

# Algebra Review

Words to Algebra

2<sup>o</sup> ~~twice a number~~ and ~~plus 4 = 10~~  
 ~~$(3 \cdot 2) + 4 = 10$~~  ~~needs variable~~  
 $2x + 4 = 10$

~~$x^2 + 4 = 10$~~   
~~x squared~~

Five less than the square root of a number y  
 ~~$\sqrt{5} = 9$~~   ~~$5 - \sqrt{y}$~~   
 $\sqrt{y} - 5$   
 5 minus square root y

Twenty more than five times a number x is equal to one hundred eighty  
 ~~$20 \cdot 5x = 180$~~  ~~not adding more~~  
 $5x + 20 = 180$   
 $20 + 5x = 180$

The quotient between a and b is at least 17  
 ~~$a \div b = 17$~~  ~~1st~~ ~~2nd bottom~~  
 ~~$\frac{a}{b} = 17$~~  ~~should write as fraction~~ ~~AP~~ ~~equals~~  
 $\frac{a}{b} \geq 17$

The cube of a number w is more than the sum of a number f and 2  
 ~~$w^4 + f = 2$~~   
 $w^3 > f + 2$   
 to the fourth power, says is more than

Inequalities  
 Ask:  
 Can it be more?  
 Can it be equal?

(no is) greater than increase by

Adding +	Subtracting -	Multiplying *	Dividing /
add/plus	subtract/minus	multiply	divide
Sum	difference	product	quotient
more than	less than	factor	fraction
combine	take away	times	over
Total	decrease	'of' 'per'	half :2
Equals =	Greater Than >	Less than <	Greater/Equal ≥
is	bigger >	smaller <	bigger ≥
Some as	is more than	is less than	is at least
equivalent	is bigger than	is smaller than	more and equal
is equal to result			minimum
			Less/Equal ≤
			is at most
			less or equal
			maximum limit

## Solving One Step Equations

$$\frac{2x}{2} = \frac{14}{2} \quad \text{Check}$$

$$2(7) = 14$$

$$14 = 14 \checkmark$$

Undo multiplication by dividing

$$\frac{+10}{-10} + x = 14$$

$$\frac{10 + (4)}{-10} = 14$$

$$14 = 14 \checkmark$$

Undo addition by subtraction

$$\frac{x-3}{+3} = 10$$

$$(13) - 3 = 10$$

$$10 = 10 \checkmark$$

Undo subtraction by addition

$$\frac{2(x)}{2} = \frac{(14) \cdot 2}{2}$$

$$\frac{28}{2} = 14$$

$$14 = 14 \checkmark$$

Undo division by multiplying

## Solving Two Step Equations

$$2x + 4 = 10$$

$$\frac{2x}{2} = \frac{6}{2}$$

$$x = 3$$

Check:

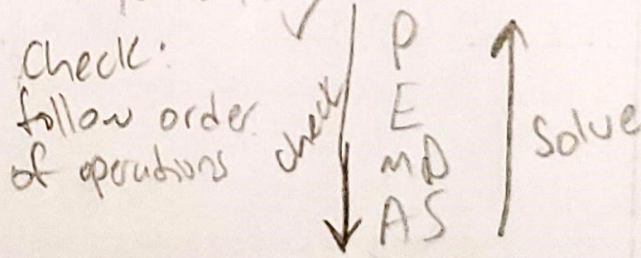
$$2(3) + 4 = 10$$

$$6 + 4 = 10$$

$$10 = 10 \checkmark$$

What happens with the order of operations?  
PEMDAS  
 (left to right)

Solve:  
 Undo PEMDAS in reverse



## Variables on both Sides

$$3x - 4 = -2$$

$$3x - 4 = -2 + 2x$$

$$\frac{-2x}{-2x} \quad \frac{-2x}{-2x}$$

$$x - 4 = -2$$

$$\frac{+4}{+4} \quad \frac{+4}{+4}$$

$$x = 2$$

1st: Combine like terms w. thin each side  
 2nd: move x terms

Check

$$3(2) - 4 = -2 - 3(2) + 5(2)$$

$$6 - 4 = -2 - 6 + 10$$

$$2 = -8 + 10$$

$$2 = 2 \checkmark$$