Do now:

Given the arithmetic sequence

$4, -1, -6, \ldots$

Find the 22nd term and the sum of the first 22 terms.

Geometric Sequences

Ex. Find formula: $6, 12, 24, 48, \ldots$

HAS A COMMON _____

Write the formula

a) $1, 3, 9, 27, 81, \ldots$

b) $\frac{1}{8}, \frac{1}{16}, \frac{1}{32}, \ldots$

c) $1, -1, 1, -1, 1, \ldots$

d) $\frac{1}{2}, -\frac{1}{8}, \frac{1}{32}, \ldots$

Geometric Series

Sum of the terms of a geometric sequence.

Given: $4, 8, 16, 32$

The sum is

$S_4 = 4 + 8 + 16 + 32$

$S_4 = 4 \cdot 2^0 + 4 \cdot 2^1 + 4 \cdot 2^2 + 4 \cdot 2^3$

$2\,S_4 =$

.....

$$S_n = a_1\left(\frac{1 - r^n}{1 - r}\right)$$

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

$$S_n = \frac{1}{2}(a_1 + a_n) \cdot d$$

} ARITHMETIC SEQUENCES

$$a_n = a_1(r)^{n-1}$$

$$S_n = a_1\left(\frac{1-r^n}{1-r}\right)$$

} GEOMETRIC SEQUENCES (Finite)

For $4+8+16+32$

Find

$S_4 =$

For $6+18+54+\ldots$

Find

$S_7 =$

Provided with $\frac{1}{4}+\frac{1}{16}+\frac{1}{64}+\ldots$

Find

S_{10}

Find $1-1+1-1+1-1+1\ldots$