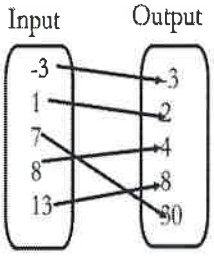
OLSEN – ACTIVITY 5 REVIEW

Name Key Period _____

Determine whether each relation is a function. Then state the domain and range of each relation.

1. Function? (Y) N

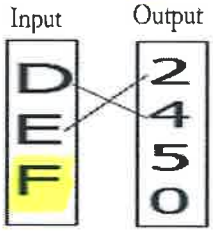


Each input has exactly one output.

D: $\{x \mid x = -3, 1, 7, 8, 13\}$

R: $\{y \mid y = 2, 3, 4, 8, 30\}$

2. Function? Y (N)

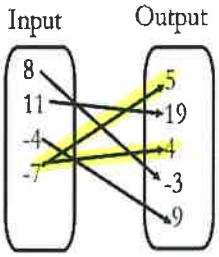


The input F has no output.

D: $\{x \mid x = D, E\}$

R: $\{y \mid y = 2, 4\}$

3. Function? Y (N)

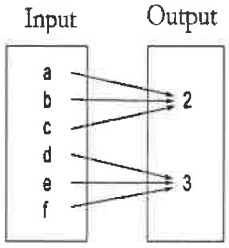


The input 7 has two outputs (5 & 4).

D: $\{x \mid x = -7, -4, 8, 11\}$

R: $\{y \mid y = -3, 5, 9, 19\}$

4. Function? (Y) N



Each input has exactly one output.

D: $\{x \mid x = a, b, c, d, e, f\}$

R: $\{y \mid y = 2, 3\}$

5. Function? Y (N)

x	y
-7	9
-3	11
-1	-8
6	8
-3	19
-9	-10

The input -3 has two outputs (11 and 19).

D: $\{x \mid x = -9, -7, -3, -1, 6\}$

R: $\{y \mid y = -10, -8, 8, 9, 11\}$

6. Function? (Y) N

x	y
-6	13
-4	18
-2	25
0	34
2	45
4	58

Each input has exactly One output.

D: $\{x \mid x = -6, -4, -2, 0, 2, 4\}$

R: $\{y \mid y = 13, 18, 25, 34, 45, 58\}$

7. Function? (Y) N

x	y
3	18
8	11
11	4
7	-6
2	18
-1	21

Each input has exactly one output.

D: $\{x \mid x = -1, 2, 3, 7, 8, 11\}$

R: $\{y \mid y = -6, 4, 11, 18, 21\}$

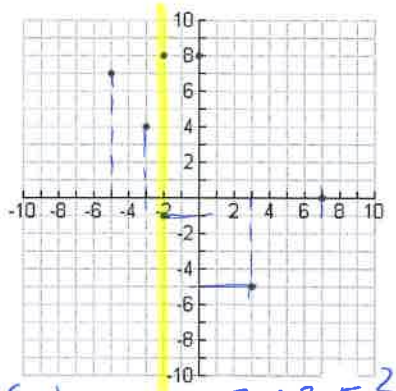
8. Function? Y (N)

x	4	2	0	2	-4
y	1	1	1	0	0

The input 2 has two outputs 1 and 0.

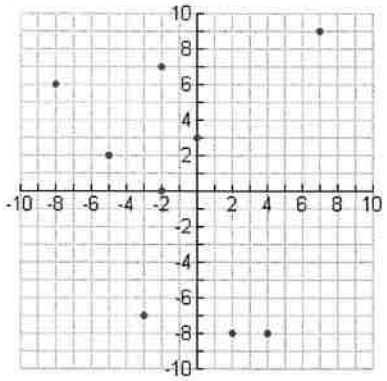
D: $\{x \mid x = -4, 0, 2, 4\}$ R: $\{y \mid y = 0, 1\}$

9. Function? Y (N) - The input -2 has two outputs (1 and 8).

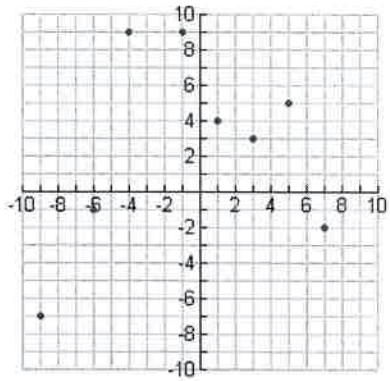


D: $\{x \mid x = -5, -3, -2, 0, 3, 5\}$
R: $\{y \mid y = -5, -1, 0, 4, 7, 8\}$

10. Function? Y N



11. Function? Y N



12. Function? (Y) N

Each input has exactly one output.

$\{(5,4),(6,3),(7,2)\}$

D: $\{x \mid x = 5, 6, 7\}$
R: $\{y \mid y = 2, 3, 4\}$

13. Function? Y (N)

The input 4 has two outputs (5 and 3).

$\{(4,5),(4,3),(5,2)\}$

D: $\{x \mid x = 4, 5\}$
R: $\{y \mid y = 2, 3, 5\}$

14. Function? (Y) N

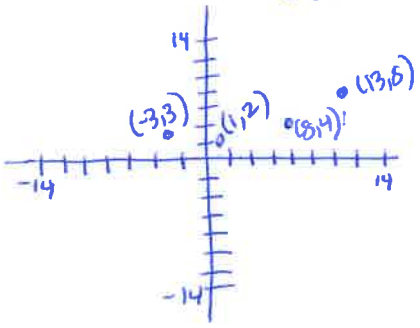
Each input has exactly one output.

$\{(5,4),(6,4),(7,4)\}$

D: $\{x \mid x = 5, 6, 7\}$
R: $\{y \mid y = 4\}$

15. Convert the mapping diagram in problem 1 into a table, graph, set of ordered pairs, and function notation.

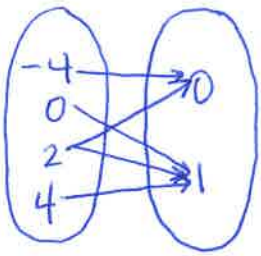
x	y
-3	3
1	2
7	30
8	4
13	8

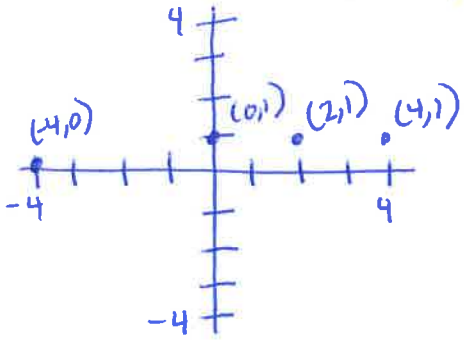


$\{(-3,3), (1,2), (7,30), (8,4), (13,8)\}$

$f(-3)=3$, $f(1)=2$, $f(7)=30$,
$f(8)=4$, $f(13)=8$

16. Convert the table in problem 8 into a mapping diagram, graph, set of ordered pairs, and function notation.

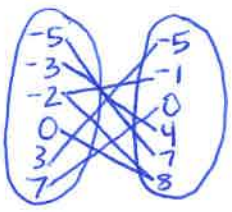




$\{(-4,0), (0,1), (2,1), (2,0), (4,1)\}$

$f(-4)=0$, $f(0)=1$, $f(2)=1$,
$f(2)=0$, $f(4)=1$.

17. Convert the graph in problem 9 into a mapping diagram, table, set of ordered pairs, and function notation.

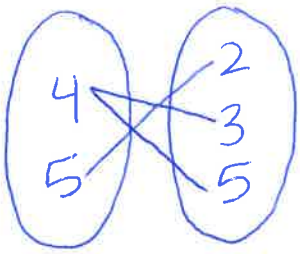


x	y
-5	7
-3	4
-2	-1
-2	8
0	8
3	-5
7	0

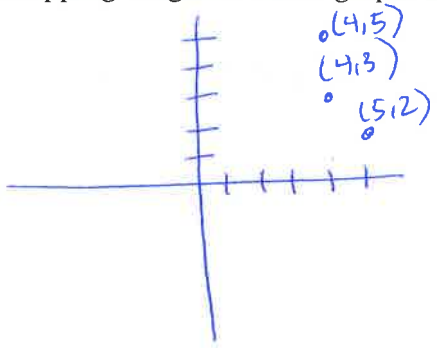
$\{(-5,7), (-3,4), (-2,1), (-2,8), (0,8), (3,-5), (7,0)\}$

$f(-5)=7$, $f(-3)=4$, $f(-2)=1$, $f(-2)=8$,
$f(0)=8$, $f(3)=-5$, $f(7)=0$.

18. Convert the set of ordered pairs in problem 13 into a mapping diagram, table, graph, and function notation.



x	y
4	3
4	5
5	2



$f(4)=5$, $f(4)=3$, $f(5)=2$

For problems 19 – 25, use the following 3 functions below. Your final answers MUST be written in <u>function notation</u>.

$f(x)=\frac{4x-6}{3}$ $\quad g(x)=-2x^2+5x-7$ $\quad h(x)=|x-1|+6$

19. Find $g(2)$

$g(2)=-2(2)^2+5(2)-7$
$g(2)=-2(4)+10-7$
$g(2)=-8+10-7$ → $g(2)=-5$

20. Find $f(-3)$

$f(-3)=\frac{4(-3)-6}{3}$ → $f(-3)=\frac{-12-6}{3}$ → $f(-3)=\frac{-18}{3}$ → $f(-3)=-6$

21. Find $h(-9)$

$h(-9)=|-9-1|+6$
$h(-9)=|-10|+6$ → $h(-9)=16$
$h(-9)=10+6$

22. Find $g(-1)$

$g(-1)=-2(-1)^2+5(-1)-7$
$g(-1)=-2(1)-5-7$ → $g(-1)=-2-5-7$
$g(-1)=-14$

23. What value of x results in $f(x)=2$?

$2=\frac{4x-6}{3}$ → $4x-6=6$
$+6 \quad +6$
$\frac{4x}{4}=\frac{12}{4}$
$x=3$ or $f(3)=2$

24. What value of x results in $h(x)=9$?

$9=|x-1|+6$
$-6 \quad -6$
$3=|x-1|$

$|x-1|=3$

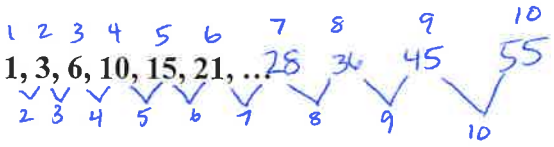
$x-1=3$ $\quad x-1=-3$
$+1 \quad +1 \quad +1 \quad +1$
$x=4$ $\quad x=-2$

$h(4)=9$
$h(-2)=9$

25. What value of x results in $g(x)=-7$?

$g(0)=-7$

For problems 26 – 30, consider the sequence: 1, 3, 6, 10, 15, 21, ..



26. What is $f(4)$?

$f(4) = 10$

27. What is $f(2)$?

$f(2) = 3$

28. What value of x results in $f(x) = 21$?

$f(6) = 21$

CHALLENGE:

29. What is $f(8)$?

$f(8) = 36$

30. What value of x results in $f(x) = 55$?

$f(10) = 55$