ora 1: Unit 1, lesson 5 Notes: Solving Equations for a Variable Name:

What we have been doing...	Property	Compare with...
olve for x:		Solve for x:
$-2x + 5 = 11$		$ax + b = c$
$-5 \quad -5$	← SUBTRACTION PROPERTY OF EQUALITY →	$-b \quad -b$
$-2x = 6$		$\frac{ax}{a} = \frac{c-b}{a}$
$\frac{-2x}{-2} = \frac{6}{-2}$	← DIVISION PROPERTY OF EQUALITY →	
$x = -3$		$x = \frac{c-B}{a}$

When solving an equation what is our main objective?

TO FIND x BY ISOLATING IT FROM ALL OTHER PARTS OF THE EQUATION.

iteral Equation:

Take the equation $ax + b = c$ and assign values for a, b and c $a =$ _____ $b =$ _____ $c =$ _____

Solve for x using both the traditional equation and the new equation. Do they have the same solutions?

Traditional Equation	New Equation
(don't worry bout this page)	

Algebra 1: Unit 1, lesson 5 Notes: Solving Equations for a Variable

Name:

What are some equations/formulas that you know?

$a^2+b^2=c^2$ $m=\frac{y_2-y_1}{x_2-x_1}$ $D=t=r$ πr^2 = area of circle

$y=mx+b$ $V=l\cdot w\cdot h$ $l\times w$ = area rectangle or square

Examples:

The volume for a rectangular prism is given by: $V=l\times w\times h$

Solve for h.

$\frac{V}{l\cdot w}=\frac{l\cdot w\cdot h}{l\cdot w}$

$\frac{V}{lw}=h$

Find the height if $V=12$, $l=\frac{1}{2}$, $w=6$

$h=\frac{V}{lw}$

$h=\frac{12}{\frac{1}{2}(6)}\rightarrow\frac{12}{3}\rightarrow 4=h$

Solve for r:

$A=s^2+2rs$

$-s^2 \quad -s^2$

$\frac{A-s^2}{2s}=\frac{2rs}{2s}$

Adding/Subtracting first

$\frac{A-s^2}{2s}=r$

Solve for y:

$2\cdot m=\frac{x+y}{2}\cdot 2$

$2m=x+y$

$-x \quad -x$

$2m-x=y$

Solve for v:

$t\cdot a=\frac{v-u}{t}\cdot t$

$ta=v-u$

$+u \quad +u$

$ta+u=v$

Sometimes more than one strategy to solve for a variable exists, Solve for h:

$2\pi rh+2\pi r^2=s$

$-2\pi r^2 \quad -2\pi r^2$

$\frac{2\pi rh}{2\pi r}=\frac{s-2\pi r^2}{2\pi r}$

$h=\frac{s-2\pi r^2}{2\pi r}$

$2\pi rh+2\pi r^2=s$

$\div 2\pi r \quad \div 2\pi r$

Since both terms have a $2\pi r$, I can DIVIDE it out - think "reverse distribute"!

$\frac{2\pi r}{2\pi r}(h+r)=\frac{s}{2\pi r}$

$h+r=\frac{s}{2\pi r}$

$-r \quad -r$

$h=\frac{s}{2\pi r}-r$

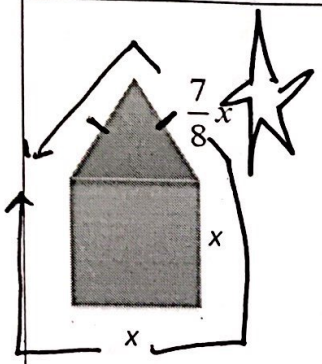
Are the two equations equivalent?

How could we check?

Notes 1.5

Algebra 1: Unit 1, lesson 5 Notes: Solving Equations for a Variable Name:

Write a formula for the perimeter in terms of P



$P = \frac{7}{8}x + \frac{7}{8}x + x + x + x$

$= \frac{14}{8}x + \frac{3}{1}x \cdot 4$

$= \frac{7}{4}x + \frac{12x}{4}$

$P = 19x/4$

Solve for *x*.

$\frac{4}{19} \cdot P = \frac{19x}{4} \cdot \frac{4}{19}$ ⇐ GET RID OF FRACTION BY MULTIPLYING BY RECIPROCAL BOTH SIDES

$\frac{4}{19}P = x$

If *P* = 47.5, find *x*.

$x = \frac{4}{19}P$

$x = \frac{4}{19}(47.5)$

$x = 10$ UNITS

Ticket out the Door

Why rewrite literal equations?