

5.4 Dividing Fractions

The **reciprocal** of a fraction is found by switching the numerator & denominator.

ex. State the reciprocal of each fraction:

$$\frac{2}{3} \rightarrow \boxed{\frac{3}{2}}$$

$$\frac{1}{4} \rightarrow \boxed{4}$$

$$\frac{5}{4} \rightarrow \boxed{\frac{4}{5}}$$

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

$$2\frac{1}{3} = \frac{7}{3}$$

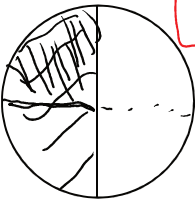
$$\rightarrow \boxed{\frac{3}{7}}$$

no reciprocal
for mixed

We can model divisions:

ex. $\frac{1}{2} \div 2$

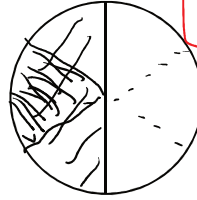
$$= \boxed{\frac{1}{4}}$$



$$\frac{1}{2} \times \frac{1}{2}$$

ex. $\frac{1}{2} \div 3$

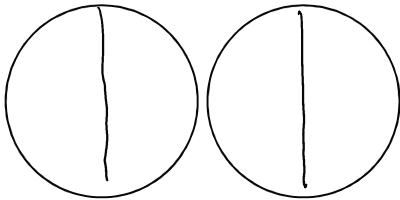
$$= \boxed{\frac{1}{6}}$$



$$\frac{1}{2} \times \frac{1}{3}$$

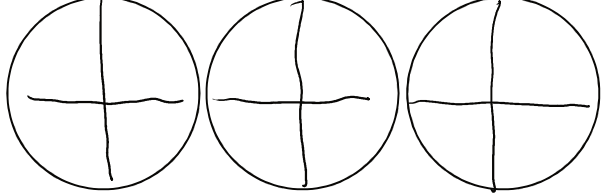
ex. $2 \div \frac{1}{2}$

$$= \boxed{4} \leftarrow 2 \times 2$$



ex. $3 \div \frac{1}{4}$

$$= \boxed{12} \leftarrow 3 \times 4$$



Rule for Fraction Division

$$\text{Dividend} \div \text{Divisor} = \text{Dividend} \times \text{Reciprocal of the divisor}$$

ex. Determine each quotient.

$$\frac{2}{3} \div \frac{5}{7}$$

$$= \frac{2}{3} \times \frac{1}{5}$$

$$= \boxed{\frac{2}{15}}$$

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

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

$$= \frac{4}{1} = \boxed{4}$$

$$\frac{4}{5} \div \frac{6}{25}$$

$$= \frac{4}{5} \times \frac{25}{6}$$

$$= \boxed{\frac{10}{3} \text{ or } 3\frac{1}{3}}$$

$$2\frac{1}{2} \div 3\frac{3}{4}$$

$$= \frac{5}{2} \div \frac{15}{4}$$

$$= \frac{5}{2} \times \frac{4}{15}$$

$$= \boxed{\frac{2}{3}}$$

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

$$= \frac{19}{6} \div \frac{5}{3}$$

$$= \frac{19}{6} \times \frac{3}{5}$$

$$= \boxed{\frac{19}{10} \text{ or } 1\frac{9}{10}}$$

$$1\frac{3}{4} \div 2\frac{1}{2}$$

$$= \frac{7}{4} \div \frac{5}{2}$$

$$= \frac{7}{4} \times \frac{2}{5}$$

$$= \boxed{\frac{7}{10}}$$

ex. A full set of teeth for a child has $\frac{5}{8}$ as many teeth as a full set for an adult. If a full child set is 20 teeth, how many is a full adult set?

$$\text{Adult} \times \frac{5}{8} = 20$$

$$\text{Adult} = 20 \div \frac{5}{8}$$

$$= \frac{20}{1} \times \frac{8}{5}$$

$$= \frac{32}{1} = \boxed{32 \text{ teeth}}$$

+ sum
 - difference
 x product
 ÷ quotient