*I can **multiply** and **divide fractions**.*

To multiply signed fractions...

1) __Reduce__ (numbers next to each other CANNOT be reduced)

2) Multiply the __numerators__ and put in the numerator of the result

3) Multiply the __denominators__ and put in the denominator of the result

4) Use the rules for __integers__.

$$\frac{7}{8} \cdot -\frac{4}{9} = \frac{-28}{72} = \frac{-7}{18}$$

Examples:

1. $-\frac{7}{9} \cdot -\frac{1}{2}$

$\boxed{\frac{7}{18}}$

2. $\frac{4}{7} \cdot -\frac{9}{11}$

$\boxed{\frac{-36}{77}}$

3. $-\frac{7}{5} \cdot \frac{1}{21}$

$\boxed{\frac{-7}{105}}$

4. $-\frac{30}{4} \cdot -\frac{7}{14}$

$\frac{-15}{2} \cdot \frac{-1}{2} = \frac{15}{4}$

$\boxed{3\frac{3}{4}}$

To multiply mixed numbers...

Turn them into __improper fractions__ first.

Examples:

1. $4\frac{3}{4} \times -3\frac{9}{10}$

$\frac{19}{4} \cdot \frac{-39}{10}$

$\frac{-741}{40} = \boxed{-18\frac{21}{40}}$

2. $(-2\frac{2}{5})(-4\frac{7}{10})$

$\frac{-12}{5} \cdot \frac{-47}{10} = \frac{564}{50}$

$\boxed{11\frac{7}{25}}$

3. $3\frac{3}{5} \times 2\frac{3}{5}$

$\frac{18}{5} \cdot \frac{13}{5} = \frac{234}{25}$

$\boxed{9\frac{9}{25}}$

4. $4 \cdot -3\frac{1}{2}$

$\frac{4}{1} \cdot \frac{-7}{2} = \frac{-28}{2}$

$\boxed{-14}$

To multiply fractions to whole numbers...

Example: $\frac{3}{5} \cdot 100$

Any whole number can be turned into a fraction by putting it over __1__.

Exponents...

1) $(-\frac{1}{3})^4 = \underline{\frac{1}{81}}$

2) $-\frac{1}{3}^4 = \underline{\frac{-1}{81}}$

3) $(-\frac{2}{7})^2 = \underline{\frac{4}{49}}$

4) $-\frac{2}{7}^3 = \underline{\frac{-8}{343}}$

To divide fractions...

1) Keep _the first fraction the same_ .

2) Change _division to multiplication_ .

3) Flip _the second fraction_ .

4) Follow the rules for _integers_ .

Examples:

1) $\dfrac{-\frac{1}{4}}{\frac{2}{5}}$

$\dfrac{-1}{4} \cdot \dfrac{5}{2}$

$\boxed{\dfrac{-5}{8}}$

2) $\dfrac{-\frac{3}{5}}{-\frac{7}{10}}$

$\dfrac{-3}{5} \cdot \dfrac{-10}{7}$

$\dfrac{30}{35} = \boxed{\dfrac{6}{7}}$

3) $\dfrac{1}{3} \div \dfrac{4}{5}$

$\dfrac{1}{3} \cdot \dfrac{5}{4}$

$\boxed{\dfrac{5}{12}}$

4) $-2 \div \dfrac{1}{2}$

$\dfrac{-2}{1} \cdot \dfrac{2}{1}$

$\dfrac{-4}{1} = \boxed{-4}$

5) $\dfrac{-\frac{2}{5}}{-9}$

$\dfrac{-2}{5} \cdot \dfrac{-1}{9}$

$\boxed{\dfrac{2}{45}}$

6) $\dfrac{3}{4} \div 2$

$\dfrac{3}{4} \cdot \dfrac{1}{2}$

$\boxed{\dfrac{3}{8}}$

7) $\dfrac{10}{-\frac{3}{4}}$

$\dfrac{10}{1} \cdot \dfrac{-4}{3}$

$\dfrac{-40}{3} = \boxed{-13\frac{1}{3}}$

Word Problems

1) A Sauerkraut Festival "Hawg Dawg" is 8 inches long. How many pieces of hot dog can be cut from the 8-inch piece of hawg dawg if each piece is to be two-thirds of an inch?

$\dfrac{8}{1} \div \dfrac{2}{3}$ $\qquad$ $\dfrac{8}{1} \cdot \dfrac{3}{2} = \dfrac{24}{2} = 12$ pieces

2) Mrs. Snell had ½ of a pumpkin pie left over. She split the leftover pie evenly between her 3 children. What fraction of a pie did each child get?

$\dfrac{1}{2} \div \dfrac{3}{1}$ $\qquad$ $\dfrac{1}{2} \cdot \dfrac{1}{3} = \dfrac{1}{6}$ of the pie each