Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Functions

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. Give the domain and range of the relation.

x	*y*
4	9
8	17
0	0
–5	–9

a. D: {–9, 0, 9, 17}; R: {–5, 0, 4, 8}
b. D: {4, 8, –5, 9, 17, –9}; R: {0}
c. D: {–5, 4, 8}; R: {–9, 9, 17}
d. D: {–5, 0, 4, 8}; R: {–9, 0, 9, 17}

____ 2. Give the domain and range of the relation.

x	*y*
2	5
9	19
0	0
–4	–7

a. D: {0}; R: {2, 9, –4, 5, 19, –7}
b. D: {–4, 0, 2, 9}; R: {–7, 0, 5, 19}
c. D: {–7, 5, 19}; R: {–4, 2, 9}
d. D: {–7, 0, 5, 19}; R: {–4, 0, 2, 9}

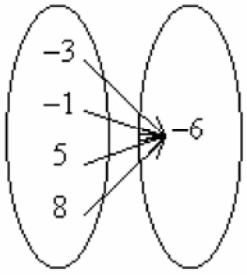
____ 3. Give the domain and range of the relation. Tell whether the relation is a function.

x	*y*
0	–3
1	–2
2	1
2	5

a. D: {–3, –2, 1, 5}; R: {0, 1, 2}
The relation is a function.
b. D: {0, 1, 2}; R: {–3, –2, 1, 5}
The relation is not a function.
c. D: {–3, –2, 1, 5}; R: {0, 1, 2}
The relation is not a function.
d. D: {0, 1, 2}; R: {–3, –2, 1, 5}
The relation is a function.

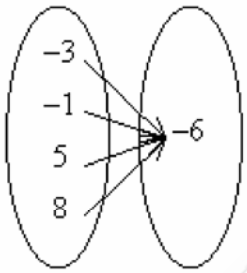
____ 4. Identify the mapping diagram that represents the relation and determine whether the relation is a function.
$\{(-3,-6),(-1,-6),(5,-6),(8,-6)\}$

a.



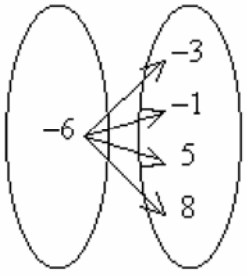
The relation is not a function.

b.



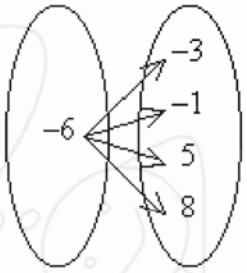
The relation is a function.

c.



The relation is a function.

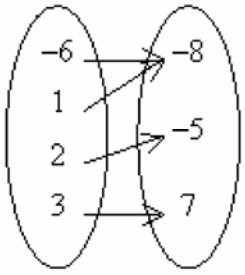
d.



The relation is not a function.

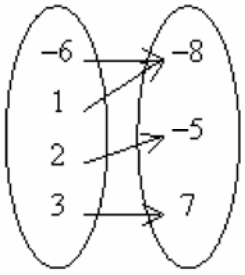
____ 5. Identify the mapping diagram that represents the relation and determine whether the relation is a function.
$\{(-8,-6),(-5,2),(-8,1),(7,3)\}$

a.



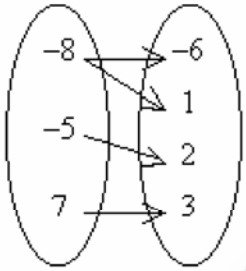
The relation is a function.

c.



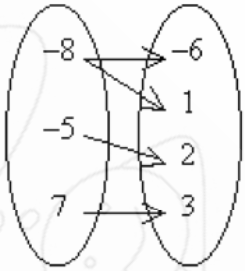
The relation is not a function

b.



The relation is a function.

d.



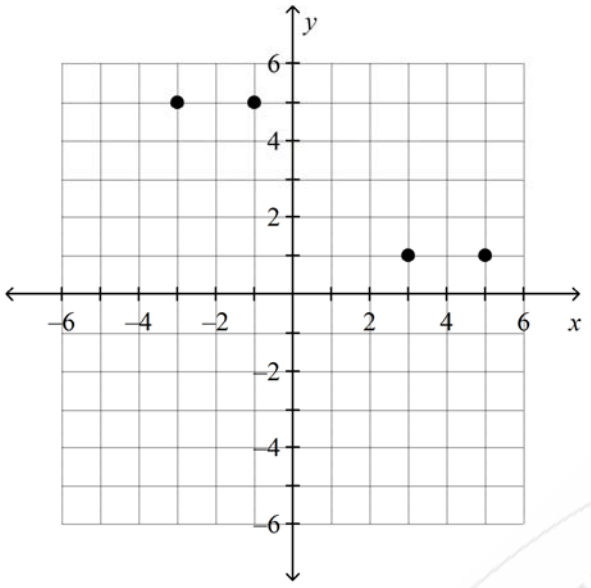
The relation is not a function.

Short Answer

6. Identify the domain and range of the relation.
$\{(4,2),(-7,-4),(4,13),(7,-13)\}$

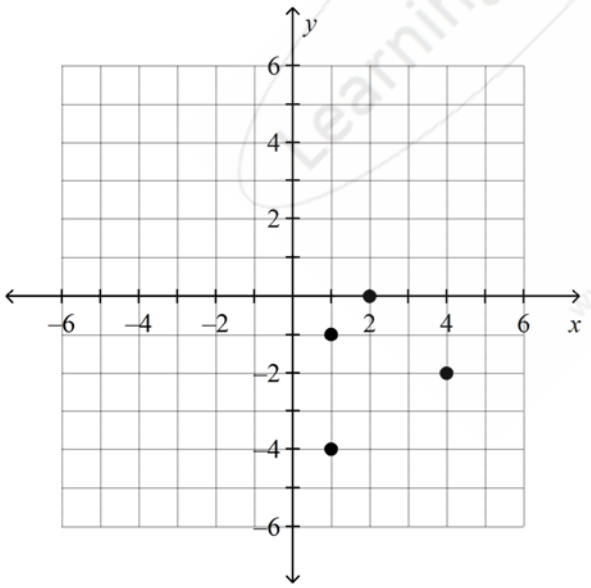
Use the vertical line test to determine whether the relation is a function.

7.



8. $\{(3, 4), (4, 0), (4, -2), (3, -3)\}$

9.



10. $\{(-4, -2), (-3, -4), (3, 4), (-5, 4)\}$

Functions
Answer Section

MULTIPLE CHOICE

1. ANS: D
The domain is the set of all *x*-values. The range is the set of all *y*-values.

	Feedback
A	The domain is the set of all *x*-values. The range is the set of all *y*-values.
B	The domain includes only the *x*-values.
C	The domain is the set of all *x*-values.
D	Correct!

PTS: 1 DIF: Basic REF: Page 237
OBJ: 4-2.2 Finding the Domain and Range of a Relation NAT: 12.5.1.g
TOP: 4-2 Relations and Functions KEY: domain | range | function | relation

2. ANS: B
The domain is the set of all *x*-values. The range is the set of all *y*-values.

	Feedback
A	The range includes only the *y*-values.
B	Correct!
C	The domain is the set of all *x*-values. The range is the set of all *y*-values.
D	The domain is the set of all *x*-values. The range is the set of all *y*-values.

PTS: 1 DIF: Basic REF: Page 237
OBJ: 4-2.2 Finding the Domain and Range of a Relation NAT: 12.5.1.g
TOP: 4-2 Relations and Functions KEY: domain | range | function | relation

3. ANS: B
A function is a special type of relation that pairs each *x*-value with exactly one *y*-value. If the same *x*-value has more than one *y*-value, then the relation is not a function.

	Feedback
A	A function has a unique *y*-value for each *x*-value.
B	Correct!
C	Check the domain and the range. The domain is the set of all *x*-values; the range is the set of all *y*-values.
D	A function has a unique *y*-value for each *x*-value.

PTS: 1 DIF: Basic REF: Page 237 OBJ: 4-2.3 Identifying Functions
NAT: 12.5.1.e TOP: 4-2 Relations and Functions KEY: function | relation | input | output

4. ANS: B PTS: 1 DIF: L3
REF: 4-6 Formalizing Relations and Functions
OBJ: 4-6.1 To determine whether a relation is a function NAT: N.2.c| A.1.b| A.1.g| A.1.i| A.3.f
TOP: 4-6 Problem 1 Identifying Functions Using Mapping Diagrams
KEY: relation | domain | range DOK: DOK 2

5. ANS: D PTS: 1 DIF: L3
REF: 4-6 Formalizing Relations and Functions
OBJ: 4-6.1 To determine whether a relation is a function NAT: N.2.c| A.1.b| A.1.g| A.1.i| A.3.f
TOP: 4-6 Problem 1 Identifying Functions Using Mapping Diagrams
KEY: relation | domain | range DOK: DOK 2

SHORT ANSWER

6. ANS:
The domain is {–7, 4, 7}.
The range is {–13, –4, 2, 13}.

PTS: 1 DIF: L3 REF: 4-6 Formalizing Relations and Functions
OBJ: 4-6.2 To find domain and range and use function notation
NAT: N.2.c| A.1.b| A.1.g| A.1.i| A.3.f
TOP: 4-6 Problem 1 Identifying Functions Using Mapping Diagrams
KEY: relation | domain | range DOK: DOK 2

7. ANS:
The relation is a function.

PTS: 1 DIF: L2 REF: 4-6 Formalizing Relations and Functions
OBJ: 4-6.1 To determine whether a relation is a function NAT: N.2.c| A.1.b| A.1.g| A.1.i| A.3.f
TOP: 4-6 Problem 2 Identifying Functions Using the Vertical Line Test
KEY: relation | vertical line test DOK: DOK 2

8. ANS:
The relation is not a function.

PTS: 1 DIF: L3 REF: 4-6 Formalizing Relations and Functions
OBJ: 4-6.1 To determine whether a relation is a function NAT: N.2.c| A.1.b| A.1.g| A.1.i| A.3.f
TOP: 4-6 Problem 2 Identifying Functions Using the Vertical Line Test
KEY: relation | vertical line test DOK: DOK 2

9. ANS:
The relation is not a function.

PTS: 1 DIF: L2 REF: 4-6 Formalizing Relations and Functions
OBJ: 4-6.1 To determine whether a relation is a function NAT: N.2.c| A.1.b| A.1.g| A.1.i| A.3.f
TOP: 4-6 Problem 2 Identifying Functions Using the Vertical Line Test
KEY: relation | vertical line test DOK: DOK 2

10. ANS:
The relation is a function.

PTS: 1 DIF: L3 REF: 4-6 Formalizing Relations and Functions
OBJ: 4-6.1 To determine whether a relation is a function NAT: N.2.c| A.1.b| A.1.g| A.1.i| A.3.f
TOP: 4-6 Problem 2 Identifying Functions Using the Vertical Line Test
KEY: relation | vertical line test DOK: DOK 2