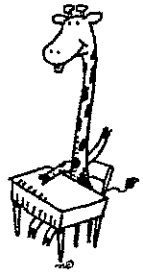
Algebra I 5.2 Relations and Functions Name:

Relation: a set of ordered pairs. (Think "Relationship")

Ex. {(2,4),(-3,1), (2,6)}

Giraffe Data

Age (years) x	Height (meters) y
18	4.25
20	4.4
21	5.25
14	5.00
18	4.85



Domain: x-values

Range: y-values

* Put in order from least to greatest. List repeats once. Write in set notation { }.

EX1 Find the domain and range of the ordered pairs listed for the giraffe data.

Domain: {14, 18, 20, 21}

Range: {4.25, 4.4, 4.85, 5.0, 5.25}

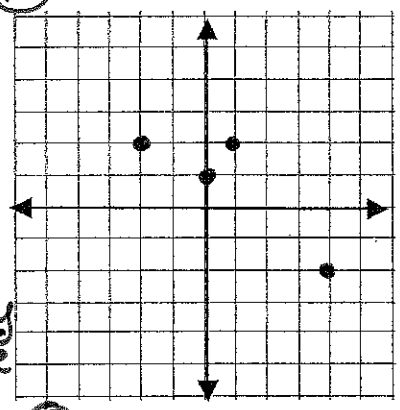
EX2 Find the domain and range of the relation represented by the data in the table.

Domain (x)	Range (y)
4	3
-2	1
-1	3
4	-2
-1	1

Domain = {-2, -1, 4}

Range = {-2, 1, 3}

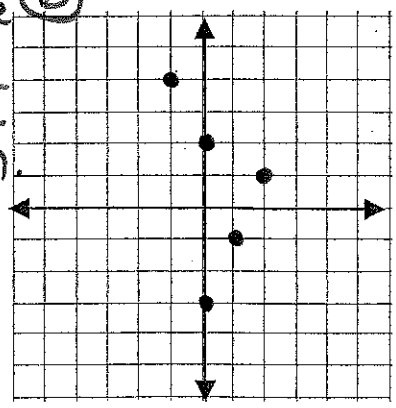
A



Function: A relation that assigns exactly one value in the range to each value in the domain. (No repeating xs).

Vertical Line Test: If any vertical line passes through more than 1 point on the graph, the relation is NOT a function.

B



EX3 Use the vertical line test to determine whether each relation is a function. (graph data points)

a) {(4,-2), (1,2), (0,1), (-2,2)} Yes

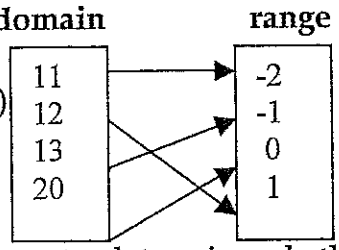
b) {(0,2),(1,-1),(-1,4)(0,-3),(2,1)} No

x=0 Repeats

5.2 NOTES

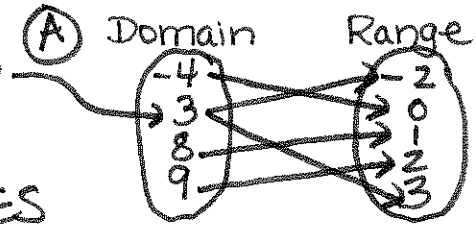
Mapping Diagram:

{(11,-2),(12,1),(13,-1),(20,0)}

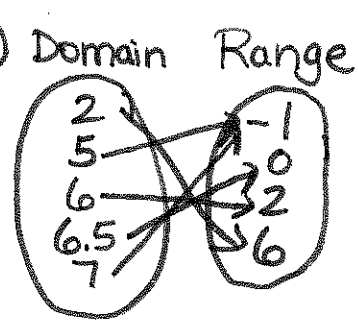


EX4 Use a mapping diagram to determine whether each relation is a function.

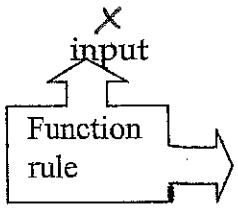
a) {(3,-2), (8,1), (9,2), (3,3), (-4,0)} NO



b) {(6.5,0), (7,-1), (6,2), (2,6), (5,-1)} YES



Function Rule:



output y or $f(x)$

Function Notation: f(x)

$f(x) = y$

EX5 Evaluate f(n)= -3n – 10 for n=6

$f(6) = -3(6) - 10$
$= -18 - 10 = -28$

EX6 Evaluate $f(x) = x^2 - 4$ for x=2.1

$f(2.1) = (2.1)^2 - 4 = 4.41 - 4 = .41$

EX7 Evaluate the function f(a) = -3a +5 to find the range for the domain {-3, 1, 4}

$f(-3) = -3(-3) + 5 = 9 + 5 = 14$
$f(1) = -3(1) + 5 = -3 + 5 = 2$
$f(4) = -3(4) + 5 = -12 + 5 = -7$

Range = $\{-7, 2, 14\}$

EX8 Find the range of the function f(x) = x – 6 for the domain {-2, 0, 5}

$f(-2) = -2 - 6 = -8$
$f(0) = 0 - 6 = -6$
$f(5) = 5 - 6 = -1$

Range = $\{-8, -6, -1\}$