

Accelerated Algebra 1/Geometry A

A few good topics....

Date	Topic
Thursday January 7	Function Vs Relation Function Notation Pages 1-4
Friday January 8	Arithmetic Sequences (recursive and explicit) Pages 5-8
Monday January 11	Properties Review <i>pgs 9-10</i> Quizzes
Tuesday January 12	Quiz over all three topics above

Worksheet Level 3:

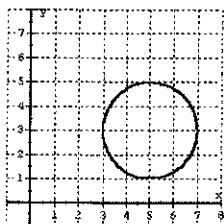
Goals:

Use the Vertical Line Test to Identify functions from a graph
Identify functions from tables and diagrams.

Concept # _____

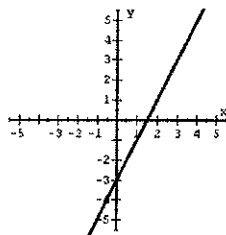
Practice #1

State whether each graph represents a function or not.



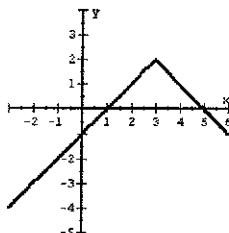
$$(x - 5)^2 + (y - 3)^2 = 4$$

Function?



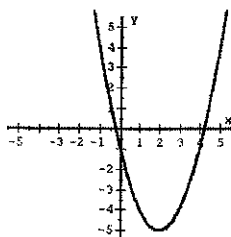
$$y = 2x - 3$$

Function?



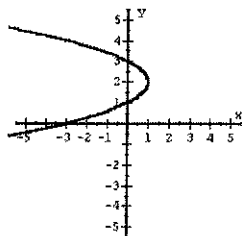
$$y = -|x - 3| + 2$$

Function?



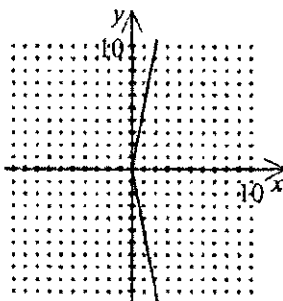
$$y = (x - 2)^2 - 5$$

Function?

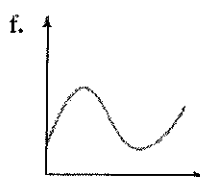
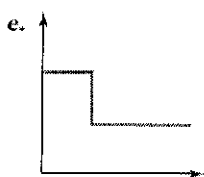
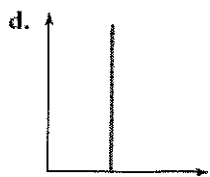
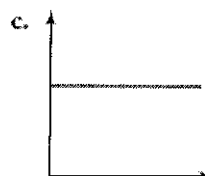
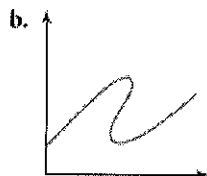
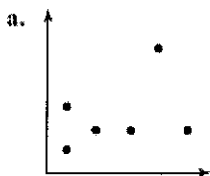


$$x = -(y - 2)^2 + 1$$

Function?



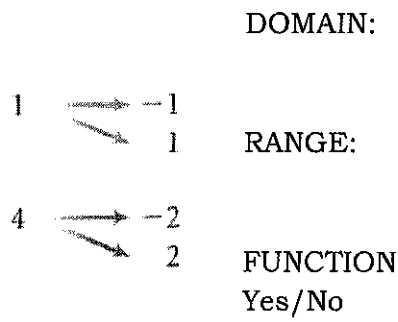
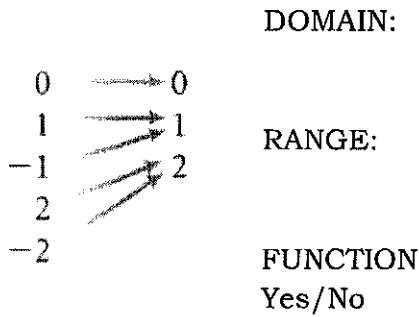
Find whether each graph represents a function.



Explain how you know if a graph is a function or not:

Level 2 Practice:

For each diagram, list the domain and range, and state whether or not it is a function.

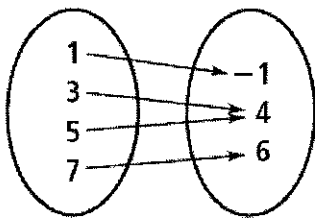


$(-2, 3), (3, -2), (1, 3), (0, -2)$

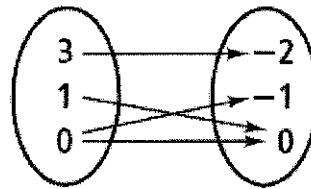
DOMAIN: RANGE: FUNCTION Yes/No

$(3, -2), (-2, 3), (3, 1), (-2, 0)$

DOMAIN: RANGE: FUNCTION Yes/No



DOMAIN: RANGE: FUNCTION Yes/No



DOMAIN: RANGE: FUNCTION Yes/No

Function Notation

1. Evaluate the following expressions given the functions below:

$$g(x) = -3x + 1$$

$$f(x) = x^2 + 7$$

$$h(x) = \frac{12}{x}$$

$$j(x) = 2x + 9$$

a. $g(10) =$

b. $f(3) =$

c. $h(-2) =$

d. $j(7) =$

e. $h(a)$

f. Find x if $g(x) = 16$

g. Find x if $h(x) = -2$

h. Find x if $f(x) = 23$

2. Translate the following statements into coordinate points:

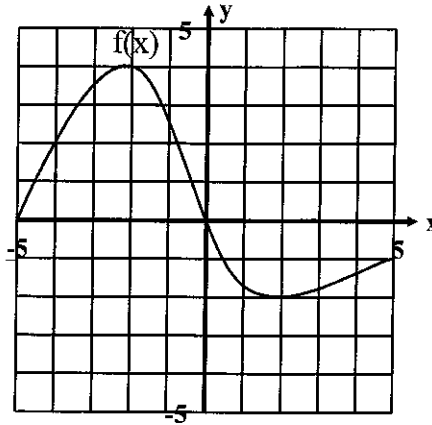
a. $f(-1) = 1$

b. $h(2) = 7$

c. $g(1) = -1$

d. $k(3) = 9$

3. Given this graph of the function $f(x)$:



Find:

a. $f(-4) =$

b. $f(0) =$

c. $f(3) =$

d. $f(-5) =$

e. x when $f(x) = 2$

f. x when $f(x) = 0$

APPLICATION

5. Swine flu is attacking Porkopolis. The function below determines how many people have swine where $t =$ time in days and $S =$ the number of people in thousands.

$$S(t) = 9t - 4$$

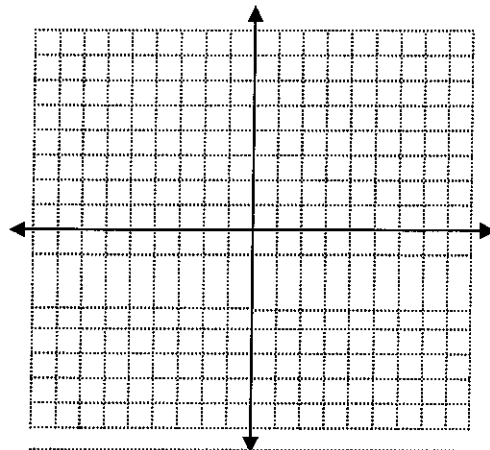
a. Find $S(4)$.

b. What does $S(4)$ mean?

c. Find t when $S(t) = 23$.

d. What does $S(t) = 23$ mean?

e. Graph the function



Arithmetic Sequences NOTES

Definition: Arithmetic Sequence

Definition: Explicit Formula

Definition: Recursive Formula

Example 1: Fill in the next 3 terms. What is the common difference?

2, 5, 8, 11, 14, 17, _____, _____, _____

Example 2: Fill in the next 3 terms. What is the common difference?

55, 49, 43, _____, _____, _____

Formula for writing an EXPLICIT equation of an arithmetic sequence:

The n th term of a_n of an arithmetic sequence with first term a_1 and common difference d is given by...

Where n is any positive integer. (** n stands for the number of terms in the sequence)

Example3: Write an equation for the arithmetic sequence 8, 17, 26, 35.....

Recursive:

Explicit:

Example 4: Find the equation for the n th term of arithmetic sequence $-8, -6, -4, \dots$

Find a_{13}

Find the 120th term

Find the recursive formula for the sequence above:

Example 5: Find the 4 arithmetic means between 16 and 91. This means find the 4 missing terms between 16 and 91.

Example 6: Given $a_1 = 21$ and $a_5 = 45$, find the equation of the arithmetic sequence and find the 3 arithmetic means between them.

Example 7: The table below shows typical costs for a construction company to rent a crane for one, two, three or four months. Assuming that the arithmetic sequence continues, how much would it cost to rent a crane for 1 year?

<u>Months</u>	<u>Cost</u>
1	\$75,000
2	\$90,000
3	\$105,000
4	\$120,000

②
6

6. Write a recursive rule and a closed rule for the sequence. *Remember to write the 1st term in the sequence for recursive rule.

Recursive Rule*

Explicit Rule

a) 1, -3, -7, -11, ...

b) 10, 8, 6, 4, ...

c) -7, -2, 3, 8, ...

d) -9, -5, -1, 3, ...

e) 12, 5, -2, -9, ...

~~7. a) Find the 20th term of the sequence in 5a.~~

~~b) Find the 30th term of the sequence in 5b.~~

~~c) Find the 50th term of the sequence in 5c.~~

~~d) Find the 74th term of the sequence in 5d.~~

~~e) Find the 38th term of the sequence in 5e.~~

Name _____ Date _____ Period _____

Explicit and Recursive Equations From Arithmetic Sequences

Find the next three terms of each arithmetic sequence, write the explicit and recursive formula:

1. 9, 16, 23, 30, _____, _____, _____

Explicit:

Recursive:

2. 31, 24, 17, 10, _____, _____, _____

Explicit:

Recursive:

3. -6, -2, 2, 6, _____, _____, _____

Explicit:

Recursive:

4. -8, -5, -2, 1, _____, _____, _____

Explicit:

Recursive:

5. 12, 16, 20, 24, _____, _____, _____

Explicit:

Recursive:

6. 3, 1, -1, -3, _____, _____, _____

Explicit:

Recursive:

7. 14, 12, 10, 8, _____, _____, _____

Explicit:

Recursive:

8. 17, 14, 11, 8, _____, _____, _____

Explicit:

Recursive:

Algebraic Properties

Write an equivalent expression using the property stated.

1. Identity Property of Addition: $c + 0 =$ _____
2. Identity Property of Multiplication: $22b \cdot 1 =$ _____
3. Multiplicative Property of Zero: $40,286 \cdot 0 =$ _____
4. Commutative Property of Addition: $x + z =$ _____
5. Commutative Property of Multiplication: $k \cdot 6 =$ _____
6. Associative Property of Addition: $(1 + 3) + 9 =$ _____
7. Associative Property of Multiplication: $(w \cdot h) \cdot l =$ _____
8. Symmetric Property: $x > 3 =$ _____
9. Exponential Property of Equality: $3^3 = 3^x$ therefore _____
10. Multiplication Property of Equality: if $x = 4$, then $2 \cdot x =$ _____
11. Addition Property of Equality: if $x = 4$, then $x + 3 =$ _____
12. Additive Identity: $a + (-a) =$ _____
13. Multiplicative Inverse: $4/5 \cdot 5/4 =$ _____
14. A football team is on the 35-yard line. The quarterback is sacked at the line of scrimmage. The team gains 0 yards. Which identity or property does this represent? Explain
15. Write two equations demonstrating two properties of your choosing.
 - a.
 - b.
16. Does the Commutative Property sometimes, always, or never hold for subtraction? Explain your reasoning.
17. Identify the sentence that does not belong with the other three. Explain your reasoning.

$x+12=12+x$	$7h=h \cdot 7$	$1+a=a+1$	$(2j)k=2(jk)$
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18. Write a real-life example in which the Distributive Property would be useful. Write an expression that demonstrates this example.

19. Nate lives 32 miles away from the mall. The distance from his house to the mall is the same as the distance from the mall to his house. Which property to this represent? Explain

Name the property demonstrated by each statement.

20.	$9 \cdot 7 = 7 \cdot 9$	
21.	$2 \cdot (3 \cdot 4) = (2 \cdot 3) \cdot 4$	
17.	$37 \cdot 0 = 0$	
18.	$1 \cdot 87 = 87$	
19.	$14 + 6 = 6 + 14$	
20.	$3(6a) = (3 \cdot 6)a$	
21.	$2b + 0 = 2b$	
22.	$55 + 6 = 6 + 55$	
23.	If $2^4 = 2^x$ then $4 = x$	
24.	$(x + 3) + y = x + (3 + y)$	
25.	$1 \cdot mp = mp$	
26.	$9 + (5 + 35) = (9 + 5) + 35$	
27.	$6b + 0 = 6b$	
28.	$7x \cdot 0 = 0$	
29.	$4(3 \cdot z) = (4 \cdot 3)z$	
30.	If $4^x = 4^5$ then $x = 5$	
31.	$14 \cdot 1 = 14$	
32.	$6 + (5 + m) = (6 + 5) + m$	
33.	$4 < x = x > 4$	
34.	$3/4 \cdot 4/3 = 1$	
35.	$-14 + 14 = 0$	
36.	If $10 = 10$ then $10 + 13 = 10 + 13$	
37.	If $x = 5$, then $3x = 15$	
38.	If $x = 12$ then $x - 7 = 12 - 7$	
39.	If $30 = 30$ then $30/5 = 30/5$	
40.	If $x = 6$ then $6 = x$	