

+/-

Coming up with rules for arithmetic sequences:

Ex:

n	1	2	3	4	...	n	...	30
element	10	12	14	16	...	$2n+8$...	68

Annotations:
 - Green arrows show a common difference of +2 between terms 1, 2, 3, and 4.
 - A red box highlights the term 14.
 - A green arrow points from the term 30 to the formula $2 \cdot (30) + 8 = 60 + 8$.
 - A red arrow points from the term 30 to the coefficient 3 in the formula $2n+8$.

Rule: $2n + 8 = 14$
 $6 + 8 = 14$

Ex:

n	1	2	3	4	...	n	...	20
elements	9	6	3	0	...	$-3n+12$...	-48

Annotations:
 - Blue arrows show a common difference of -3 between terms 1, 2, 3, and 4.
 - A red box highlights the term 0.
 - A red arrow points from the term 20 to the formula $-3n+12$.
 - A red arrow points from the term 20 to the constant term 12 in the formula $-3n+12$.
 - A red checkmark is next to the term -48.

Rule: $-3n + 12 = 0$
 $-3n + 12$
 $-3(20) + 12$
 $-60 + 12$
 -48

p212: Rules of Algebra

Do Now:

$$\begin{array}{r|l}
 -2(x+3) & \longrightarrow -2x-6 \\
 -2(5+3) & -2(5)-6 \\
 -2(5) & -10-6 \\
 -16 & -16
 \end{array}$$

* Distributive Property:

$$a(b+c) = ab + ac$$

* Addition Prop. (of Equality):

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

$$\begin{array}{r}
 age = 6 \\
 age + 3 = 6 + 3 \\
 \hline
 age = 6 \quad \checkmark
 \end{array}$$

* Subtraction Prop. (of Equality):

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

* Multiplication Prop. (of Equality):

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

* Division Prop. (of Equality):

If $a = b$ AND $c \neq 0$, then $\frac{a}{c} = \frac{b}{c}$

Ex: PEMDAS

$$\begin{array}{r}
 2 \cdot (x+4) = -4 \\
 \hline
 x+4 = -2 \\
 \hline
 x = -6
 \end{array}$$

Division Prop. (green arrow pointing to the first step)
 Subtraction Prop. (blue arrow pointing to the second step)

$$\begin{array}{r}
 2(x+4) = -4 \\
 2x + 8 = -4 \\
 \hline
 2x = -12 \\
 \hline
 x = -6 \quad (> \text{steps!})
 \end{array}$$