

Assignment #2

SEQUENCES + SERIES

Name _____

Per. _____

① Consider the geometric sequence: 2, 6, 18, 54,

a) what is the common ratio? _____ b) List the next 3 terms _____

c) Calculate the 30th term (show work)
...using IB notation

d) Find the sum of the first 10 terms, showing IB notation.

② Find the n^{th} term formula, U_n , for each sequence below

a) 7, 14, 28,

b) 80, 86, 92, 98,

c) 80, 40, 20, ...

d) 5, -10, 20, -40,

③ Find the sum of each sequence (showing work, etc.) of the first 11 terms.

a) 2000, 500, 125,

b) 10, 6, 2, -2, ...

④ A geometric sequence has $u_1 = 8$ and $u_4 = 216$. What is the common ratio? (show work)

and find the general term, u_n .

and find 57

⑤ Find the sum of each series (show details for all steps)
(a) $10 + 7 + 4 + \dots - 50$

(b) $\frac{4}{1} + \frac{2}{1} + 1 + \dots + 64$

⑥ Find k given that a geometric sequence has consecutive terms of

$$4, k, k^2 - 1$$

⑦ The figure shows two adjacent triangular fields ABC and ACD where $AD = 30$ m, $CD = 80$ m, $BC = 50$ m, $\angle ADC = 60^\circ$ and $\angle BAC = 30^\circ$

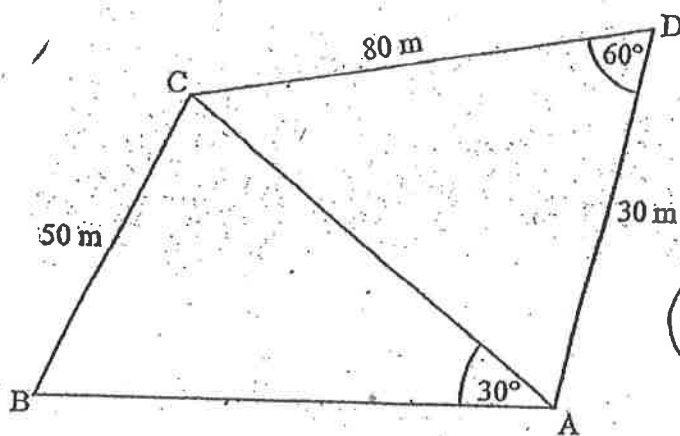


diagram not to scale

(a) Using $\triangle ACD$ calculate AC

*

(b) then calculate $\angle ABC$

*

(c) Calculate the area of the field ACD

Geometric Sequence

A sequence is geometric if each term can be obtained from the previous term by multiplying by the same number.

This number is the constant ratio

Example

2, 10, 50, 250,

What is the common ratio of

135, 90, 60, 40,

If the terms are getting smaller, then the common ratio (multiplier) must be less than 1

Is the following sequence geometric?

0.5, 1, 2, 4, 8, 16,

If so, what is common ratio?

How many applications of 2 do you need to get from the first term to the 3rd term?

to the 4th term?

to the 85th term?

to the nth term?

Explicit formula for Geometric Sequences

=

any term of interest

first term

common ratio

$n = \# \text{ of terms}$

Let's try it!

What's the 23rd term of this sequence?

$\frac{1}{9}, -\frac{1}{3}, 1, -3, 9, \dots$



The first term of a geometric sequence is 4 and the last term is 26,244. If there are 9 terms in the sequence, what is the common ratio?

Alternative wording for the same problem ↷

Note

If something grows at 15%

then the common ratio would be _____

