

## MULTIPLYING POSITIVE AND NEGATIVE NUMBERS

$$\begin{array}{l} + \times + = + \\ - \times - = + \\ + \times - = - \end{array} \left. \begin{array}{l} \text{same signs} \\ \text{multiplied} = \text{positive} \\ \text{answer} \end{array} \right\}$$
$$\left. \begin{array}{l} + \times - = - \\ - \times + = - \end{array} \right\} \begin{array}{l} \text{different signs} \\ \text{multiplied} = \text{negative} \\ \text{answer} \end{array}$$

## MULTIPLYING BIGGER NUMBERS WITHOUT A CALCULATOR

$$128 \times 42$$

$$4000 + 1000 + 376 = 5376$$

	100	20	8
40	4000	800	320
2	200	40	16

$200 + 800 = 1000$   
 $320 + 40 + 16 = 376$

# Multiplying Fractions

multiply across the top

multiply across the bottom

$$\frac{1}{2} \times \frac{3}{8} = \frac{3}{16}$$

$$\left(-\frac{2}{5}\right) \times \frac{3}{8}$$

$$= -\frac{6 \div 2}{40 \div 2}$$

Simplify

$$= -\frac{3}{20}$$

$$2\frac{1}{4} \times \left(-\frac{2}{3}\right)$$

$$\frac{9}{4} \times -\frac{2}{3}$$

$$\frac{-18 \div 2}{12 \div 2}$$

$$-\frac{9}{6} = -\frac{3}{2}$$

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

$$\frac{3}{10} \times \frac{5}{8}$$

$$\frac{15}{80} \begin{array}{l} \div 5 \\ \div 5 \end{array}$$

$$\frac{3}{16}$$

$$\frac{3}{5} \times ? = \frac{-6}{25}$$

$$\frac{3}{5} \times \frac{-2}{5} = \frac{-6}{25}$$

$$? \times \frac{1}{3} = \frac{1}{4} \times 3$$

$$? \times \frac{1}{3} = \frac{3}{12}$$

$$\frac{3}{4} \times \frac{1}{3} = \frac{3}{12}$$

$$\frac{3}{4} \times \frac{1}{3} = \frac{1}{4}$$

24 x 8

$$\begin{array}{r} 20 \quad 4 \\ 8 \overline{) 160 \quad 32} \end{array}$$

$$160 + 32$$

$$\boxed{192}$$

$$-2.4 \times -0.8 = +$$

$$\frac{-24}{10} \times \frac{-8}{10} = + \frac{192}{100} = \frac{96}{50}$$

$$-0.24 \times 0.8$$

$$\frac{-24}{100} \times \frac{-8}{10} = + \frac{192}{1000}$$

$$= \frac{48}{25}$$

$$= \frac{24}{125}$$

$$0.024 \times -8$$

$$\frac{24}{1000} \times \frac{-8}{1} = - \frac{192}{1000}$$

$$= - \frac{24}{125}$$

$$\frac{-11}{7} \times \frac{-21}{44}$$

$$\frac{-11}{44} \times \frac{-21}{7}$$

$$\frac{-1}{4} \times \frac{-3}{1}$$

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

Simplify the fractions before multiplying.

$$\begin{aligned}\left(-\frac{11}{7}\right)\left(-\frac{21}{44}\right) &= \left(-\frac{\overset{1}{\cancel{11}}}{\underset{1}{\cancel{7}}}\right)\left(-\frac{\overset{3}{\cancel{21}}}{\underset{4}{\cancel{44}}}\right) \\ &= \frac{1 \times 3}{1 \times 4} \\ &= \frac{3}{4}\end{aligned}$$

THIS WAY YOU SIMPLIFY FIRST  
THEN MULTIPLY

$$\frac{-11}{7} \times \frac{-21}{44} = \frac{231}{308} \quad \frac{231 \div 77}{308 \div 77} = \frac{3}{4}$$

THIS WAY YOU MULTIPLY THEN  
SIMPLIFY

which way is easier?



On February 5, 2008, the price of a share in CIBC changed by  $-\$1.640$ .

A person owns 35 shares. By how much did those shares change in value that day?

$$\frac{35}{1} \times -1.64$$

$$\frac{35}{1} \times \frac{-164}{100} = \frac{3730}{100}$$

$$\frac{-373}{10}$$

\$

$$-37.3$$

key word to look out for is "of"

ex.  $\frac{1}{3}$  of  $\frac{1}{2}$  the playground was used to build a swingset

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