Algebra 1 **1-6A** **Name**_____ **pd**____

Relations Part 1: Converting

Express each relation as a table, a graph, and a mapping. Then determine the domain and range.

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

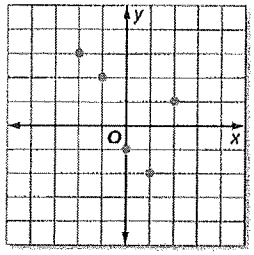
2. $\{(5, -7), (-1, 4), (0, -5), (-2, 3)\}$

Express each relation as a set of ordered pairs. Describe the domain and range.

27.

Buying Aquarium Fish	
Number of Fish	Total Cost
1	$2.50
2	$4.50
5	$10.50
8	$16.50

28.

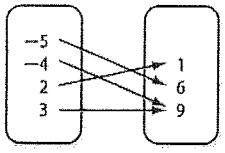


Express the relation in each table, mapping, or graph as a set of ordered pairs.

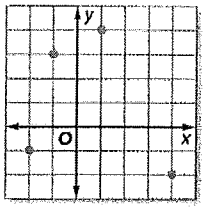
29.

x	y
4	−1
8	9
−2	−6
7	−3

30.



31.



Now Complete IXL – Q1, Q2

Relations Part 2: Independent/Dependent Variables

Identify the independent and dependent variables for each relation.

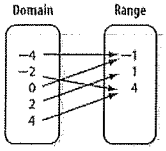
3. Increasing the temperature of a compound inside a sealed container increases the pressure inside a sealed container.
4. Mike's cell phone is part of a family plan. If he uses more minutes than his share, then there are fewer minutes available for the rest of his family.
5. Julian is buying concert tickets for himself and his friends. The more concert tickets he buys the greater the cost.
6. A store is having a sale over Labor Day weekend. The more purchases, the greater the profits.

Now Complete IXL – Q3

Relations Part 3: Identifying Functions

Determine whether each relation is a function. Explain.

1.



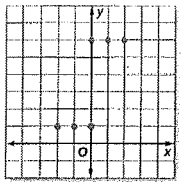
2.

Domain	Range
2	6
5	7
6	9
6	10

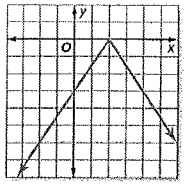
3. $\{(2, 2), (-1, 5), (5, 2), (2, -4)\}$

4. $y = \frac{1}{2}x - 6$

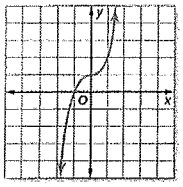
5.



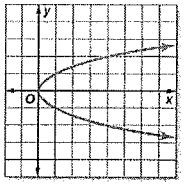
6.



7.

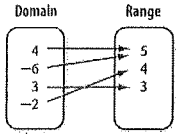


8.

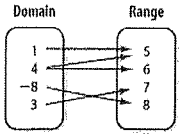


Determine whether each relation is a function. Explain.

20.



21.



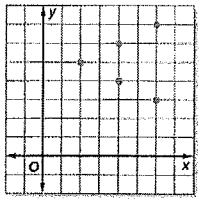
22.

Domain	Range
4	6
−5	3
6	−3
−5	5

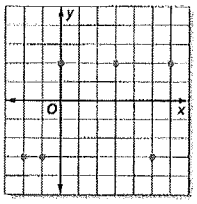
23.

Domain	Range
−4	2
3	−5
4	2
9	−7
−3	−5

24.



25.



Now Complete IXL – Q4 and Q5

Relations Part 4: Function Notation

If $f(x) = 6x + 7$ and $g(x) = x^2 - 4$, find each value.

11. $f(-3)$

12. $f(m)$

14. $g(5)$

15. $g(a) + 9$

17. $f(q + 1)$

18. $f(2) + g(2)$

If $f(x) = -2x - 3$ and $g(x) = x^2 + 5x$, find each value.

33. $f(-1)$

34. $f(6)$

35. $g(2)$

36. $g(-3)$

37. $g(-2) + 2$

38. $f(0) - 7$

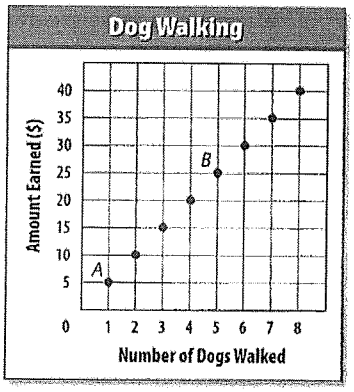
Now Complete IXL – Q7

Applications:

10. CCSS REASONING The cost of sending cell phone pictures is given by $y = 0.25x$, where x is the number of pictures that you send and y is the cost in dollars.
    a. Write the equation in function notation. Interpret the function in terms of the context.
    b. Find $f(5)$ and $f(12)$. What do these values represent?
    c. Determine the domain and range of this function.

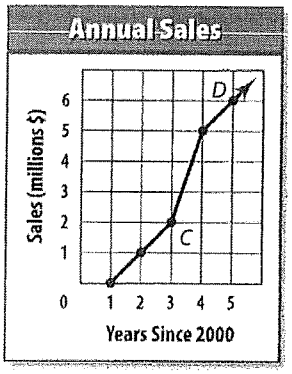
For Exercises 21–23, use the graph at the right.

21. Name the ordered pair at point A and explain what it represents.
22. Name the ordered pair at point B and explain what it represents.
23. Identify the independent and dependent variables for the relation.



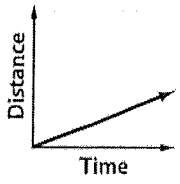
For Exercises 24–26, use the graph at the right.

24. Name the ordered pair at point C and explain what it represents.
25. Name the ordered pair at point D and explain what it represents.
26. Identify the independent and dependent variables.

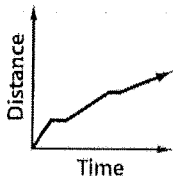


32. SPORTS In a triathlon, athletes swim 2.4 miles, bicycle 112 miles, and run 26.2 miles. Their total time includes transition time from one activity to the next. Which graph best represents a participant in a triathlon? Explain.

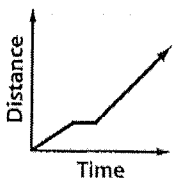
Graph A



Graph B



Graph C



37 PHYSIOLOGY A typical adult has about 2 pounds of water for every 3 pounds of body weight. This can be represented by the equation $w = 2\left(\frac{b}{3}\right)$, where w is the weight of water in pounds and b is the body weight in pounds.
    a. Make a table to show the relation between body and water weight for people weighing 100, 105, 110, 115, 120, 125, and 130 pounds. Round to the nearest tenth if necessary.
    b. What are the independent and dependent variables?
    c. State the domain and range, and then graph the relation.
    d. Reverse the independent and dependent variables. Graph this relation. Explain what the graph indicates in this circumstance.

45 EDUCATION The average national math test scores $f(t)$ for 17-year-olds can be represented as a function of the national science scores t by $f(t) = 0.8t + 72$.

a. Graph this function. Interpret the function in terms of the context.

b. What is the science score that corresponds to a math score of 308?

c. What is the domain and range of this function?

43. A school's cafeteria employees surveyed 250 students asking what beverage they drank with lunch. They used the data to create the table below.

Beverage	Number of Students
milk	38
chocolate milk	112
juice	75
water	25

What percent of the students surveyed preferred drinking juice with lunch?

A 25%
C 35%
B 30%
D 40%

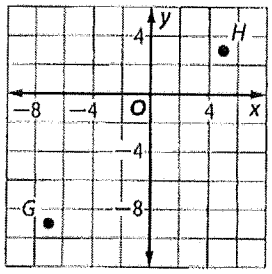
44. Which of the following is equivalent to $6(3 - g) + 2(11 - g)$?

F $2(20 - g)$
H $8(5 - g)$
G $8(14 - g)$
J $40 - g$

57. Determine which of the following relations is a function.

F $\{(-3, 2), (4, 1), (-3, 5)\}$
G $\{(2, -1), (4, -1), (2, 6)\}$
H $\{(-3, -4), (-3, 6), (8, -2)\}$
J $\{(5, -1), (3, -2), (-2, -2)\}$

45. SHORT RESPONSE Grant and Hector want to build a clubhouse at the midpoint between their houses. If Grant's house is at point G and Hector's house is at point H, what will be the coordinates of the clubhouse?



46. If $3b = 2b$, which of the following is true?

A $b = 0$
B $b = \frac{2}{3}$
C $b = 1$
D $b = \frac{3}{2}$

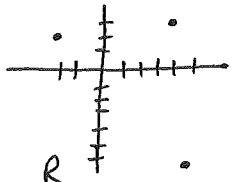
Algebra 1 **1-6A** **Name** Key **pd**

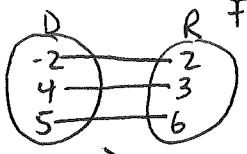
Relations Part 1: Converting

Express each relation as a table, a graph, and a mapping. Then determine the domain and range.

1. {(4, 3), (−2, 2), (5, −6)}

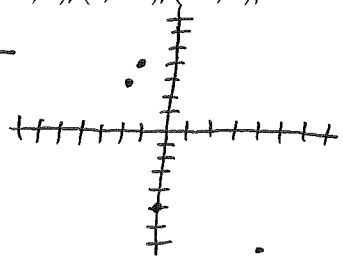
X	Y
4	3
-2	2
5	6

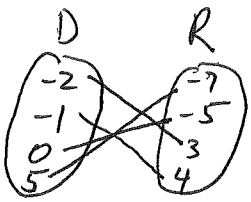




2. {(5, −7), (−1, 4), (0, −5), (−2, 3)}

X	Y
5	-7
-1	4
0	-5
-2	3





Express each relation as a table, a graph, and a mapping. Then determine the domain and range.

9. {(0, 0), (−3, 2), (6, 4), (−1, 1)}

11. {(6, 1), (4, −3), (3, 2), (−1, −3)}

13. {(6, 7), (3, −2), (8, 8), (−6, 2), (2, −6)}

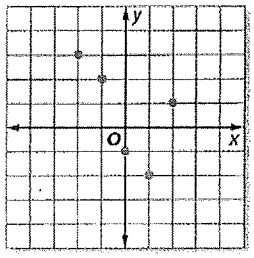
Express each relation as a set of ordered pairs. Describe the domain and range.

27.

Buying Aquarium Fish	
Number of Fish	Total Cost
1	$2.50
2	$4.50
5	$10.50
8	$16.50

(1, 2.5)
(2, 4.5)
(5, 10.5)
(8, 16.5)
D: {1, 2, 5, 8}
R: {2.5, 4.5, 10.5, 16.5}

28.



(-2, 3), (-1, 2), (0, -1), (1, -2), (2, 1)
D: {-2, -1, 0, 1, 2}
R: {-2, -1, 1, 2, 3}

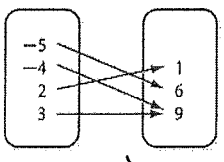
Express the relation in each table, mapping, or graph as a set of ordered pairs.

29.

x	y
4	−1
8	9
−2	−6
7	−3

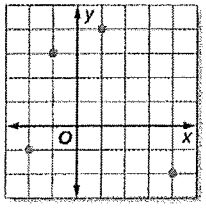
(4, -1), (8, 9), (-2, -6), (7, -3)

30.



(-5, 6)
(-4, 9)
(2, 1)
(3, 9)

31.



(-2, -1), (-1, 3), (1, 4), (4, -2)

Now Complete IXL – Q1, Q2

Relations Part 2: Independent/Dependent Variables

Identify the independent and dependent variables for each relation.

3. Increasing the temperature of a compound inside a sealed container increases the pressure inside a sealed container.

I (x) - temp
D (y) - pressure

4. Mike's cell phone is part of a family plan. If he uses more minutes than his share, then there are fewer minutes available for the rest of his family.

I (x) - Mike min
D (y) - Fam min left

5. Julian is buying concert tickets for himself and his friends. The more concert tickets he buys the greater the cost.

I (x) - # bought
D (y) - cost

6. A store is having a sale over Labor Day weekend. The more purchases, the greater the profits.

I (x) - purchases
D (y) - profit

Now Complete IXL – Q3

Relations Part 3: Identifying Functions

Determine whether each relation is a function. Explain.

1. Domain: −4, −2, 0, 2, 4 → Range: −1, 1, 4

Yes

2.

Domain	Range
2	6
5	7
6	9
6	10

NO

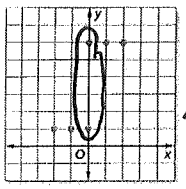
3. $\{(2, 2), (-1, 5), (5, 2), (2, -4)\}$

NO

4. $y = \frac{1}{2}x - 6$

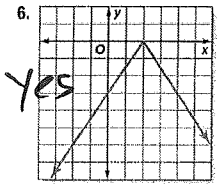
Yes

5.



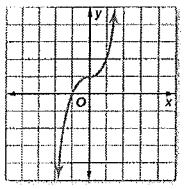
NO

6.



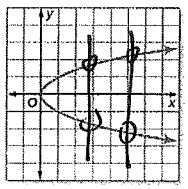
Yes

7.



Yes

8.



NO

Determine whether each relation is a function. Explain.

20. Domain: 4, −6, 3, −2 → Range: 5, 4, 3

Yes

21. Domain: 1, 4, −8, 3 → Range: 5, 6, 7, 8

NO

22.

Domain	Range
4	6
−5	3
6	−3
−5	5

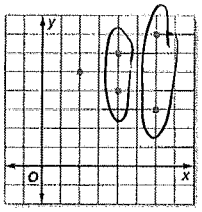
NO

23.

Domain	Range
−4	2
3	−5
4	2
9	−7
−3	−5

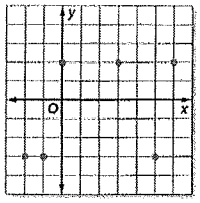
Yes

24.



NO

25.



Yes

Now Complete IXL – Q4 and Q5

Relations Part 4: Function Notation

If $f(x) = 6x + 7$ and $g(x) = x^2 - 4$, find each value.

11. $f(-3) = 6(-3)+7 = -11$

12. $f(m) = 6(m)+7$

14. $g(5) = 6(5)+7 = 37$

15. $g(a) + 9$ $g(a) = a^2 - 4 + 9$

17. $f(q + 1)$

$6(q+1)+7$

$6q+6+7$

$6q+13$

18. $f(2) + g(2)$

$f(2) = 6(2)+7 = 19$ $g(2) = (2)^2 - 4 = 0$

$19+0 = 19$

If $f(x) = -2x - 3$ and $g(x) = x^2 + 5x$, find each value.

33. $f(-1) = -2(-1)-3 = -1$

34. $f(6) = -2(6)-3 = -15$

35. $g(2) = 2^2+5(2) = 4+10 = 14$

36. $g(-3) = (-3)^2+5(-3)$

$9-15$

-6

37. $g(-2) + 2$

$(-2)^2+5(-2)+2$

$4-10+2$

-4

38. $f(0) - 7$

$-2(0)-3-7$

$0-3-7 = -10$

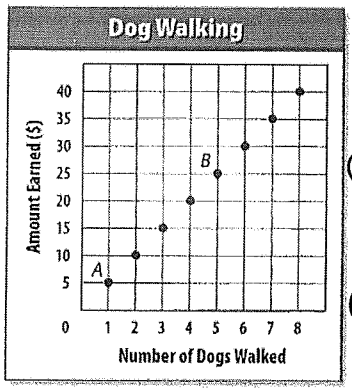
Now Complete IXL – Q7

Applications:

10. CCSS REASONING The cost of sending cell phone pictures is given by $y = 0.25x$, where x is the number of pictures that you send and y is the cost in dollars.
    a. Write the equation in function notation. Interpret the function in terms of the context.
    b. Find $f(5)$ and $f(12)$. What do these values represent?
    c. Determine the domain and range of this function.

For Exercises 21–23, use the graph at the right.

21. Name the ordered pair at point A and explain what it represents.
22. Name the ordered pair at point B and explain what it represents.
23. Identify the independent and dependent variables for the relation.



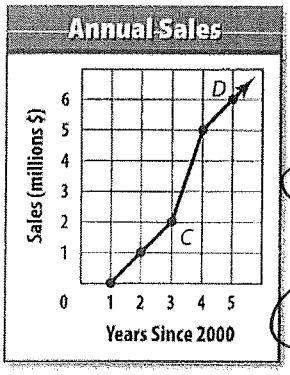
(21) A = (1, 5)
walk 1 dog, $5

(22) B = (5, 25)
walk 5 dogs, earn $25

(23) Ind: dogs
Dep: $

For Exercises 24–26, use the graph at the right.

24. Name the ordered pair at point C and explain what it represents.
25. Name the ordered pair at point D and explain what it represents.
26. Identify the independent and dependent variables.



(24) C = (3, 2)
In 2003, Sales = $2,000,000

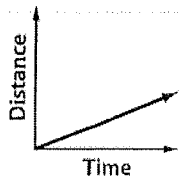
(25) D = (5, 6)
In 2005, Sales = $6,000,000

(26) Ind = yrs since 2000
Dep = Sales

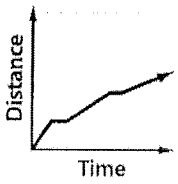
32. SPORTS In a triathlon, athletes swim 2.4 miles, bicycle 112 miles, and run 26.2 miles. Their total time includes transition time from one activity to the next. Which graph best represents a participant in a triathlon? Explain.

slow — fast — medium

Graph A



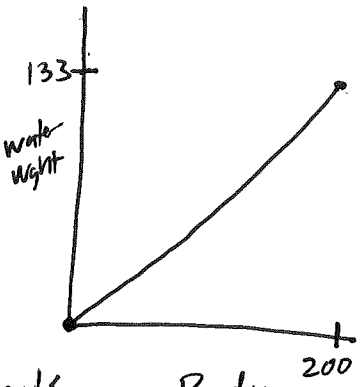
Graph B



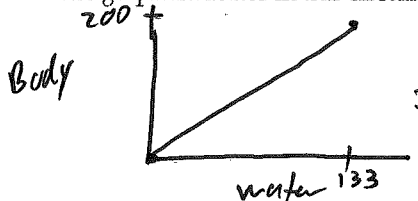
Graph C

(37) PHYSIOLOGY A typical adult has about 2 pounds of water for every 3 pounds of body weight. This can be represented by the equation $w = 2\left(\frac{b}{3}\right)$, where w is the weight of water in pounds and b is the body weight in pounds.
    a. Make a table to show the relation between body and water weight for people weighing 100, 105, 110, 115, 120, 125, and 130 pounds. Round to the nearest tenth if necessary.
    b. What are the independent and dependent variables? Body wght — water wght.
    c. State the domain and range, and then graph the relation.
    d. Reverse the independent and dependent variables. Graph this relation. Explain what the graph indicates in this circumstance.

X	Y
100	67
105	70
110	73
115	77
120	80
125	83
130	87



D: pos reals
R: pos reals



Input is now water wght.

45 EDUCATION The average national math test scores $f(t)$ for 17-year-olds can be represented as a function of the national science scores t by $f(t) = 0.8t + 72$.

~~a. Graph this function. Interpret the function in terms of the context.~~

b. What is the science score that corresponds to a math score of 308?

c. What is the domain and range of this function?

t = sci score

43. A school's cafeteria employees surveyed 250 students asking what beverage they drank with lunch. They used the data to create the table below.

Beverage	Number of Students
milk	38
chocolate milk	112
juice	75
water	25

total 250

What percent of the students surveyed preferred drinking juice with lunch?

A 25%

B 30%

C 35%

D 40%

$\frac{75}{250} = \frac{x}{100}$

44. Which of the following is equivalent to $6(3 - g) + 2(11 - g)$? $= 18 - 6g + 22 - 2g$, $40 - 8g$

F $2(20 - g)$ $40 - 2g$

H $8(5 - g)$ $40 - 8g$

G $8(14 - g)$ $112 - 8g$

J $40 - g$

57. Determine which of the following relations is a function.

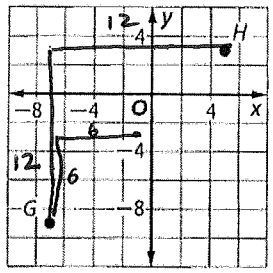
F $\{(-3, 2), (4, 1), (-3, 5)\}$ NO

G $\{(2, -1), (4, -1), (2, 6)\}$ NO

H $\{(-3, -4), (-3, 6), (8, -2)\}$ NO

J $\{(5, -1), (3, -2), (-2, -2)\}$

45. SHORT RESPONSE Grant and Hector want to build a clubhouse at the midpoint between their houses. If Grant's house is at point G and Hector's house is at point H, what will be the coordinates of the clubhouse?



$(-1, -3)$

46. If $3b = 2b$, which of the following is true?

A $b = 0$

B $b = \frac{2}{3}$

C $b = 1$

D $b = \frac{3}{2}$