



Ch 8.6

Geometric Sequences



Finding Common Ratios and Next Terms



- A # pattern is also called a *sequence*, where each # is a *term*. When you multiply a fixed # (*common ratio*) to each term it forms a geometric sequence. Find the # you multiply each term by to get the pattern, or common ratio then find the next couple of terms.

- Ex 1. -3, -6, -12, -24...

x2 x2 x2

-48, -96, -192

- Ex 2. 4, 6, 9, 13.5...

x3/2 x3/2 x3/2

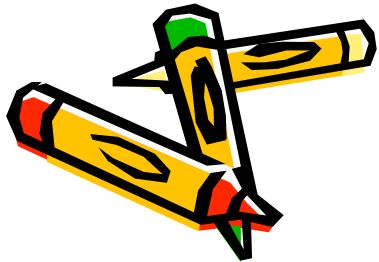
20.25, 30.375, 45.5625

- Ex 3. 750, 150, 30, 6...

x1/5 x1/5 x1/5

6/5, 6/25, 6/125

(1.2, .24, .048)



Sequences can be geometric (multiply) or arithmetic (add)



TRY SOME

- Find the common ratio and next 3 terms of sequence

1. $3, -15, 75, -375$

2. $3, 3/2, 3/4, 3/8$

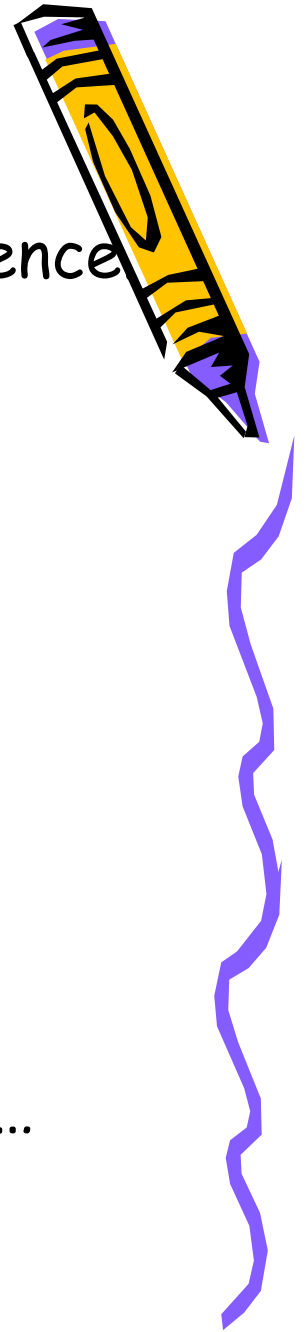
3. $1, 3, 9, 27$

4. $120, -60, 30, -15$

Is the sequence geometric or arithmetic?

5. $162, 54, 18, 6...$

6. $98, 101, 104, 107...$



Finding Terms of a Sequence

- For a geometric seq., if you know the 1st term, term # & common ratio then you can find additional terms by using the Geometric Sequence Rule.

- **RULE:** $A(n) = a \cdot r^{n-1}$

nth term 1st term common ratio term #

- Find the 1st, 5th & 10th term of each sequence.

$$A(n) = -2 \cdot 5^{n-1}$$

- $A(1) = -2 \cdot 5^{1-1} = -2$

- $A(5) = -2 \cdot 5^{5-1} = -1250$

- $A(10) = -2 \cdot 5^{10-1} = -3,906,250$



TRY SOME

- Find the 1st, 5th, & 10th terms of each sequence.

1. $A(n) = -3 \cdot 2^{n-1}$

2. $A(n) = 4 \cdot 3^{n-1}$

