

# Introduction to Sequences Homework

Read section 11-1 before you begin this worksheet.

Name

Master S

Date

Block

1-13: Identify the pattern in each sequence. Then find the next 3 numbers in the sequence.

1. 3, 7, 11, 15, ... *Add 4*  
19, 23, 27

2. 3, 6, 12, 24, ... *Mult. by 2*  
48, 96, 192

3. -2, -7, -12, ... *Subtract 5*  
-17, -22, -27

4. 3, 1,  $\frac{1}{3}$ ,  $\frac{1}{9}$ , ... *Divide by 3*  
 $\frac{1}{27}$ ,  $\frac{1}{81}$ ,  $\frac{1}{243}$

5. 3, 9, 27, 81, ... *Mult. by 3*  
243, 729, 2187

6.  $\frac{3}{4}$ ,  $\frac{3}{5}$ ,  $\frac{3}{6}$ ,  $\frac{3}{7}$ , ... *Add 1 to the denom.*  
 $\frac{3}{8}$ ,  $\frac{3}{9}$ ,  $\frac{3}{10}$

7. 3, 3.75, 4.5, 5.25, ... *Add .75*  
6, 6.75, 7.5

8.  $\frac{1}{3}$ ,  $-\frac{1}{4}$ ,  $\frac{1}{5}$ ,  $-\frac{1}{6}$ , ... *Change sign & Add 1 to denom.*  
 $\frac{1}{7}$ ,  $-\frac{1}{8}$ ,  $\frac{1}{9}$

9. 3, -15, 75, -375, ... *Mult by -5*  
1875, -9375, 46875

10. 3, 12, 36, 144, ... *Alternate Mult by 4 & then 3*  
432, 1728, 5184

11. 3, 18, 54, 108, ...  
 $\div 6 \div 3 \div 2$   
no clear pattern...

12. 3, -6, -17, -26, ... *Subtract 9, then 11*  
-37, -46, -57

13. 1, 1, 2, 3, 5, 8, ... *Add the 2 consec. terms...*  
13, 21, 34

14-17: Answer the following questions.

14. What is an arithmetic sequence? *A sequence where each term is determined by adding a constant value to the previous term.*

15. What is a geometric sequence? *A sequence where each term is determined by multiplying a nonzero constant to the previous term.*

16. Which of the above sequences in problems 1-13 are arithmetic?

1, 3, 7

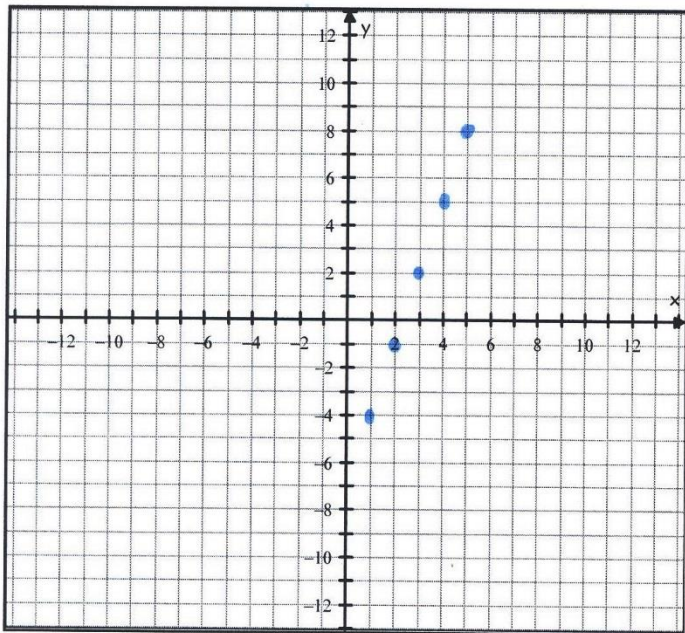
17. Which of the above sequences in problems 1-13 are geometric?

2, 4, 5, 9

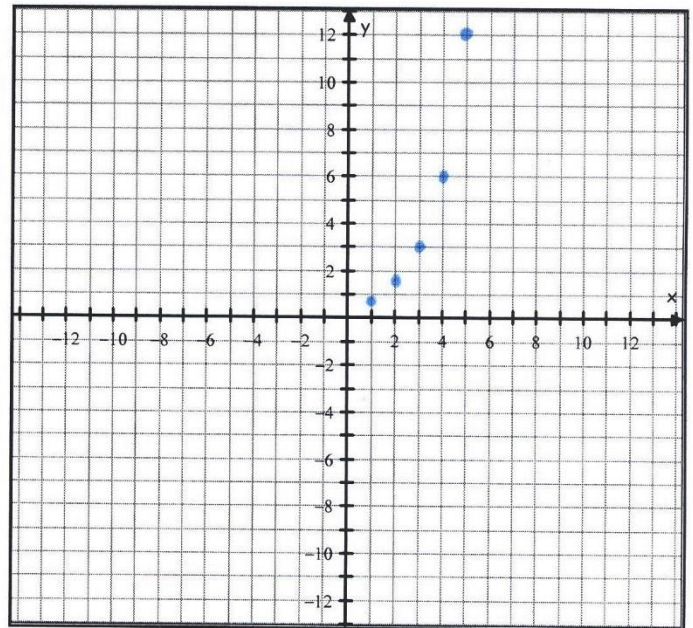
18-19: Identify each sequence below as arithmetic or geometric then, graph each sequence.

Hint: Graph each sequence by using the numbers in the sequence as each y-coordinate. What would the x-coordinates be?

18.  $-4, -1, 2, 5, 8, \dots$



19.  $\frac{3}{4}, \frac{3}{2}, 3, 6, 12, \dots$



20-21: Answer the following questions below.

- a) Describe what you see when you graph each case (be specific.)
- b) Does each graph look familiar? What function families are they?
- c) What is the equation that fits each graph? 😊

20. Use the graphed sequence in #18.

- a) The discrete set of points when connected would make a linear function
- b) Identity Function
- c)  $f(x) = 3x - 7$

21. Use the graphed sequence in #19.

- a) The discrete set of points when connected would make an exponential growth function
- b) Exponential Function
- c)  $f(x) = \frac{3}{8} \cdot 2^x$  (Found using Stat  $\rightarrow$  Calc  $\rightarrow$  0-ExpReg.)