Sequence - a list of #'s that follow a pattern

Series = the sum of a seq.

Arith - adds the same values

Geom = multiplies same value

$a_1 = 5 \cdot 2^3$
$= 40$

$n = 7 - 3 + 1$

$$\sum_{i=3}^{7} 5 \cdot 2^{i}$$

geom

r

$$S_n = \frac{a_1 - a_1 \cdot r^n}{1 - r}$$

$$\frac{40 - 40 \cdot 2^5}{1 - 2}$$

$= 1240$

arith

$$\sum_{i=30}^{70} (2i + 5)$$

d

$a_1 = 60+5$
65

$a_n = 145$

$$S_n = \frac{n}{2}(a_1 + a_n)$$

$$= \frac{41}{2}(65 + 145) = 4305$$

$41 \cdot 105$

4200
105
4305

7/ $\sum_{n=1}^{\infty} 8 \cdot \left(\frac{1}{5}\right)^{n-1}$ $\quad 8 \cdot \frac{1}{5}^{0}$

$0 < |r| < 1$

$r = \frac{1}{5}$ Converges

$$S = \frac{a_1}{1-r} = \frac{8}{1-\frac{1}{5}} = \frac{8}{4/5} = \cancel{8}^{2} \cdot \frac{5}{\cancel{4}} = 10$$

17/ $a_1 = 14$

$r = 0.75$

$$S = \frac{a_1}{1-r} = \frac{14}{1-0.75} = \frac{14}{0.25} = 56 \text{ ft.}$$

$2000 + 1600 + 1200 + \ldots\ldots\ldots + -10{,}400.$

$d = -400$

$S_n = \frac{n}{2}(a_1 + a_n)$

$= \frac{32}{2}(2000 + {}^{-}10400)$

$= 16(-8400)$

$= -134{,}400$

$a_n = a_1 + d(n-1)$

$-10400 = 2000 + {}^{-}400(n-1)$

-2000

$\frac{-12400}{-400} = \frac{-400(n-1)}{-400}$

$31 = n - 1$

$32 = n$

Phone = Loses 17% per year.

What will be worth in 7 years?

$a_8 = a_1 \cdot r^{n-1}$

$a_8 = \$777 \cdot (0.83)^{8-1}$

a_n

$= \$210$

100%

+17%

83%

117%

1.17