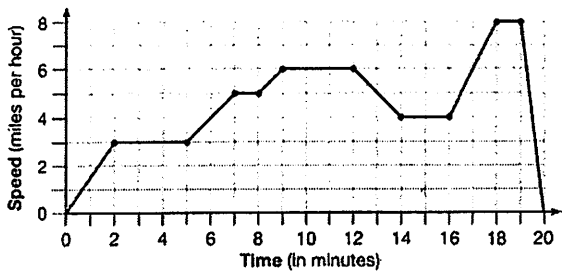
Regents Exam Questions
F.IF.B.4: Relating Graphs to Events
www.jmap.org

Name: _____

F.IF.B.4: Relating Graphs to Events

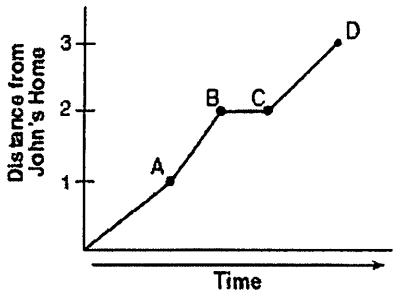
1 The graph below represents a jogger's speed during her 20-minute jog around her neighborhood.



Which statement best describes what the jogger was doing during the 9 – 12 minute interval of her jog?

1) She was standing still.
2) She was increasing her speed.
3) She was decreasing her speed
4) She was jogging at a constant rate.

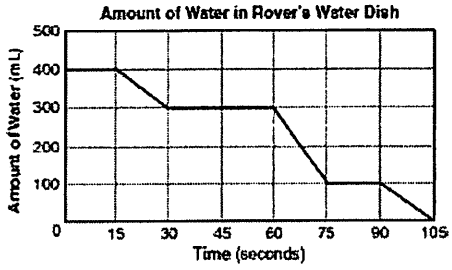
2 John left his home and walked 3 blocks to his school, as shown in the accompanying graph.



What is one possible interpretation of the section of the graph from point *B* to point *C*?

1) John arrived at school and stayed throughout the day.
2) John waited before crossing a busy street.
3) John returned home to get his mathematics homework.
4) John reached the top of a hill and began walking on level ground.

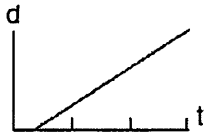
3 The accompanying graph show the amount of water left in Rover's water dish over a period of time.

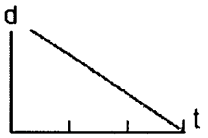


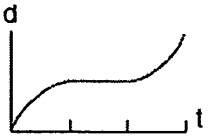
How long did Rover wait from the end of his first drink to the start of his second drink of water?

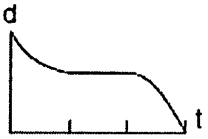
1) 10 sec
2) 30 sec
3) 60 sec
4) 75 sec

4 A bug travels up a tree, from the ground, over a 30-second interval. It travels fast at first and then slows down. It stops for 10 seconds, then proceeds slowly, speeding up as it goes. Which sketch best illustrates the bug's distance (*d*) from the ground over the 30-second interval (*t*)?

1) 

2) 

3) 

4) 

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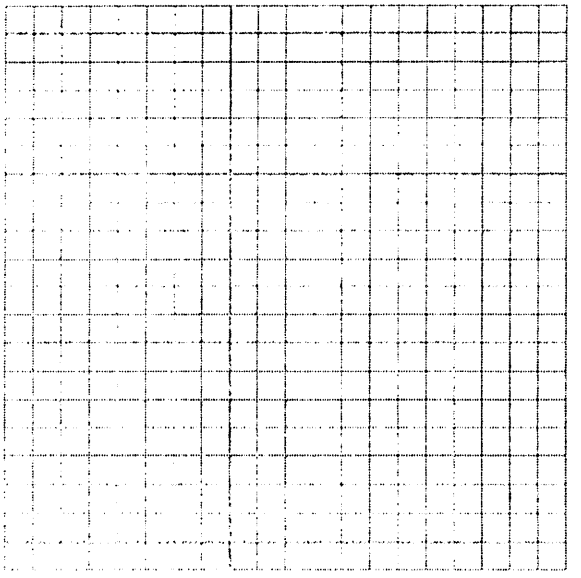
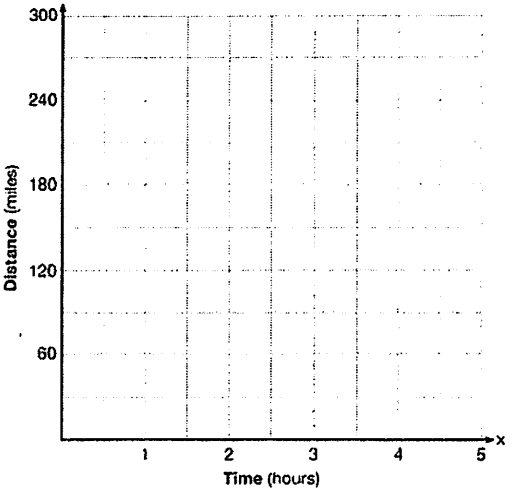
5 During a snowstorm, a meteorologist tracks the amount of accumulating snow. For the first three hours of the storm, the snow fell at a constant rate of one inch per hour. The storm then stopped for two hours and then started again at a constant rate of one-half inch per hour for the next four hours.
a) On the grid below, draw and label a graph that models the accumulation of snow over time using the data the meteorologist collected.

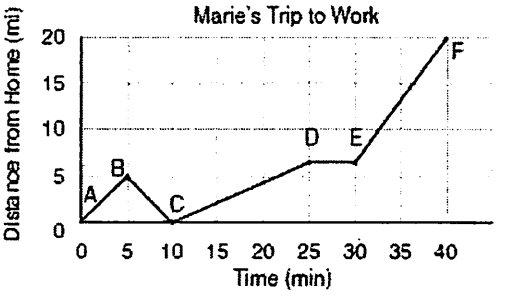


b) If the snowstorm started at 6 p.m., how much snow had accumulated by midnight?

6 A driver leaves home for a business trip and drives at a constant speed of 60 miles per hour for 2 hours. Her car gets a flat tire, and she spends 30 minutes changing the tire. She resumes driving and drives at 30 miles per hour for the remaining one hour until she reaches her destination. On the set of axes below, draw a graph that models the driver's distance from home.



7 The accompanying graph shows Marie's distance from home (A) to work (F) at various times during her drive.



Marie left her briefcase at home and had to return to get it. State which point represents when she turned back around to go home and explain how you arrived at that conclusion. Marie also had to wait at the railroad tracks for a train to pass. How long did she wait?

Regents Exam Questions
F.IF.A.1: Defining Functions 1
www.jmap.org

Name: _____

F.IF.A.1: Defining Functions 1

1 Which relation is *not* a function?
1) $\{(1,5),(2,6),(3,6),(4,7)\}$
2) $\{(4,7),(2,1),(-3,6),(3,4)\}$
3) $\{(-1,6),(1,3),(2,5),(1,7)\}$
4) $\{(-1,2),(0,5),(5,0),(2,-1)\}$

2 Which relation represents a function?
1) $\{(0,3),(2,4),(0,6)\}$
2) $\{(-7,5),(-7,1),(-10,3),(-4,3)\}$
3) $\{(2,0),(6,2),(6,-2)\}$
4) $\{(-6,5),(-3,2),(1,2),(6,5)\}$

3 Which set of ordered pairs represents a function?
1) $\{(0,4),(2,4),(2,5)\}$
2) $\{(6,0),(5,0),(4,0)\}$
3) $\{(4,1),(6,2),(6,3),(5,0)\}$
4) $\{(0,4),(1,4),(0,5),(1,5)\}$

4 Which relation is *not* a function?
1) $\{(2,4),(1,2),(0,0),(-1,2),(-2,4)\}$
2) $\{(2,4),(1,1),(0,0),(-1,1),(-2,4)\}$
3) $\{(2,2),(1,1),(0,0),(-1,1),(-2,2)\}$
4) $\{(2,2),(1,1),(0,0),(1,-1),(2,-2)\}$

5 Which relation is a function?
1) $\{(2,1),(3,1),(4,1),(5,1)\}$
2) $\{(1,2),(1,3),(1,4),(1,5)\}$
3) $\{(2,3),(3,2),(4,2),(2,4)\}$
4) $\{(1,6),(2,8),(3,9),(3,12)\}$

6 Which set is a function?
1) $\{(3,4),(3,5),(3,6),(3,7)\}$
2) $\{(1,2),(3,4),(4,3),(2,1)\}$
3) $\{(6,7),(7,8),(8,9),(6,5)\}$
4) $\{(0,2),(3,4),(0,8),(5,6)\}$

7 Which set of ordered pairs is *not* a function?
1) $\{(3,1),(2,1),(1,2),(3,2)\}$
2) $\{(4,1),(5,1),(6,1),(7,1)\}$
3) $\{(1,2),(3,4),(4,5),(5,6)\}$
4) $\{(0,0),(1,1),(2,2),(3,3)\}$

8 Which set of ordered pairs does *not* represent a function?
1) $\{(3,-2),(-2,3),(4,-1),(-1,4)\}$
2) $\{(3,-2),(3,-4),(4,-1),(4,-3)\}$
3) $\{(3,-2),(4,-3),(5,-4),(6,-5)\}$
4) $\{(3,-2),(5,-2),(4,-2),(-1,-2)\}$

9 Which set of points does *not* represent a function?
1) $\{(-3,-2),(-1,-2),(0,-1),(1,0)\}$
2) $\{(-2,3),(0,4),(3,-2),(4,2)\}$
3) $\{(2,-2),(1,4),(2,5),(3,6)\}$
4) $\{(-2,4),(1,1),(2,4),(3,9)\}$

10 Which relation is a function?
1) $\left\{\left(\frac{3}{4},0\right),(0,1),\left(\frac{3}{4},2\right)\right\}$
2) $\left\{(-2,2),\left(-\frac{1}{2},1\right),(-2,4)\right\}$
3) $\{(-1,4),(0,5),(0,4)\}$
4) $\{(2,1),(4,3),(6,5)\}$

11 Given the relation $R = \{(-2,3),(a,4),(1,9),(0,7)\}$. Which replacement for a makes this relation a function?
1) 1
2) −2
3) 0
4) 4

12 Given the relation $\{(8,2),(3,6),(7,5),(k,4)\}$, which value of k will result in the relation *not* being a function?
1) 1
2) 2
3) 3
4) 4

Regents Exam Questions
F.IF.A.1: Defining Functions 1
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Name: _____

13 The relation defined by the set of ordered pairs $\{(0,2),(-2,2),(1,4),(4,1),(0,-1)\}$ is *not* a function. Which of the ordered pairs listed below, if omitted from this relation, will make the resulting set a function?

1) $(-2,-2)$
2) $(1,4)$
3) $(4,1)$
4) $(0,-1)$

14 The function f has a domain of $\{1,3,5,7\}$ and a range of $\{2,4,6\}$. Could f be represented by $\{(1,2),(3,4),(5,6),(7,2)\}$? Justify your answer.

15 Which table represents a function?

1)

x	2	4	2	4
f(x)	3	5	7	9

2)

x	0	−1	0	1
f(x)	0	1	−1	0

3)

x	3	5	7	9
f(x)	2	4	2	4

4)

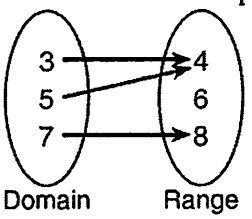
x	0	1	−1	0
f(x)	0	−1	0	1

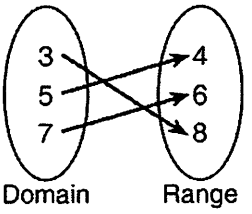
16 A function is shown in the table below.

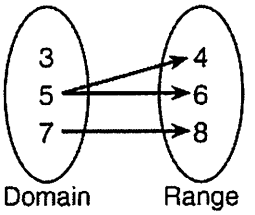
x	f(x)
−4	2
−1	−4
0	−2
3	16

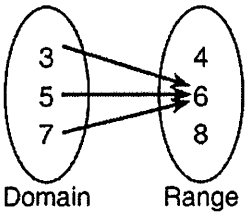
If included in the table, which ordered pair, $(-4,1)$ or $(1,-4)$, would result in a relation that is no longer a function? Explain your answer.

17 Which relation does *not* represent a function?

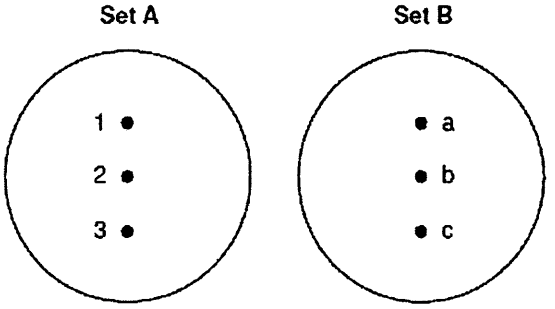
1)


2)


3)


4)


18 On the accompanying diagram, draw a mapping of a relation from set A to set B that is not a function. Explain why the relationship you drew is not a function.

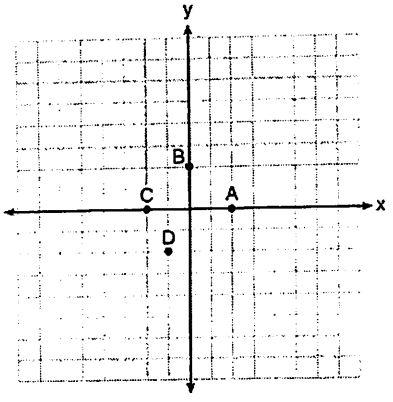


Regents Exam Questions
F.IF.A.2: Functional Notation 1a
www.jmap.org

Name: _____

F.IF.A.2: Functional Notation 1a

1 The graph of $y = f(x)$ is shown below.



Which point could be used to find $f(2)$?
1) A
2) B
3) C
4) D

2 If $f(x) = |x^3 - 3|$, then $f(-1)$ is equivalent to
1) 0
2) 2
3) −2
4) 4

3 If $f(x) = \frac{x}{x^2 - 16}$, what is the value of $f(-10)$?
1) $-\frac{5}{2}$
2) $-\frac{5}{42}$
3) $\frac{5}{58}$
4) $\frac{5}{18}$

4 If $f(x) = \frac{\sqrt{2x+3}}{6x-5}$, then $f\left(\frac{1}{2}\right) =$
1) 1
2) -2
3) −1
4) $-\frac{13}{3}$

5 If $f(x) = kx^2$, and $f(2) = 12$, then k equals
1) 1
2) 2
3) 3
4) 4

6 A model rocket is launched into the air from ground level. The height, in feet, is modeled by $p(x) = -16x^2 + 32x$, where x is the number of elapsed seconds. What is the total number of seconds the model rocket will be in the air?
1) 1
2) 2
3) 0
4) 16

7 The height, $f(x)$, of a bouncing ball after x bounces is represented by $f(x) = 80(0.5)^x$. How many times higher is the first bounce than the fourth bounce?
1) 8
2) 2
3) 16
4) 4

Name: _____

8 The value in dollars, $v(x)$, of a certain car after x years is represented by the equation $v(x) = 25{,}000(0.86)^x$. To the *nearest dollar*, how much more is the car worth after 2 years than after 3 years?
1) 2589
2) 6510
3) 15,901
4) 18,490

9 A population, $p(x)$, of wild turkeys in a certain area is represented by the function $p(x) = 17(1.15)^{2x}$, where x is the number of years since 2010. How many more turkeys will be in the population for the year 2015 than 2010?
1) 46
2) 49
3) 51
4) 68

10 If $f(x) = \frac{x-4}{x+4}$, then $f(4a)$ equals
1) $\frac{a-1}{a+1}$
2) $\frac{a+1}{a-1}$
3) $\frac{4a-1}{4a+1}$
4) $\frac{4a+1}{4a-1}$

11 If $f(x) = \frac{x-2}{x+1}$, then $f(n+1)$ is equal to
1) $-\frac{1}{2}$
2) $\frac{n+1}{n-2}$
3) $\frac{n-1}{n+2}$
4) $\frac{n-2}{n+1}$

12 If $f(x) = 2x^2 - 3x + 4$, then $f(x+3)$ is equal to
1) $2x^2 - 3x + 7$
2) $2x^2 - 3x + 13$
3) $2x^2 + 9x + 13$
4) $2x^2 + 9x + 25$

13 If $f(x) = 4x^2 - x + 1$, then $f(a+1)$ equals
1) $4a^2 - a + 6$
2) $4a^2 - a + 4$
3) $4a^2 + 7a + 6$
4) $4a^2 + 7a + 4$

14 If $f(x) = x^2 - 3$, then $f(a-b)$ is equivalent to
1) $a^2 - b^2 - 3$
2) $a^2 - 2ab - b^2 - 3$
3) $a^2 - 2ab + b^2 - 3$
4) $a^2 + b^2 - 3$

15 For which equation will $f(-2) = -6$?
1) $f(x) = x^3 + x$
2) $f(x) = x^4 - 5x$
3) $f(x) = 4x^3 + 6x^2 - x$
4) $f(x) = -3x^3 - 4x^2 + 4x$

16 Given: the function f defined by $f(x) = 3x^2 - 4$. Which statement is true?
1) $f(0) = 0$
2) $f(-2) = f(2)$
3) $f(5) + f(2) = f(7)$
4) $f(5) - f(2) = f(10)$

17 If $f(n) = (n-1)^2 + 3n$, which statement is true?
1) $f(3) = -2$
2) $f(-2) = 3$
3) $f(-2) = -15$
4) $f(-15) = -2$

Regents Exam Questions
F.IF.A.2: Functional Notation 2
www.jmap.org

Name: _____

F.IF.A.2: Functional Notation 2

1 If $f(x) = (2x)^2$, find f(–4).

2 If $f(x) = x^2 - 3x$, find f(–1.8).

3 If $f(x) = -2x^2 + 6$, find the value of f(–3).

4 If $f(x) = 3 - x^2$, find f(–2).

5 If $f(x) = x^2 - 2x + 3$, find the value of f(–2).

6 If $f(x) = x^2 + 3x - 5$, find the value of f(3).

7 If $f(x) = x^3 - 2x$, find f(–2).

8 If $f(x) = 2x^3 + 4x^2$, find f(–3).

9 If $f(x) = \sqrt{25 - x^2}$, find f(3).

10 If $f(x) = \sqrt{29 - x^2}$, find f(–2).

11 If $f(x) = 3x - 4$ and $g(x) = x^2$, find the value of $f(3) - g(2)$.

12 Given that $f(x) = 2x + 1$, find $g(x)$ if $g(x) = 2[f(x)]^2 - 1$.

13 A population of wolves in a county is represented by the equation $P(t) = 80(0.98)^t$, where t is the number of years since 1998. Predict the number of wolves in the population in the year 2008.

14 The equation to determine the weekly earnings of an employee at The Hamburger Shack is given by $w(x)$, where x is the number of hours worked.

$$w(x) = \begin{cases} 10x, & 0 \le x \le 40 \\ 15(x-40) + 400, & x > 40 \end{cases}$$

Determine the difference in salary, *in dollars*, for an employee who works 52 hours versus one who works 38 hours. Determine the number of hours an employee must work in order to earn $445. Explain how you arrived at this answer.

15 If $g(x) = \left(ax\sqrt{1-x}\right)^2$, express g(10) in simplest form.

Regents Exam Questions
F.LE.A.1: Families of Functions
www.jmap.org

Name: _____

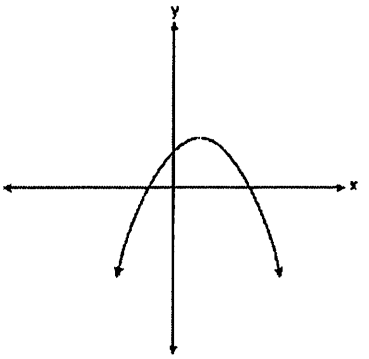
F.LE.A.1: Families of Functions

1 Which situation could be modeled by using a linear function?
1) a bank account balance that grows at a rate of 5% per year, compounded annually
2) a population of bacteria that doubles every 4.5 hours
3) the cost of cell phone service that charges a base amount plus 20 cents per minute
4) the concentration of medicine in a person's body that decays by a factor of one-third every hour

2 Grisham is considering the three situations below.
I. For the first 28 days, a sunflower grows at a rate of 3.5 cm per day.
II. The value of a car depreciates at a rate of 15% per year after it is purchased.
III. The amount of bacteria in a culture triples every two days during an experiment.
Which of the statements describes a situation with an equal difference over an equal interval?
1) I, only
2) II, only
3) I and III
4) II and III

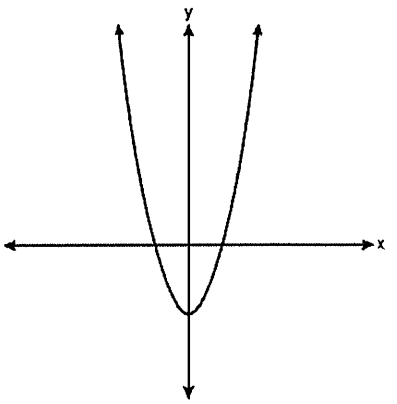
3 Sara was asked to solve this word problem: "The product of two consecutive integers is 156. What are the integers?" What type of equation should she create to solve this problem?
1) linear
2) quadratic
3) exponential
4) absolute value

4 Which type of graph is shown in the diagram below?



1) absolute value
2) exponential
3) linear
4) quadratic

5 Which type of function is represented by the graph shown below?



1) absolute value
2) exponential
3) linear
4) quadratic

Regents Exam Questions
F.LE.A.1: Families of Functions
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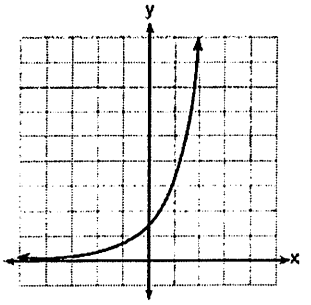
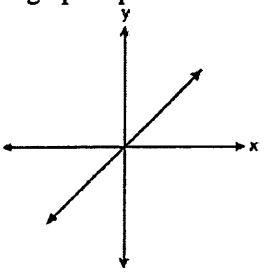
Name: _____

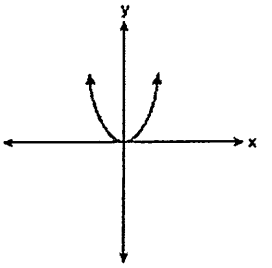
6 Which type of function is graphed below?

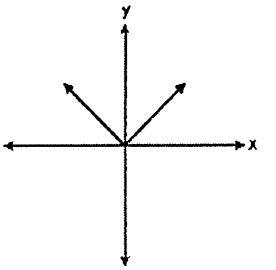


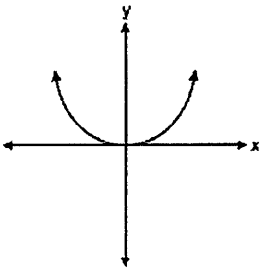
1) linear
2) quadratic
3) exponential
4) absolute value

7 Which graph represents a linear function?

1)


2)


3)


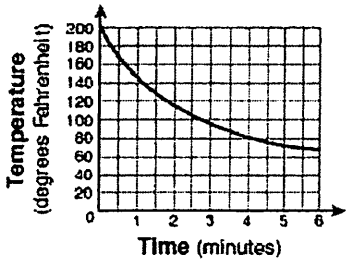
4)


Regents Exam Questions
F.LE.A.1: Families of Functions
www.jmap.org

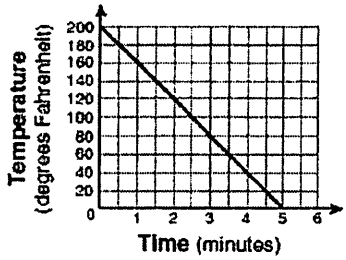
Name: _____

10 Antwaan leaves a cup of hot chocolate on the counter in his kitchen. Which graph is the best representation of the change in temperature of his hot chocolate over time?

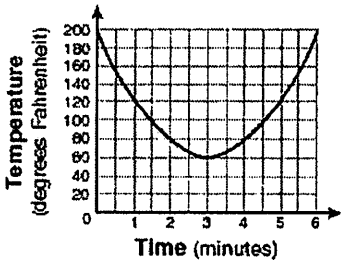
1)



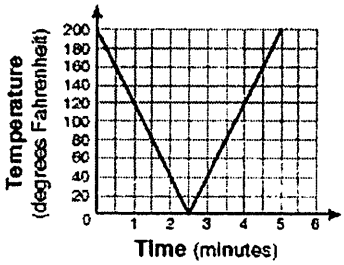
2)



3)

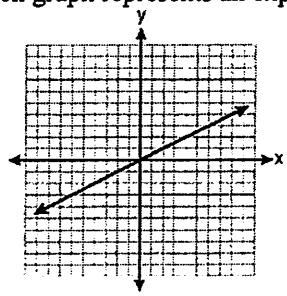


4)

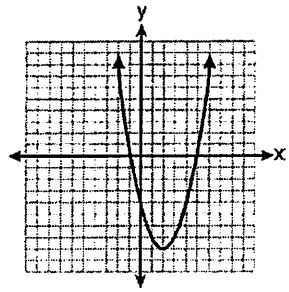


11 Which graph represents an exponential equation?

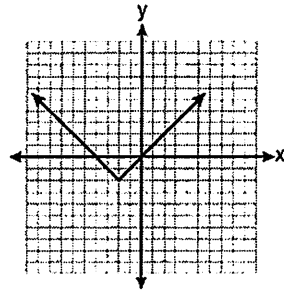
1)



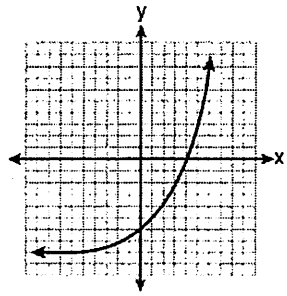
2)



3)



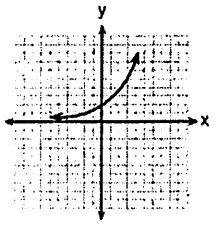
4)

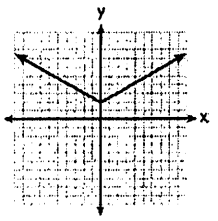


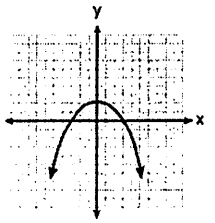
Regents Exam Questions
F.LE.A.1: Families of Functions
www.jmap.org

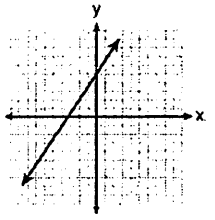
Name: _____

12 Which graph represents an absolute value equation?

1)


2)


3)


4)


13 The tables below show the values of four different functions for given values of x.

x	f(x)
1	12
2	19
3	26
4	33

x	g(x)
1	−1
2	1
3	5
4	13

x	h(x)
1	9
2	12
3	17
4	24

x	k(x)
1	−2
2	4
3	14
4	28

Which table represents a linear function?

1) $f(x)$
2) $g(x)$
3) $h(x)$
4) $k(x)$

Regents Exam Questions
F.LE.A.2: Families of Functions 1a
www.jmap.org

Name: _____

8 Which chart could represent the function $f(x) = -2x + 6$?

1)

x	f(x)
0	6
2	10
4	14
6	18

2)

x	f(x)
0	4
2	6
4	8
6	10

3)

x	f(x)
0	8
2	10
4	12
6	14

4)

x	f(x)
0	6
2	2
4	–2
6	–6

9 If x and y are defined as indicated by the accompanying table, which equation correctly represents the relationship between x and y?

x	y
2	1
3	3
5	7
7	11

1) $y = x + 2$
2) $y = 2x + 2$
3) $y = 2x + 3$
4) $y = 2x - 3$

10 Which equation expresses the relationship between x and y, as shown in the accompanying table?

x	0	1	2	3	4
y	2	5	8	11	14

1) $y = x + 3$
2) $y = 2x + 3$
3) $y = 3x + 2$
4) $y = x + 2$

11 Which linear equation represents the data in the accompanying table?

c	d
0	20.00
1	21.50
2	23.00
3	24.50

1) $d = 1.50c$
2) $d = 1.50c + 20.00$
3) $d = 20.00c + 1.50$
4) $d = 21.50c$

12 The table below represents the function F.

x	3	4	6	7	8
F(x)	9	17	65	129	257

The equation that represents this function is

1) $F(x) = 3^x$
2) $F(x) = 3x$
3) $F(x) = 2^x + 1$
4) $F(x) = 2x + 3$

Regents Exam Questions
F.LE.A.2: Families of Functions 1a
www.jmap.org

Name: _____

13 Which equation could represent the relationship between the x and y values shown in the accompanying table?

x	y
0	2
1	3
2	6
3	11
4	18

1) $y = x + 2$
2) $y = x^2 + 2$
3) $y = x^2$
4) $y = 2^x$

14 Which function is shown in the table below?

x	f(x)
−2	$\frac{1}{9}$
−1	$\frac{1}{3}$
0	1
1	3
2	9
3	27

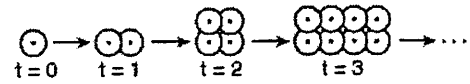
1) $f(x) = 3x$
2) $f(x) = x + 3$
3) $f(x) = -x^3$
4) $f(x) = 3^x$

15 Which equation models the data in the accompanying table?

Time in hours, x	0	1	2	3	4	5	6
Population, y	5	10	20	40	80	160	320

1) $y = 2x + 5$
2) $y = 2^x$
3) $y = 2x$
4) $y = 5(2^x)$

16 The accompanying diagram represents the biological process of cell division.



If this process continues, which expression best represents the number of cells at any time, t?
1) $t + 2$
2) $2t$
3) t^2
4) 2^t

17 A laboratory technician studied the population growth of a colony of bacteria. He recorded the number of bacteria every other day, as shown in the partial table below.

t (time, in days)	0	2	4
f(t) (bacteria)	25	15,625	9,765,625

Which function would accurately model the technician's data?
1) $f(t) = 25^t$
2) $f(t) = 25^{t+1}$
3) $f(t) = 25t$
4) $f(t) = 25(t + 1)$

18 Which equation represents a quadratic function?
1) $y = x + 2$
2) $y = |x + 2|$
3) $y = x^2$
4) $y = 2^x$

Regents Exam Questions
F.LE.A.3: Families of Functions
www.jmap.org

Name: _____

F.LE.A.3: Families of Functions

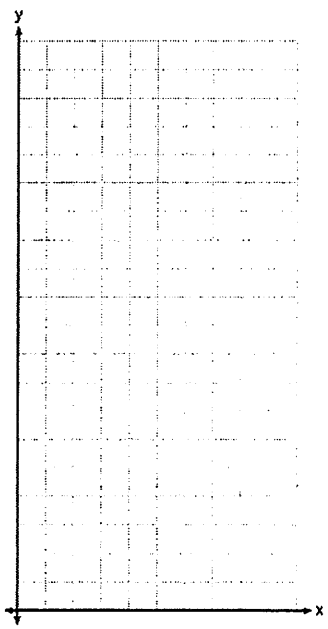
1 As x increases beyond 25, which function will have the largest value?
1) $f(x) = 1.5^x$
2) $g(x) = 1.5x + 3$
3) $h(x) = 1.5x^2$
4) $k(x) = 1.5x^3 + 1.5x^2$

2 If $f(x) = 3^x$ and $g(x) = 2x + 5$, at which value of x is $f(x) < g(x)$?
1) -1
2) 2
3) -3
4) 4

3 What is the largest integer, x, for which the value of $f(x) = 5x^4 + 30x^2 + 9$ will be greater than the value of $g(x) = 3^x$?
1) 7
2) 8
3) 9
4) 10

4 Alicia has invented a new app for smart phones that two companies are interested in purchasing for a 2-year contract. Company A is offering her \$10,000 for the first month and will increase the amount each month by \$5000. Company B is offering \$500 for the first month and will double their payment each month from the previous month. Monthly payments are made at the end of each month. For which monthly payment will company B's payment first exceed company A's payment?
1) 6
2) 7
3) 8
4) 9

5 Graph $f(x) = x^2$ and $g(x) = 2^x$ for $x \geq 0$ on the set of axes below.



State which function, $f(x)$ or $g(x)$, has a greater value when $x = 20$. Justify your reasoning.

Regents Exam Questions
F.LE.A.2: Families of Functions 1a
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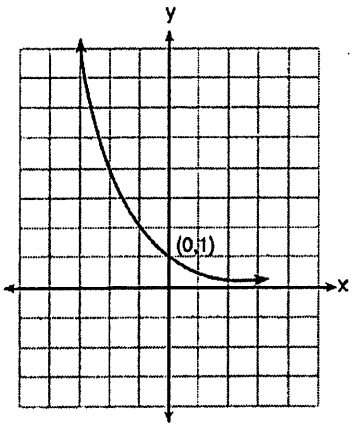
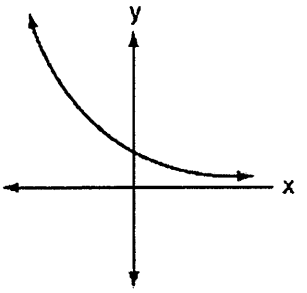
Name: _____

5 What is the equation of the graph shown below?



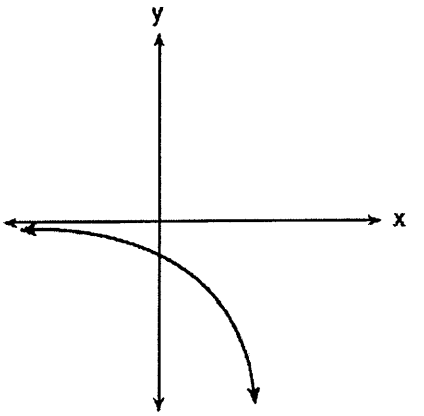
1) $y = 2^x$
2) $y = 2^{-x}$
3) $x = 2^y$
4) $x = 2^{-y}$

6 Which equation best represents the accompanying graph?



1) $y = 2^x$
2) $y = x^2 + 2$
3) $y = 2^{-x}$
4) $y = -2^x$

7 Which equation is represented by the accompanying graph?



1) $y = 2^x$
2) $y = -2^x$
3) $y = 2^{-x}$
4) $y = x^2 - 2$

Regents Exam Questions
F.IF.B.5: Domain and Range
www.jmap.org

Name: _____

F.IF.B.5: Domain and Range

1 Which domain would be the most appropriate set to use for a function that predicts the number of household online-devices in terms of the number of people in the household?
1) integers
2) whole numbers
3) irrational numbers
4) rational numbers

2 A construction company uses the function $f(p)$, where p is the number of people working on a project, to model the amount of money it spends to complete a project. A reasonable domain for this function would be
1) positive integers
2) positive real numbers
3) both positive and negative integers
4) both positive and negative real numbers

3 A store sells self-serve frozen yogurt sundaes. The function $C(w)$ represents the cost, in dollars, of a sundae weighing w ounces. An appropriate domain for the function would be
1) integers
2) rational numbers
3) nonnegative integers
4) nonnegative rational numbers

4 An online company lets you download songs for $0.99 each after you have paid a $5 membership fee. Which domain would be most appropriate to calculate the cost to download songs?
1) rational numbers greater than zero
2) whole numbers greater than or equal to one
3) integers less than or equal to zero
4) whole numbers less than or equal to one

5 Officials in a town use a function, C, to analyze traffic patterns. $C(n)$ represents the rate of traffic through an intersection where n is the number of observed vehicles in a specified time interval. What would be the most appropriate domain for the function?
1) $\{\ldots -2,-1,0,1,2,3,\ldots\}$
2) $\{-2,-1,0,1,2,3\}$
3) $\{0,\frac{1}{2},1,1\frac{1}{2},2,2\frac{1}{2}\}$
4) $\{0,1,2,3,\ldots\}$

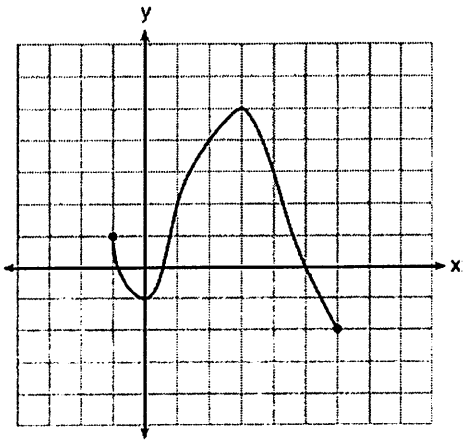
6 The function $h(t) = -16t^2 + 144$ represents the height, $h(t)$, in feet, of an object from the ground at t seconds after it is dropped. A realistic domain for this function is
1) $-3 \le t \le 3$
2) $0 \le t \le 3$
3) $0 \le h(t) \le 144$
4) all real numbers

Regents Exam Questions
F.IF.A.2: Domain and Range 1a
www.jmap.org

Name: _____

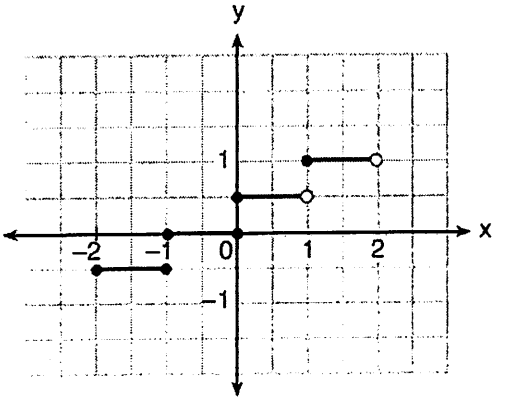
F.IF.A.2: Domain and Range 1a

1 What is the domain of the function shown below?



1) $-1 \le x \le 6$
2) $-1 \le y \le 6$
3) $-2 \le x \le 5$
4) $-2 \le y \le 5$

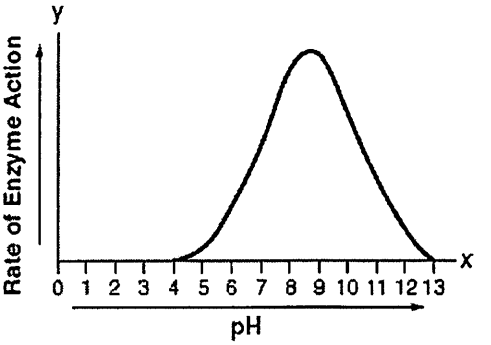
2 The graph of a relation is shown below.



What is the domain of this relation?

1) $\{-2,-1,0,1\}$
2) $\left\{-\frac{1}{2},0,\frac{1}{2},1\right\}$
3) $\{x \mid -2 \le x < 2\}$
4) $\{x \mid -2 \le x \le 2\}$

3 The effect of pH on the action of a certain enzyme is shown on the accompanying graph.



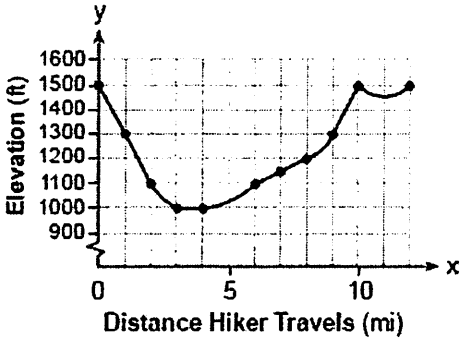
What is the domain of this function?

1) $4 \le x \le 13$
2) $4 \le y \le 13$
3) $x \ge 0$
4) $y \ge 0$

Regents Exam Questions
F.IF.A.2: Domain and Range 1a
www.jmap.org

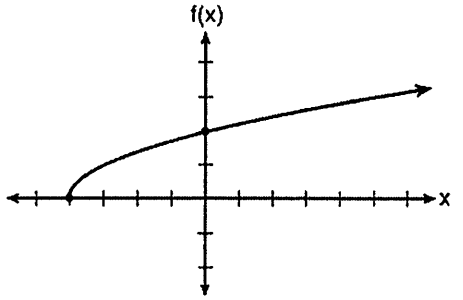
Name: _____

4 The accompanying graph shows the elevation of a certain region in New York State as a hiker travels along a trail.



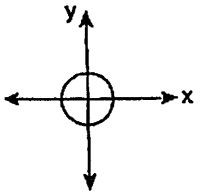
What is the domain of this function?
1) $1{,}000 \le x \le 1{,}500$
2) $1{,}000 \le y \le 1{,}500$
3) $0 \le x \le 12$
4) $0 \le y \le 12$

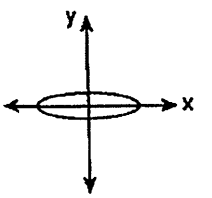
5 The graph of the function $f(x) = \sqrt{x+4}$ is shown below.

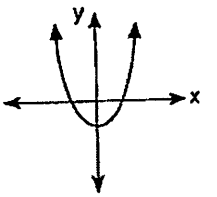


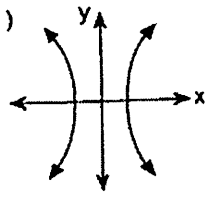
The domain of the function is
1) $\{x \mid x > 0\}$
2) $\{x \mid x \ge 0\}$
3) $\{x \mid x > -4\}$
4) $\{x \mid x \ge -4\}$

6 Which graph illustrates a quadratic relation whose domain is all real numbers?

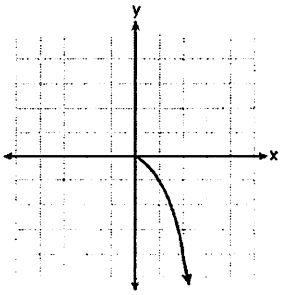
1)


2)


3)


4)


7 What is the range of the function shown below?

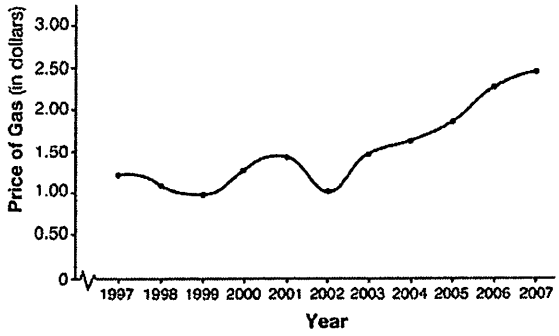


1) $x \le 0$
2) $x \ge 0$
3) $y \le 0$
4) $y \ge 0$

Regents Exam Questions
F.IF.A.2: Domain and Range 1a
www.jmap.org

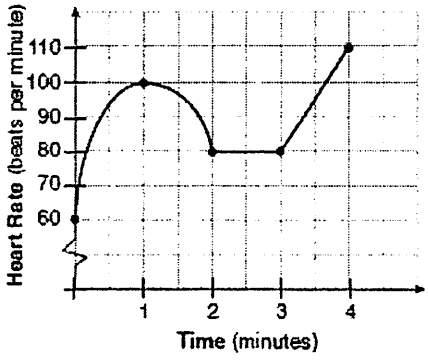
Name: _____

8 The graph below shows the average price of gasoline, in dollars, for the years 1997 to 2007.



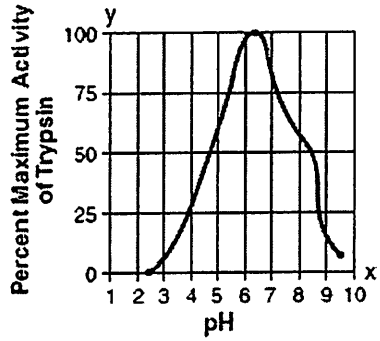
What is the approximate range of this graph?
1) $1997 \le x \le 2007$
2) $1999 \le x \le 2007$
3) $0.97 \le y \le 2.38$
4) $1.27 \le y \le 2.38$

9 The accompanying graph shows the heart rate, in beats per minute, of a jogger during a 4-minute interval.



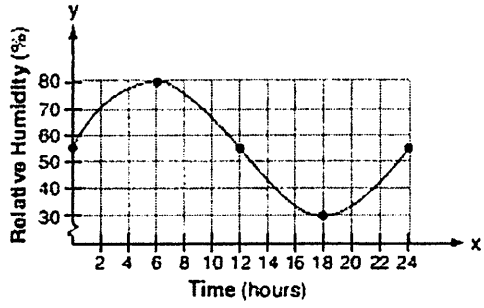
What is the range of the jogger's heart rate during this interval?
1) 0 – 4
2) 1 – 4
3) 0 – 110
4) 60 – 110

10 Data collected during an experiment are shown in the accompanying graph.



What is the range of this set of data?
1) $2.5 \le y \le 9.5$
2) $2.5 \le x \le 9.5$
3) $0 \le y \le 100$
4) $1 \le x \le 10$

11 A meteorologist drew the accompanying graph to show the changes in relative humidity during a 24-hour period in New York City.

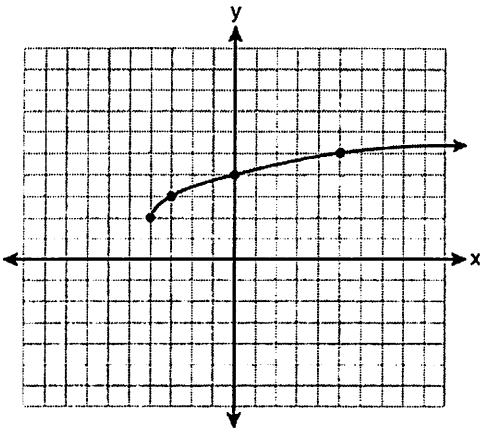


What is the range of this set of data?
1) $0 \le y \le 24$
2) $0 \le x \le 24$
3) $30 \le y \le 80$
4) $30 \le x \le 80$

Regents Exam Questions
F.IF.A.2: Domain and Range 1a
www.jmap.org

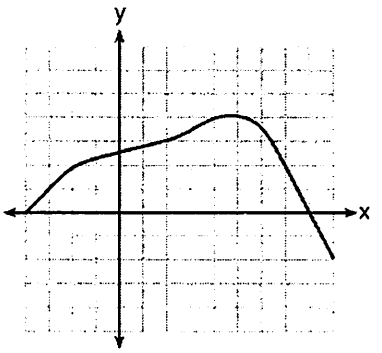
Name: _____

14 What are the domain and the range of the function shown in the graph below?



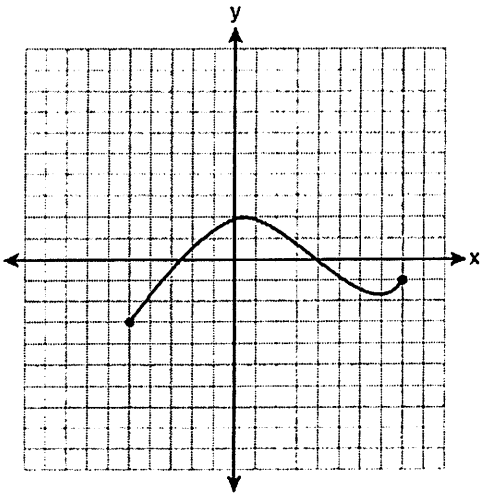
1) $\{x \mid x > -4\}$; $\{y \mid y > 2\}$
2) $\{x \mid x \geq -4\}$; $\{y \mid y \geq 2\}$
3) $\{x \mid x > 2\}$; $\{y \mid y > -4\}$
4) $\{x \mid x \geq 2\}$; $\{y \mid y \geq -4\}$

15 Which value is in the domain of the function graphed below, but is *not* in its range?



1) 0
2) 2
3) 3
4) 7

16 The graph below represents the function $y = f(x)$.



State the domain and range of this function.

Regents Exam Questions
F.IF.A.2: Domain and Range 3a
www.jmap.org

Name: _____

F.IF.A.2: Domain and Range 3a

1 The range of the function $f(x) = x^2 + 2x - 8$ is all real numbers
1) less than or equal to -9
2) greater than or equal to -9
3) less than or equal to -1
4) greater than or equal to -1

2 What is the domain of $f(x) = 2^x$?
1) all integers
2) all real numbers
3) $x \geq 0$
4) $x \leq 0$

3 What is the domain of the function $g(x) = 3^x - 1$?
1) $(-\infty, 3]$
2) $(-\infty, 3)$
3) $(-\infty, \infty)$
4) $(-1, \infty)$

4 The range of the function defined as $y = 5^x$ is
1) $y < 0$
2) $y > 0$
3) $y \leq 0$
4) $y \geq 0$

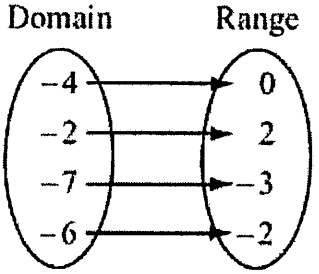
5 If $f(x) = \frac{1}{3}x + 9$, which statement is always true?
1) $f(x) < 0$
2) $f(x) > 0$
3) If $x < 0$, then $f(x) < 0$.
4) If $x > 0$, then $f(x) > 0$.

Algebra
Unit 3 MORE PRACTICE

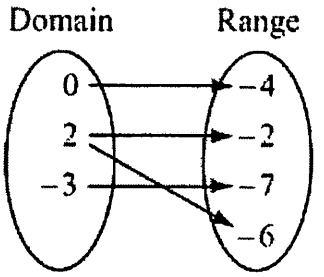
Name _____
Section _____

1. Which of the following represents the relation, {(0, -4), (2, -2), (-3, -7), (2, -6)}?

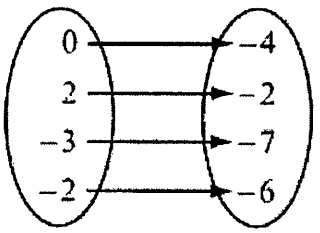
A.



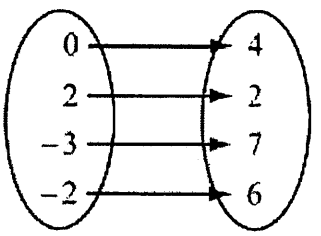
B.



C.



D.



Is the relation a function? Explain.

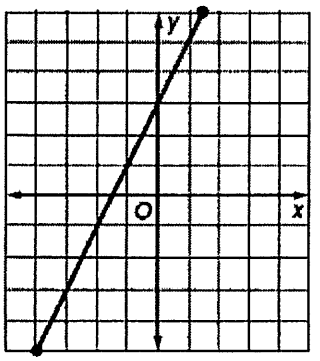
2. What is the domain of this function?

A. $-4 < x < 1.5$

B. $-4 \leq x \leq 1.5$

C. $-6 < y < 6$

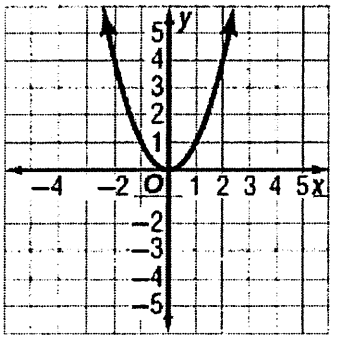
D. $-6 \leq y \leq 6$



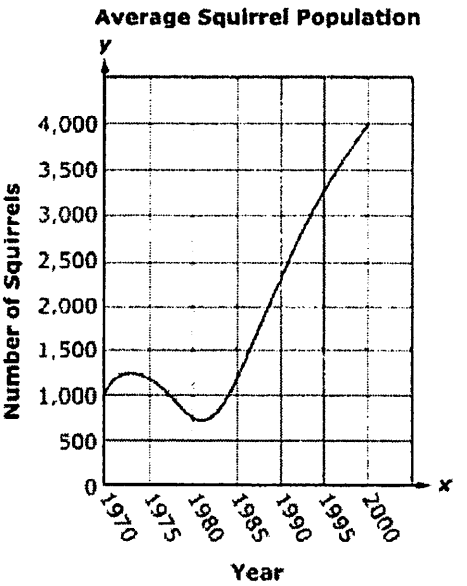
3. What is the range of the function $y = -3x^2 + x$ when the domain is {1, 3, 5}?

4. What is the range of a function $f(x) = -x^2 + x$ for the domain, $\{x \mid -2 \le x \le 3\}$?

5. What is the range of the function in the graph shown below?

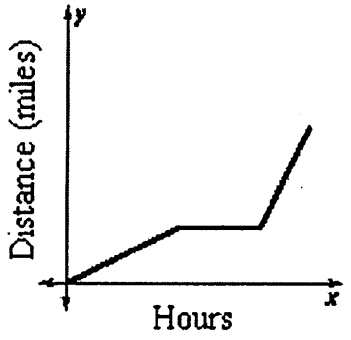


6. The graph shows the average squirrel population in a city park from the years 1970 to 2000. Approximately what are the domain and range of the data shown on the graph?

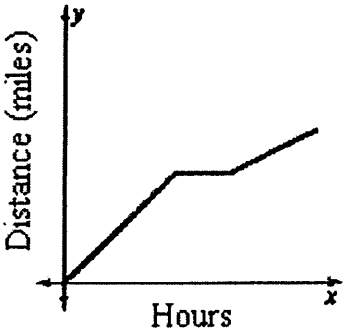


7. After hiking all morning, a hiker stops to rest and eat lunch. He then resumes his hike at a slower pace. Identify the graph that best represents the relationship between the distance traveled by a hiker and the time it takes to cover that distance.

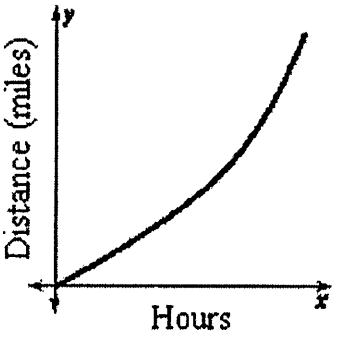
A.



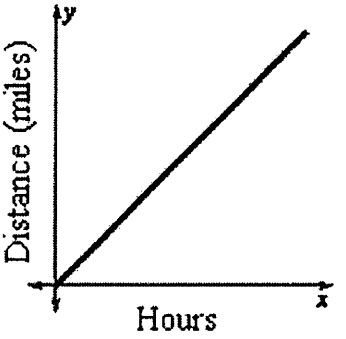
B.



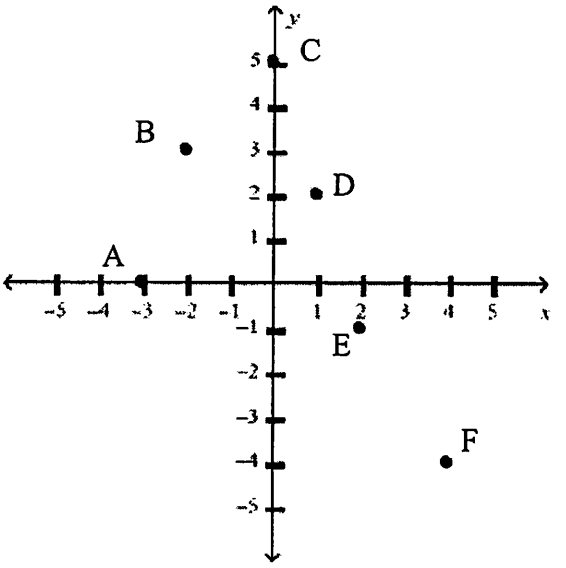
C.



D.

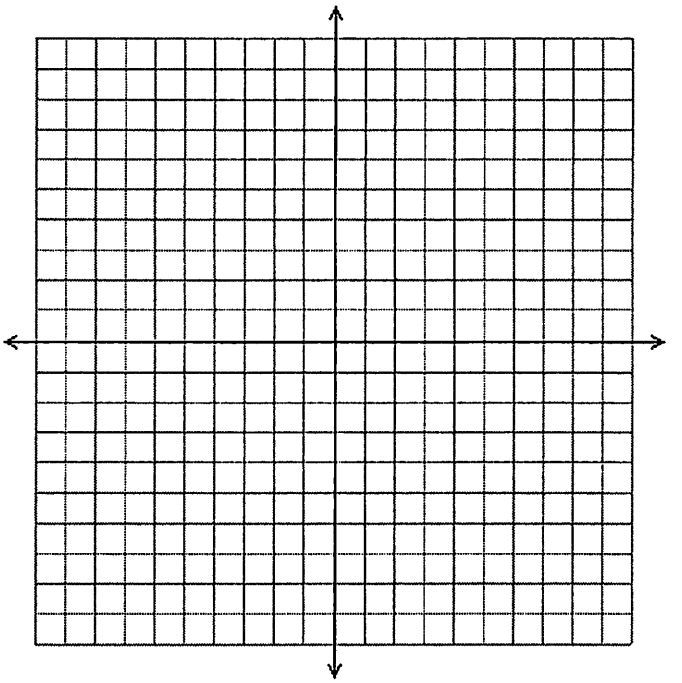


8. The graph of $h(x)$ is show below. What point could be used to find $h(4)$?



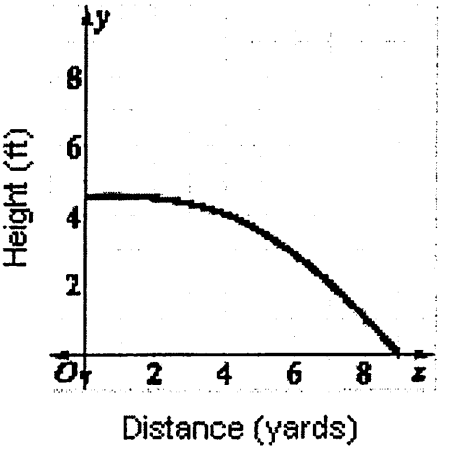
9. The function g has a domain of $\{-10, -5, 5, 15, 25\}$ and a range of $\{3, 9, 11\}$. Could g be represented by $\{(-10, 3), (-5, 3), (5, 3), (15, 9), (25, 11)\}$? Justify your answer.

10. On the graph below, sketch a linear function that is decreasing over the domain (-4, 8] and has the range [-2,5).

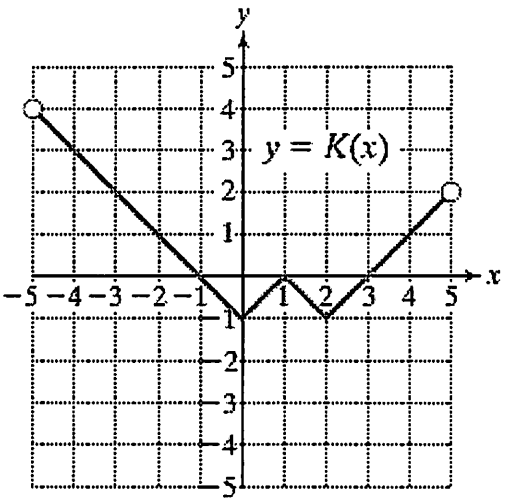


11. Let $h(x) = \frac{1}{2}x + 2$. Does $h(8) \div h(4) = h(2)$? Justify.

12. This graph shows the height and distance traveled by a tennis ball. Find $f(4)$. Explain what this represents.



13. The graph of $y = K(x)$ is given.



a. Find $K(0)$.

b. Find $K(-5)$.

c. Find $K(1)$.

d. For what value(s) of x is $K(x) = 0$?

e. For what value(s) of x is $K(x) = 3$?

f. Write the domain of K.

g. Write the range of K.