1-2 Notes: Order of Operations + Simplifying Expressions → no equal sign

Lesson Objective: To understand how to properly condense an algebraic expression.

The infamous **PEMDAS**.

Order of operations:

1. P = parenthèses (also means brackets [ ], square roots $\sqrt{\ }$, or braces { }).
2. E = Exponents
3. MD or DM = multiplication or division. Do whatever comes 1st left to right.
4. AS or SA = addition or subtraction. Do whatever comes 1st left to right.

One Step per line.

Lots of examples.

Ex. $25-8\cdot2+3^2$

$25-8\cdot2+9$

$25-16+9$

$9+9$

18

Ex. $-2\frac{1}{3}-(-2)^2\div\sqrt{12-3}=$

E P

$-2\frac{1}{3}-(-2)^2\div\sqrt{9}$

$-2\frac{1}{3}-(-2)^2\div3$

E

$-2\frac{1}{3}-(4)\div3$ If you can't divide, make into a fraction

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

$-\frac{7}{3}-\frac{4}{3}=-\frac{7}{3}+\frac{-4}{3}$

$-\frac{11}{3}$

Ex. $15(-13+7)\div(8-5)$

$15(-6)\div(3)$

$-90\div 3$

-30

Ex. $-\frac{1}{3}\left(\frac{8+6}{10-4^2}\right)$

$-\frac{1}{3}\left(\frac{14}{10-16}\right)$

$-\frac{1}{3}\left(\frac{14\div 2}{-6\div 2}\right)$

$-\frac{1}{3}\left(\frac{7}{-3}\right)$

$\frac{7}{9}$

TRY. $8(5+30\div 5)$

TRY. $5+4^2\cdot 8-2^3\div 2^2$

TRY. $2\left[(13-7)^2 \div 3\right]$

TRY. $5-3\left[2\left(\frac{3}{8}-2\right)^2+1\right]$

Given $a=-2$, $b=\frac{5}{3}$, *and* $c=\frac{1}{3}$ → Replace them in the expression below and simplify.

Ex. Simplify $ab-b\div c^2+a$

$(-2)\left(\frac{5}{3}\right)-\left(\frac{5}{3}\right)\div\left(\frac{1}{3}\right)^2+(-2)$

$\left(\frac{-2}{1}\right)\left(\frac{5}{3}\right)-\left(\frac{5}{3}\right)\div\frac{1}{9}+(-2)$

$-\frac{10}{3}-\left(\frac{5}{3}\right)\div\frac{1}{9}+(-2)$

$-\frac{10}{3}-\left(\frac{-5}{1}\right)\cdot\frac{9}{1}+(-2)$

$-\frac{10}{3}--15+(-2)$

$-\frac{10}{3}+\frac{15}{1}\cdot\frac{3}{3}-\frac{2}{1}\cdot\frac{3}{3}$

$-\frac{10}{3}+\frac{45}{3}-\frac{6}{3}$

$\frac{35}{3}-\frac{6}{3}$

$\frac{29}{3}$

$\left(\frac{1}{3}\right)^2=\frac{1}{3}\cdot\frac{1}{3}=\frac{1}{9}$

TRY. Simplify $\dfrac{a-b\div c+c\div b}{ac}$ (a, b, and c are on previous page).