5.2 Proportions

EQ: How can we use proportions to help us decide when things are fair?

Proportion: an equation stating that two ratios are equivalent. Two ratios that form a proportion are called **proportional**.

Example 1: Are $\frac{6}{4}$ and $\frac{8}{12}$ proportional?

$\frac{6}{4} \div 2 = \frac{3}{2}$

$\frac{8}{12} \div 4 = \frac{2}{3}$

compare

Is $\frac{3}{2} = \frac{2}{3}$?

No, they are not proportional

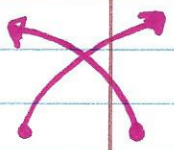
Example 2: Does $\frac{4}{5}$ and $\frac{16}{20}$ form a ~~no~~ proportion.

$\frac{4}{5}$ and $\frac{16 \div 4}{20 \div 4}$

$\frac{4}{5} = \frac{4}{5}$

Yes, they are proportional

Example 3: Using cross multiplication to find if ratios are proportional.



30 ← $\frac{1 \text{ miles}}{5 \text{ mins}}$ and $\frac{6 \text{ miles}}{30 \text{ mins}}$ → 30

$30 = 30$ ✓

Yes, they are proportional

Example 4: Person A bought 2 tickets for $184. Person B bought 3 tickets for $266. Is this fair?

*Unit rate
*division

$\frac{\$184}{2 \text{ tickets}}$ and $\frac{\$266}{3 \text{ tickets}}$

*Compare to 1 ticket

$184 \div 2$ $266 \div 3$

$92/ticket $87/ticket

NO, not proportional. Person B got a better deal.