

ALGEBRA I

Unit 3

The collage features several educational worksheets:

- Coordinate Plane:** A worksheet with sections for 'Coordinate Plane', 'x-axis', and 'y-axis'.
- COORDINATE PLANE PARTS OF THE PLANE:** A worksheet with a table for 'Main Ideas/Questions' and 'Notes/Examples'. The notes section says: 'Label the origin, quadrants, x-axis, and y-axis.'
- DOMAIN & RANGE of Continuous Graphs:** A worksheet with a note: 'Note: Domain and range of these types of graphs are usually written using inequalities or in interval notation.' It includes two graphs: a V-shaped graph and a circle.
- FUNCTION:** A worksheet with a table for 'Main Ideas/Questions' and 'Notes/Examples'. The notes section says: 'Determine whether the given relation is a function.'
- Describing REAL WORLD GRAPHS:** A worksheet with a table for 'Main Ideas/Questions' and 'Notes/Examples'. The notes section says: '1. The graph shows the height of a rollercoaster during a single ride. Describe the rollercoaster ride.' It includes a graph with a vertical axis labeled 'Height (feet)'.
- FUNCTION NOTATION:** A worksheet with a table for 'Main Ideas/Questions' and 'Notes/Examples'. The notes section says: 'Equations that represent functions are often written in function notation. $y = 4x - 1$ → '. It also includes a list of bullet points: 'this is read as _____' and '_____ is the _____ and _____ is the _____'.
- EVALUATING Functions:** A worksheet with a table for 'Main Ideas/Questions' and 'Notes/Examples'. The notes section says: 'Function notation is especially useful for finding a value in the range that corresponds to a certain domain value. Example: If $f(x) = 4x - 1$, find $f(2)$ '.

RELATIONS & FUNCTIONS

NOTES • HOMEWORK • QUIZZES • TEST

Created by: ALL THINGS ALGEBRA®

Unit 3 - Relations & Functions: Sample Unit Outline

	TOPIC	HOMEWORK
DAY 1	Relations & Functions Dictionary	None
DAY 2	Relations, Functions, Range, Relations vs. Functions	HW #1
DAY 3	Continue Relations, Domain, Range, Functions	↓
DAY 4	Real World Graphs	HW #2
DAY 5	Quiz 3-1	None
DAY 6	Equations as Functions; Graphing by Function Table	HW #3
DAY 7	Function Notation; Evaluating Functions	HW #4
DAY 8	Zeros of Functions	HW #5
DAY 9	Quiz 3-2	None
DAY 10	Arithmetic Sequences	HW #6
DAY 11	Unit 3 Review	Study for Test
DAY 12	UNIT 3 TEST	None

RELATIONS & FUNCTIONS *Dictionary!*

Graphing Basics Definition

Coordinate Plane

x-axis

y-axis

Quadrants

Origin

Ordered Pairs

Name: _____ Date: _____

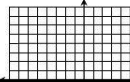
Topic: _____ Class: _____

Main Ideas/Questions Notes/Examples

COORDINATE PLANE

PARTS OF

Label the origin, quadrants, x-axis, and y-axis:



Name: _____ Date: _____

Topic: _____ Class: _____

DOMAIN & RANGE of Continuous Graphs

- For domain, scan your pencil _____ to identify the x-values in which you are "touching"
- For range, scan your pencil _____ and identify the y-values in which you are "touching"

Directions: Identify the domain and range of each graph.

Name: _____ Date: _____

Topic: _____ Class: _____

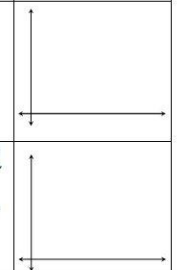
Describing REAL WORLD GRAPHS

1. The graph shows the height of a rollercoaster during a single ride. Describe the rollercoaster ride.



Each scenario is viewed lightly during a ride for the rest of the ride on the x-axis and height on the y-axis.

Example: The value of the stock goes up 25% after one year, then goes down 10% over the next 5 years. Graph time on the x-axis and value of the stock on the y-axis.



Name: _____ Date: _____

Topic: _____ Class: _____

FUNCTION NOTATION

Equations that represent functions are often written in function notation.

$$y = 4x - 1 \rightarrow f(x) = 4x - 1$$

- this is read as "f of x equals 4x minus 1"
- _____ is the _____ and _____ is the _____

EVALUATING Functions

Function notation is especially useful when you need to find the range that corresponds to a given domain.

Example: If $f(x) = 4x - 1$, find $f(2)$.

Evaluate $f(2)$ for $f(x) = 4x - 1$.

RELATIONS

Definition:

The set of x-values is called the _____

The set of y-values is called the _____

ORDERED PAIRS

1. $\{(-3, 1), (-2, 0), (1, 2), (3, -4), (-3, 5)\}$

Domain: _____

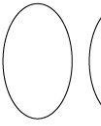
Range: _____

TABLE

x	y

x	y

MAPPING



Unit 3 Test Study Guide (Relations and Functions)

Name: _____ Date: _____ Per: _____

Topic 11 Relations & Functions

Directions: Identify the domain and range of each of the relations below. Then, determine whether the relation is a function.

1. $\{(-6, 4), (5, -1), (0, 3), (-2, 4)\}$

2.

x	y
-4	8
-3	1
0	-5
-3	2

3.

4.

5.

6.

7.

8.

9.

Algebra I Unit 3 Test (Relations and Functions)

1. What is the range of the relation below?
 $\{(-4, 1), (-2, 0), (8, -1)\}$

A. $\{-1, 1\}$
B. $\{-1, 0, 1\}$
C. $\{-4, -2, 8\}$
D. $\{-4, -2, -1, 0, 1, 8\}$

2. What is the domain of the relation below?

A. $\{-1, 0, 1, 3\}$
B. $\{-2, 0, 1, 3\}$
C. $\{-2, -1, 0, 1, 2, 3\}$
D. $\{0, 1, 2, 3\}$

3. What is the domain of the relation below?

A. All real numbers greater than or equal to 0.
B. All real numbers.
C. All real numbers between -6 and 4.
D. All real numbers greater than -2.

4. What is the range of the relation below?

A. $-1 \leq x \leq 4$
B. $-3 \leq x \leq 2$
C. $-1 \leq y \leq 4$
D. $-3 \leq y \leq 2$

5. What is the range of the relation below?

A. $x < 3$
B. $y < 4$
C. $x \leq 6$
D. $y \leq 6$

6. What is the domain of the relation below?

A. $x \leq 5$
B. $y \leq 5$
C. $x \geq 5$
D. All real numbers

Name: _____

Topic: _____

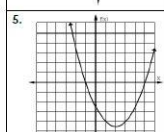
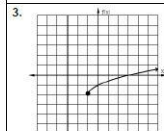
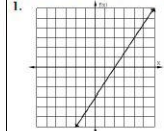
Main Ideas/Questions Notes/Examples

WHAT ARE ZEROS?

What are they also called?

Identifying Zeros GIVEN A GRAPH

Identify the zeros of each function.



Name: _____ Date: _____

Topic: _____ Class: _____

Main Ideas/Questions Notes/Examples

ARITHMETIC SEQUENCE

COMMON DIFFERENCE

IDENTIFYING an Arithmetic Sequence

Determine whether the sequences are arithmetic or not. If arithmetic, find the common difference.

1. 1, 5, 9, 13, ...

2. 1, 3, 5, 8, ...

3. 8, 6, 4, 2, ...

4. -5, -8, -1, ...

5. 5, 10, 20, 40, ...

6. 7, 6, 5, 4, ...

CONTINUING Arithmetic Sequences

Given the arithmetic sequence, find the next three terms.

7. 9, 13, 17, 21, _____

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

9. -8, -2, 4, 10, _____

Arithmetic Sequence FORMULA

The n^{th} term of an arithmetic sequence can be found using the following formula:

$$a_n = a_1 + (n - 1)d$$

Write the rule for the n^{th} term, then find a_{10} .

10. 7, 13, 19, 25, ...

11. 30, 26, ...

EXAMPLES