FRACTIONS

Note Title 05/08/2013

Equivalent Fractions

If we MULTIPLY or DIVIDE the top and bottom of a fraction by the SAME number, the fraction stays the same

e.g.

① Fill in the missing number $\frac{3}{5} = \frac{36}{60}$ (×12 top, ×12 bottom)

② Cancel down as much as possible: $\frac{48}{72} = \frac{6}{9} = \frac{2}{3}$ (÷8, ÷8; ÷3, ÷3)

Comparing Fractions

Example Write $\frac{4}{15}$, $\frac{3}{20}$ and $\frac{1}{4}$ in ascending order of size.

One way to do this is to make the DENOMINATORS (bottoms) equal.

The LOWEST COMMON MULTIPLE of 15, 20 and 4 is 60

$\frac{4}{15} = \frac{16}{60}$ (×4, ×4)

$\frac{3}{20} = \frac{9}{60}$

$\frac{1}{4} = \frac{15}{60}$

So $\frac{3}{20} < \frac{1}{4} < \frac{4}{15}$

(The $<$ sign means "is less than"
Also $>$ means "is greater than.")

Note Title 08/11/2011

Adding and Subtracting

- Change the fractions so that they have the same denominator (bottom).
- Add/subtract the tops but keep the same bottom.

Examples

① $\frac{7}{8} - \frac{1}{6} = \frac{21}{24} - \frac{4}{24} = \frac{17}{24}$

$\frac{7}{8} \xrightarrow{\times 3} \frac{21}{24}$ $\quad$ $\frac{1}{6} \xrightarrow{\times 4} \frac{4}{24}$

② $3\frac{1}{3} + 4\frac{3}{4} = 7\frac{4}{12} + \frac{9}{12}$

$= 7\frac{13}{12}$

$= 8\frac{1}{12}$

Multiplying Fractions

- Any mixed numbers must be converted to improper fractions before multiplying.
- We can cancel any number on the TOP with any number on the BOTTOM if they have a common factor.
- A whole number on its own can be written over 1.
- Multiply the tops and the bottoms.
- If the answer is an improper fraction, make it into a mixed number.

Examples

① $\frac{\cancel{8}^{2}}{9} \times \frac{5}{\cancel{12}_{3}} = \frac{10}{27}$

② $2\frac{1}{3} \times 3\frac{3}{4} = \frac{\cancel{7}^{1}}{\cancel{3}} \times \frac{\cancel{15}^{5}}{4}$

$= \frac{35}{4}$

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

③ $5 \times \frac{3}{8} = \frac{5}{1} \times \frac{3}{8}$

$= \frac{15}{8} = 1\frac{7}{8}$

Dividing fractions

- Change any mixed numbers into improper fractions
- Turn the second fraction upside-down and change the divide sign to a multiply sign.
- Carry on with the multiplication method (cancel, etc).

Examples

① $\frac{10}{21} \div \frac{15}{28}$

NO CANCELLING YET - it is still a ÷

(Now we can cancel.)

$= \frac{\cancel{10}^{2}}{\cancel{21}_{3}} \times \frac{\cancel{28}^{4}}{\cancel{15}_{3}}$

$= \frac{8}{9}$

② $3\frac{1}{3} \div 4\frac{1}{6}$

$= \frac{10}{3} \div \frac{25}{6}$

$= \frac{\cancel{10}^{2}}{\cancel{3}_{1}} \times \frac{\cancel{6}^{2}}{\cancel{25}_{5}}$

$= \frac{4}{5}$