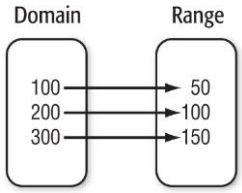
NAME _____ DATE _____ PERIOD _____

2-1 Skills Practice
Relations and Functions

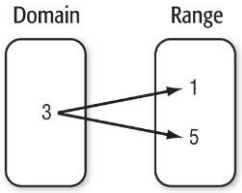
State the domain and range of each relation. Then determine whether each relation is a *function*. If it is a function, determine if it is *one-to-one*, *onto*, *both* or *neither*.

1.



D = {100, 200, 300};
R = {50, 100, 150};
function; both

2.



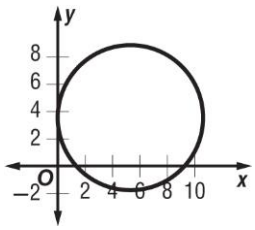
D = {3};
R = {1, 5};
not a function

3.

x	y
1	2
2	4
3	6

D = {1, 2, 3};
R = {2, 4, 6};
function; both

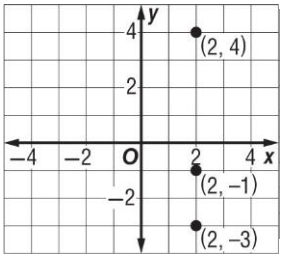
4.



D = {x | $0 \le x \le 10$};
R = {y | $-2 \le y \le 8$};
not a function

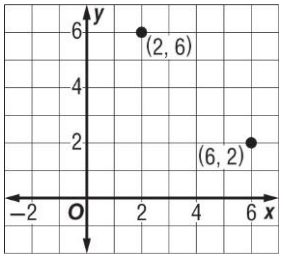
Graph each relation or equation and determine the domain and range. Determine whether the relation is a *function*, is *one-to-one*, *onto*, *both*, or *neither*. Then state whether it is discrete or continuous.

5. {(2, –3), (2, 4), (2, –1)}



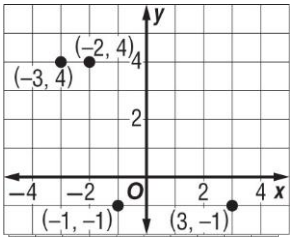
D = {2}, R = {–3, –1, 4}; no; discrete

6. {(2, 6), (6, 2)}



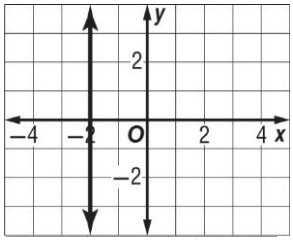
D = {2, 6}, R = {2, 6}; yes, both; discrete

7. {(–3, 4), (–2, 4), (–1, –1), (3, –1)}



D = {–3, –2, –1, 3},
R = {–1, 4}; yes, onto; discrete

8. $x = -2$



D = {–2}, R = {all real numbers};
no; continuous

Find each value if $f(x) = 2x - 1$ and $g(x) = 2 - x^2$.

9. $f(0)$ **–1**

10. $f(12)$ **23**

11. $g(4)$ **–14**

12. $f(-2)$ **– 5**

13. $g(-1)$ **1**

14. $f(d)$ **$2d - 1$**

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2-1 Word Problem Practice

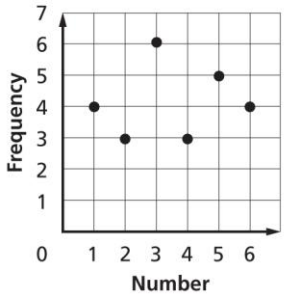
Relations and Functions

1. PLANETS The table below gives the mean distance from the Sun and orbital period of the eight major planets in our Solar System. Think of the mean distance as the domain and the orbital period as the range of a relation. Is this relation a function? Explain.

Planet	Mean Distance from Sun (AU)	Orbital Period (years)
Mercury	0.387	0.241
Venus	0.723	0.615
Earth	1.0	1.0
Mars	1.524	1.881
Jupiter	5.204	11.75
Saturn	9.582	29.5
Uranus	19.201	84
Neptune	30.047	165

Yes, it is a function because every value in the domain corresponds to a single value in the range.

2. PROBABILITY Martha rolls a number cube several times and makes the frequency graph shown. Write a relation to represent this data.



{(1, 4), (2, 3), (3, 6), (4, 3), (5, 5), (6, 4)}

3. SCHOOL The number of students N in Vassia's school is given by $N = 120 + 30G$, where G is the grade level. Is 285 in the range of this function?

No; if $N = 285$, then $G = 5.5$, but grade levels are integers so 285 is not in the range of the function.

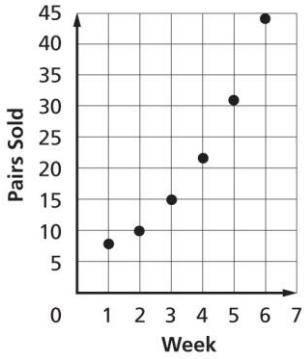
4. FLOWERS Anthony decides to decorate a ballroom with $r = 3n + 20$ roses, where n is the number of dancers. It occurs to Anthony that the dancers always come in pairs. That is, $n = 2p$, where p is the number of pairs. What is r as a function of p?

$r = 6p + 20$

5. SALES Cool Athletics introduced the new Power Sneaker in one of their stores. The table shows the sales for the first 6 weeks.

Week	1	2	3	4	5	6
Pairs Sold	8	10	15	22	31	44

a. Graph the data.



b. Identify the domain and range.

D = {1, 2, 3, 4, 5, 6}
R = {8, 10, 15, 22, 31, 44}

c. Is the relation a function? Explain.

Yes, it is a function because every value in the domain corresponds to a single value in the range.