \frac{287}{91}$

4c. Or, cross multiply:

$$\frac{22}{7} \times \frac{41}{13} \quad \frac{286}{7 \times 13} \quad \frac{287}{13 \times 7}$$

$$\begin{array}{r} 13 \\ \times 22 \\ \hline 286 \end{array} \quad \begin{array}{r} 41 \\ \times 7 \\ \hline 287 \end{array}$$

$\frac{286}{91} < \frac{287}{91}$

$$(5a.) 4^{\frac{+3}{8}} = \frac{35}{8}$$

$$(5b.) 1^{\frac{+5}{18}} = \frac{23}{18}$$

$$(5c.) 9^{\frac{+1}{6}} = \frac{55}{6}$$

$$(6a.) 4^{\frac{+5}{8}} \times 1^{\frac{+1}{7}}$$

$$\frac{37}{\cancel{8}_1} \times \frac{\cancel{8}^1}{7} = \frac{37}{7} = 5\frac{2}{7}$$

$$(6b.) 1^{\frac{+3}{5}} \div 2^{\frac{+6}{7}}$$

$$\frac{8}{5} \div \frac{20}{7}$$

$$\frac{\cancel{8}_2}{5} \times \frac{7}{\cancel{20}_5} = \frac{14}{25}$$

$$(6c.) 1 \div 5^{\frac{+1}{6}}$$

$$\frac{1}{1} \div \frac{31}{6}$$

$$\frac{1}{1} \times \frac{6}{31} = \frac{6}{31}$$

$$(6d.) \frac{1}{8} \times 3^{\frac{+4}{9}}$$

$$\frac{1}{8} \times \frac{31}{9} = \frac{31}{72}$$

$$(6e.) 1^{\frac{+5}{18}} \div 3$$

$$\frac{23}{18} \div \frac{3}{1}$$

$$\frac{23}{18} \times \frac{1}{3} = \frac{23}{54}$$

$$(6f.) 7^{\frac{+1}{5}} \times 6^{\frac{+2}{3}}$$

$$\frac{\overset{12}{\cancel{36}}}{\cancel{5}_1} \times \frac{\overset{4}{\cancel{20}}}{\cancel{3}_1} = 48$$