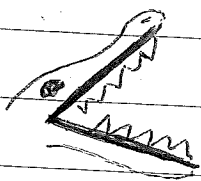


9-17-15 1-4 Comparing Fractions

< means "is less than"
 $4 < 10$

> means "is greater than"
 $10 > 4$

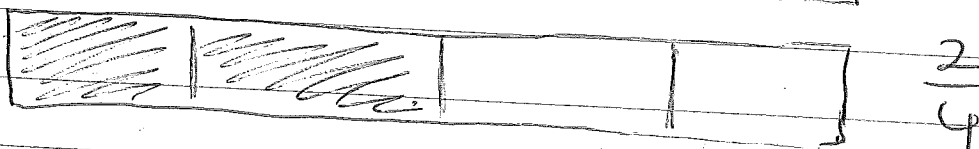
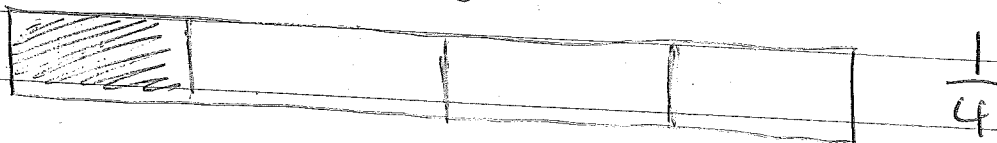


Alligator's mouth
opens to the
bigger number.

SAME DENOMINATOR

same unit fraction / same
size pieces.

Greater numerator then
is the greater fraction.



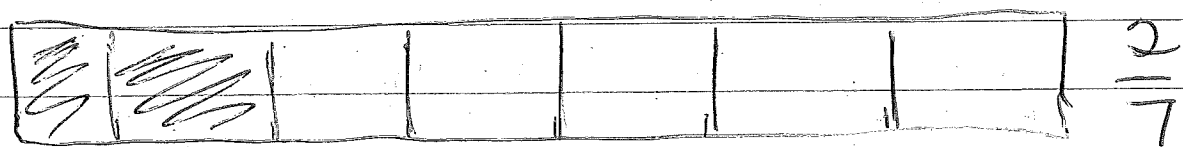
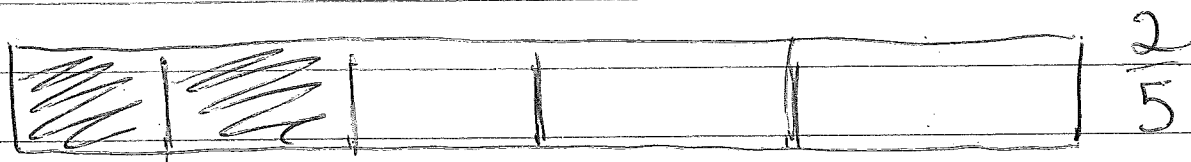
$$\frac{1}{4} < \frac{2}{4}$$

SAME NUMERATOR

$$\frac{2}{5} \quad \square \quad \frac{2}{7}$$

* We have the same number of pieces - 2.

Because $\frac{1}{5}$ is greater than $\frac{1}{7}$, $\frac{2}{5}$ would be greater than $\frac{2}{7}$.



DIFFERENT DENOMINATORS

* Find a common denominator.

There are 3 different methods for this.

Rewriting with common denom. is just making equivalent fractions.

Method #1:

When 1 is A Factor OF
the Other

$$\text{Ex. } \frac{2}{6} \boxed{>} \frac{3}{12}$$
$$\left(\frac{4}{12}\right) > \left(\frac{3}{12}\right)$$

6 goes into 12 evenly, so
use the larger number.

$$\frac{2 \cdot x2}{6 \cdot x2} = \frac{4}{12}$$

$$\frac{3}{12} = \frac{3}{12}$$

Method #2: Product of
the Denominators

Use this method when the
denominators only share a
common factor of 1.

$$\text{Ex. } \frac{2}{8} \boxed{<} \frac{3}{11}$$
$$\left(\frac{22}{88}\right) < \left(\frac{24}{88}\right)$$
$$\frac{2 \cdot x11}{8 \cdot x11} = \frac{22}{88}$$
$$\frac{3 \cdot x8}{11 \cdot x8} = \frac{24}{88}$$
$$\frac{8}{2} = 4$$
$$\frac{11}{1} = 11$$

Factors

$$8 \times 11 = 88$$

Method #3:

The Denominators share a Factor other than 1.

Ex. $\frac{3}{4} \left(\frac{15}{20} \right)$ $\frac{6}{10} \left(\frac{12}{20} \right)$ $\frac{4}{2} \left(\frac{4}{2} \right)$ $\frac{10}{2} \left(\frac{10}{2} \right)$

$4 = 4, 8, 12, 16, 20$
 $10 = 10, 20$

When they share a factor other than 1, list out the multiples.

$$\frac{3}{4} \begin{array}{l} \times 5 \\ \hline 15 \\ \times 5 \\ \hline 20 \end{array}$$

$$\frac{6}{10} \begin{array}{l} \times 2 \\ \hline 12 \\ \times 2 \\ \hline 20 \end{array}$$

9-18-15 SHORTCUT!

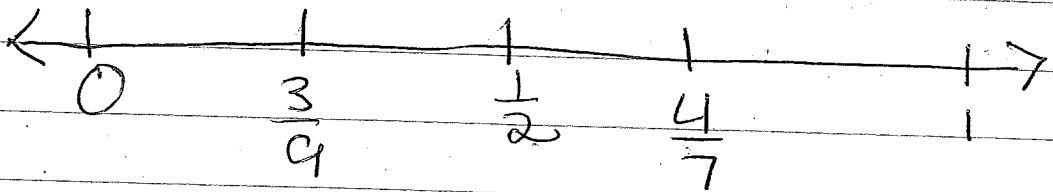
Cross-Multiplication

$$\begin{array}{r} 14 \\ \frac{2}{5} \times 7 \\ \hline 14 \\ \times 5 \\ \hline 20 \\ \frac{4}{7} \times 5 \\ \hline 20 \\ \hline 35 \end{array}$$

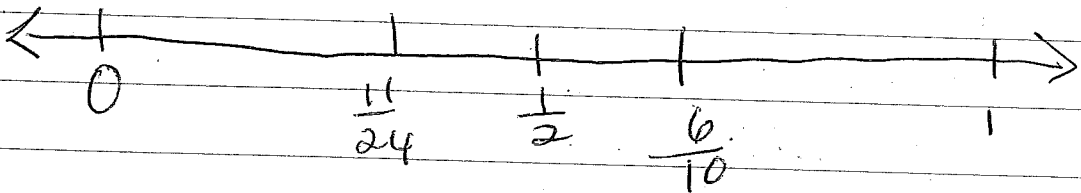
Special Cases

Use $\frac{1}{2}$ as a benchmark.

$$\frac{4}{7} > \frac{3}{9}$$



$$\frac{6}{10} > \frac{11}{24}$$



Use 1 as a benchmark.

$$\frac{5}{6} < \frac{6}{7}$$



$\frac{1}{6}$ away from 1



$\frac{1}{7}$ away from 1

$\frac{1}{7}$ is the smaller amount, so $\frac{6}{7}$ is closer to 1, making it bigger.