

Coming up with rules for arithmetic sequences:

Ex: 10, 12, 14, 16, 18, ..., 68

↖ +/ -

↖ 30<sup>th</sup> term

n	1	2	3	4	...	n	...	30
element	10	12	14	16	...	2n+8	...	2(30)+8

60+8  
68

\*

Rule:  $2n + 8 = 10$

$2 + 8 = 10$

Ex: 

n	1	2	3	4	...	n	...	20
element	9	6	3	0	...	3n+12	...	3(20)+12

-60+12  
-48

$-3n + 12 = 9$

$-3 + 12 = 9$

Ex: P105, #3

n	1	2	3	4	5	...	n	...	20
element	-4	4	12	20	28	...	8n-12	...	8(20)-12

160-12  
148

$8n - 12 = 4$

$16 - 12 = 4$

## p212: Rules of Algebra

\* Distributive Property:  $a(b+c) = ab+ac$

\* Addition Prop. of Equality:

If  $a = b$ , then  $a+c = b+c$

$$\begin{array}{r} x-2=9 \\ +2 \quad +2 \\ \hline x=11 \end{array}$$

\* Subtraction Prop. of Equality:

If  $a = b$ , then  $a-c = b-c$

\* Multiplication Prop. of Equality:

If  $a = b$ , then  $a \cdot c = b \cdot c$

$$\begin{array}{l} 3\left(\frac{x}{3}\right) = (10)3 \\ x = 30 \checkmark \end{array}$$

\* Division Prop. of Equality:

If  $a = b$ , <sup>and  $c \neq 0$</sup> , then  $\frac{a}{c} = \frac{b}{c}$

Ex:

$$\begin{array}{l} \text{Dist. Prop} \\ 2(x+4) = -4 \\ 2x + 8 = -4 \\ \quad \quad \quad -8 \quad \quad \quad -8 \quad \text{Subtraction Prop} \\ \hline 2x = -12 \\ \frac{2x}{2} = \frac{-12}{2} \quad \text{Division Prop} \\ x = -6 \end{array}$$

$$\begin{array}{l} \text{Division Prop} \\ 2(x+4) = -4 \\ \hline x+4 = -2 \quad \text{Substr. Prop} \\ \quad \quad \quad -4 \quad \quad \quad -4 \\ \hline x = -6 \end{array}$$