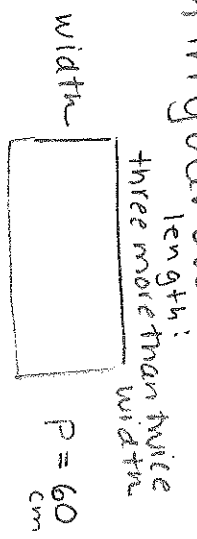


Writing Equations

Ex. The length of a rectangle is 3cm more than twice the width. The perimeter is 60 cm.

\* Use a "guess and check table" to write an equation representing the situation.

1) Draw a picture/summarize the situation in your own way.



2) Find the unknown or x... Ask "what is the thing I don't know or can't figure out from clues?" The width is x.

3) set up a table to "build" the equation (Everything in terms of x).

guess width	Length $(2x+3)$	Perimeter $2w + 2l$ $2x + 2(2x+3)$	Check Perimeter
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EQUATION simplified  
 $2x + 4x + 6 = 60$   
 $6x + 6 = 60$

we will solve soon... not yet!

More Writing Equations

Ex. Elisa sold 110 tickets for the football game. Adult tickets cost \$2.50 and student tickets cost \$1.10. She collected \$212.

Write an equation representing the problem.

# of S	# of A	Student Value	Adult Value	Total value	Check
$x$	$(110-x)$	$1.10x$	$2.50(110-x)$		\$212

$1.10x + 2.50(110-x) = 212$   
 $1.10x + 275 - 2.5x = 212$   
 $-1.4x + 275 = 212$

### Solving Simple Equations

\* The goal is to get all "x terms" to one side of the equal sign.

\* Use "inverse operations" to undo operations

\* "BS" or Both Sides rule → Do same thing to both sides of equal sign

← remember where = is

EX.  $3x + 1 = -8 + x$

$$\begin{array}{r} 2x + 1 \quad \neq \quad -8 \\ \hline -1 \quad \quad \quad -1 \end{array}$$

$$\frac{2x}{2} \neq \frac{-9}{2}$$

$$x \neq -4.5$$

"Undoing +5"

EX.  $2x + 5 = 17$

$$\begin{array}{r} 2x \quad \neq \quad 12 \\ \hline \frac{2x}{2} \quad \neq \quad \frac{12}{2} \\ x \quad \neq \quad 6 \end{array}$$

### Solving Equations with Parentheses

$$3(2x - 7) = 6x + 17 + x$$

$$6x - 21 = 7x + 17$$

$$\begin{array}{r} -21 = x + 17 \\ -17 \quad \quad \quad -17 \\ \hline -38 = x \end{array}$$

$$3(2(-38) - 7) = 6(-38) + 17 + (-38)$$

$$-249 = -249$$

\* You must apply distributive property and combine like terms before solving.

### Solving Equations with Fractions

$$\frac{3}{4}x + \frac{7}{2} = -7$$

$$\frac{4}{3} \cdot \frac{3}{4}x \neq -9 \cdot \frac{4}{3}$$

$$\frac{12}{12}x \neq \frac{-36}{3}$$

$$x = -12$$

\* Multiply both sides by reciprocal of  $\frac{3}{4}$  ...  $\frac{4}{3}$

OR  $.75x + \frac{7}{2} = -7$

$$.75x = -9$$

change fraction to decimal

$$x = -12$$