Topic: Geometric Sequences

ACCESS MATHS

FEEDBACK

ACTION

RESPONSE

Fluency

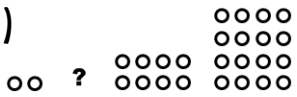
Identify the common ratio and the missing term in each sequence.

1) 3, 9, 27, 81, ___

2) 7, 21, ___, 189

3) 400, 100, 25, ___

4) $\frac{1}{5}$, $\frac{1}{20}$, ___, $\frac{1}{320}$

5) 

6) ___, 60, 10, $\frac{5}{3}$, $\frac{5}{18}$, ___

7) $1\frac{1}{2}$, $2\frac{1}{4}$, $3\frac{3}{8}$, ___, $7\frac{19}{32}$

8) $\frac{1}{2}x+2$, $x+4$, $2x+8$, ___

9) ___, $6x^3$, $18x^5$, $54x^7$

Find the specified terms for the sequences.

1) nth term $= 4^n$, first 4 terms.

2) nth term $= 10^n$, first 5 terms.

3) nth term $= 0.5^n$, 10^{th} term $=$

4) $U_n = 4U_{n-1}$ $U_1=3$. Find U_3

5) $U_n = \frac{1}{2}U_{n-1}$ $U_1=6$. Find U_4

6) $U_n = 0.1U_{n-1}$ $U_4=6$. Find U_1

Reasoning

Can you come up with a geometric sequence that:

a) has 20 as the third term?

a^2) has a fractional second term but not the first?

a^3) has fractional odd terms (terms 1, 3, 5,... are fractions but terms 2, 4, 6,... are not)

a^4) has $U_1=3$ and becomes greater than 100 after U_3, but not before.

What are the possible values for the common ratio for all the sequences that satisfy this rule?

Problem Solving

Amelia posts a message on Twitter at noon on Saturday, by 1pm three of her followers retweet it. In the second hour three of each of their followers retweet it and so on...

a) Explain why the number of retweets forms a geometric sequence.

b) Find a formula linking the number of retweets, R, with the number of the hour, h, after it was first tweeted.

c) How many people will retweet in the twelfth hour?

d) How many total retweets will the message have had by midnight?

e) When (day/time) will it first be retweeted more than 40 million times?

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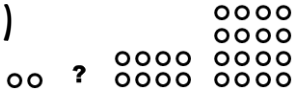
5) 

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R A G