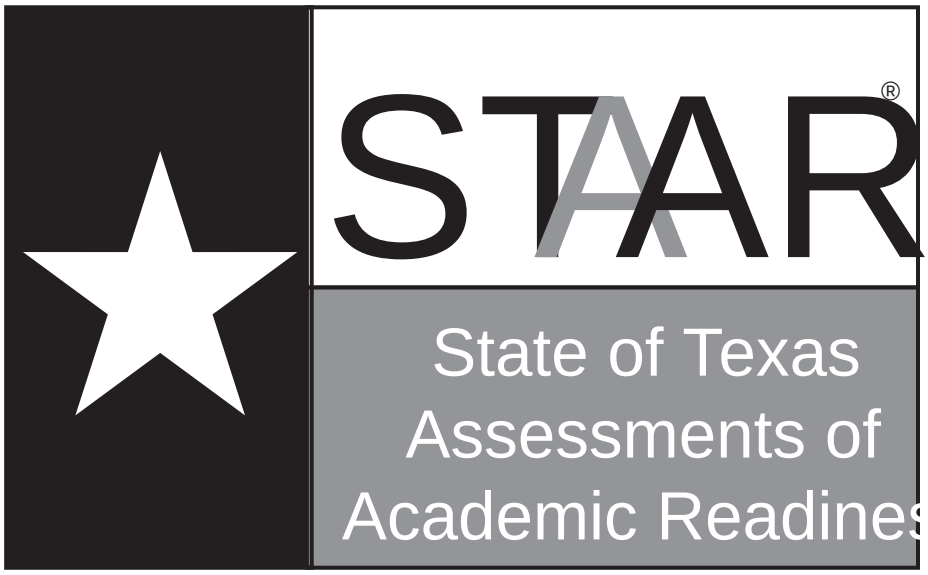

STAAR®
State of Texas
Assessments of
Academic Readines

STAAR ALGEBRA I REFERENCE MATERIALS

Perfect square trinomials

$$a^2 + 2ab + b^2 = (a + b)^2$$
$$a^2 - 2ab + b^2 = (a - b)^2$$

a b a + b

$$\frac{a^m}{a^n} = a^{(m-n)}$$

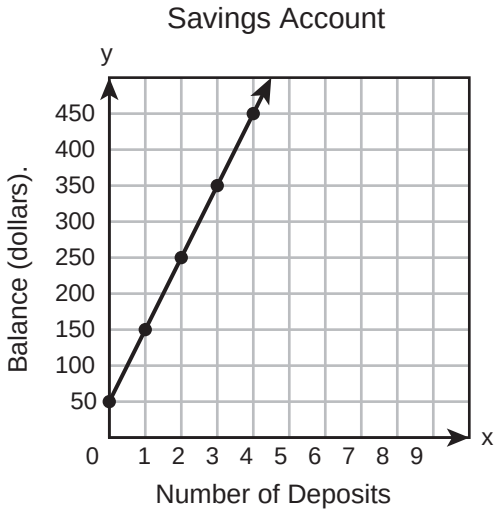
$$a^{\frac{m}{n}} = \sqrt[n]{a^m}$$

$$a^{-n} = \frac{1}{a^n}$$

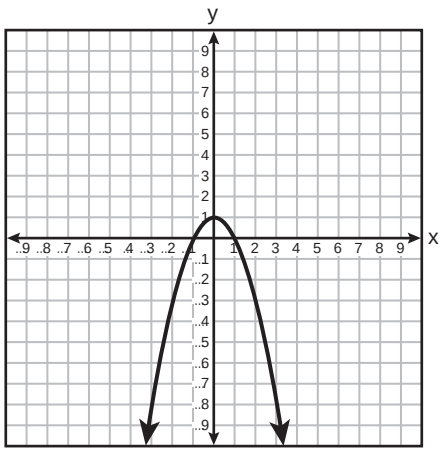
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-b}{2a}$$



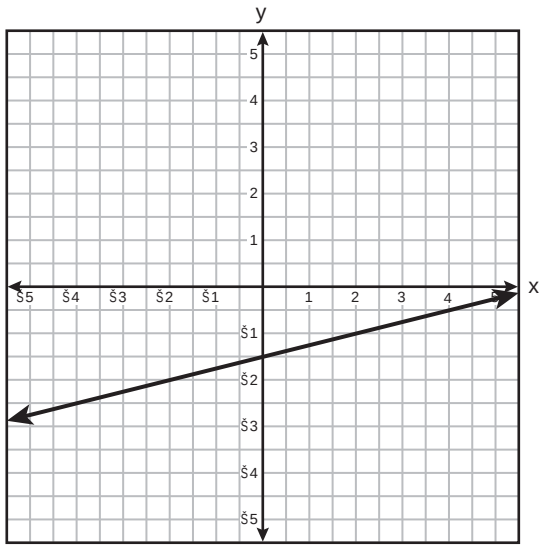
What is the rate of change of the balance with respect


y
x
9
8
7
6
5
4
3
2
1
-9 -8 -7 -6 -5 -4 -3 -2 -1
1 2 3 4 5 6 7 8 9
-1
-2
-3
-4
-5
-6
-7
-8
-9

5 The table represents somable

x	Š 7.5	Š 3.5	Š 1	2	3.5
y	12	0	Š 7.5	Š 16.5	Š 21

7 The graph of 0.5 x 2y = 3 is shown on the grid.



Which ordered pair is in the solution set of 0.5 x 2y 3?

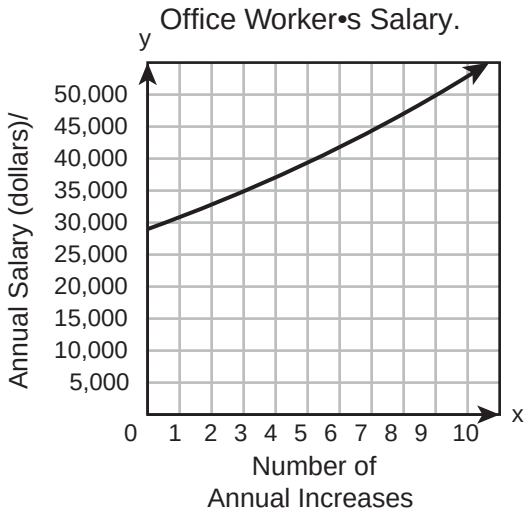
A (2, 0.5)

B (2, 1)

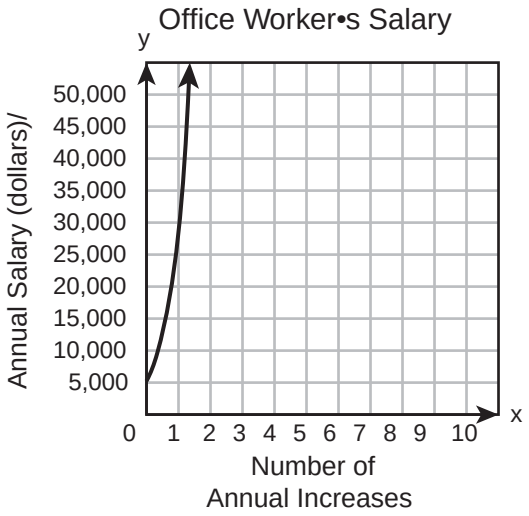
$x = \frac{1}{3}$

$x = \frac{1}{5}$

A


Office Worker•s Salary.
y
Annual Salary (dollars)/
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0 1 2 3 4 5 6 7 8 9 10
x
Number of
Annual Increases

C


Office Worker•s Salary
y
Annual Salary (dollars)/
50,000
45,000
40,000
35,000
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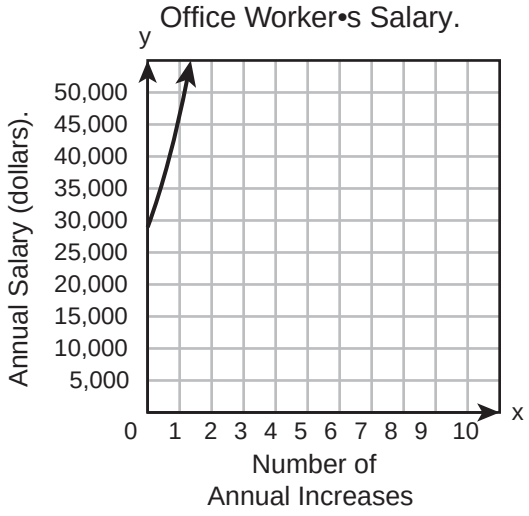
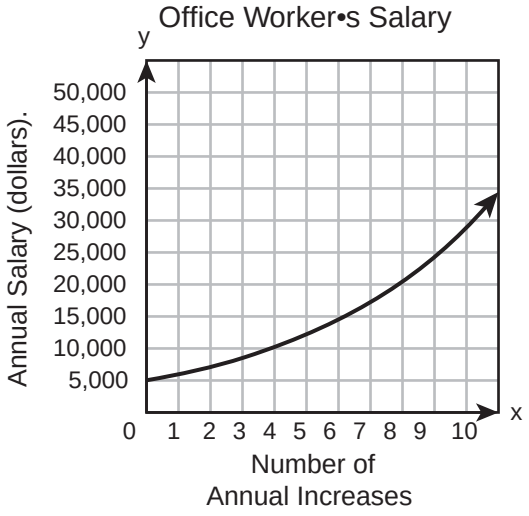
25,000
20,000
15,000
10,000
5,000
0 1 2 3 4 5 6 7 8 9 10
x
Number of
Annual Increases

B

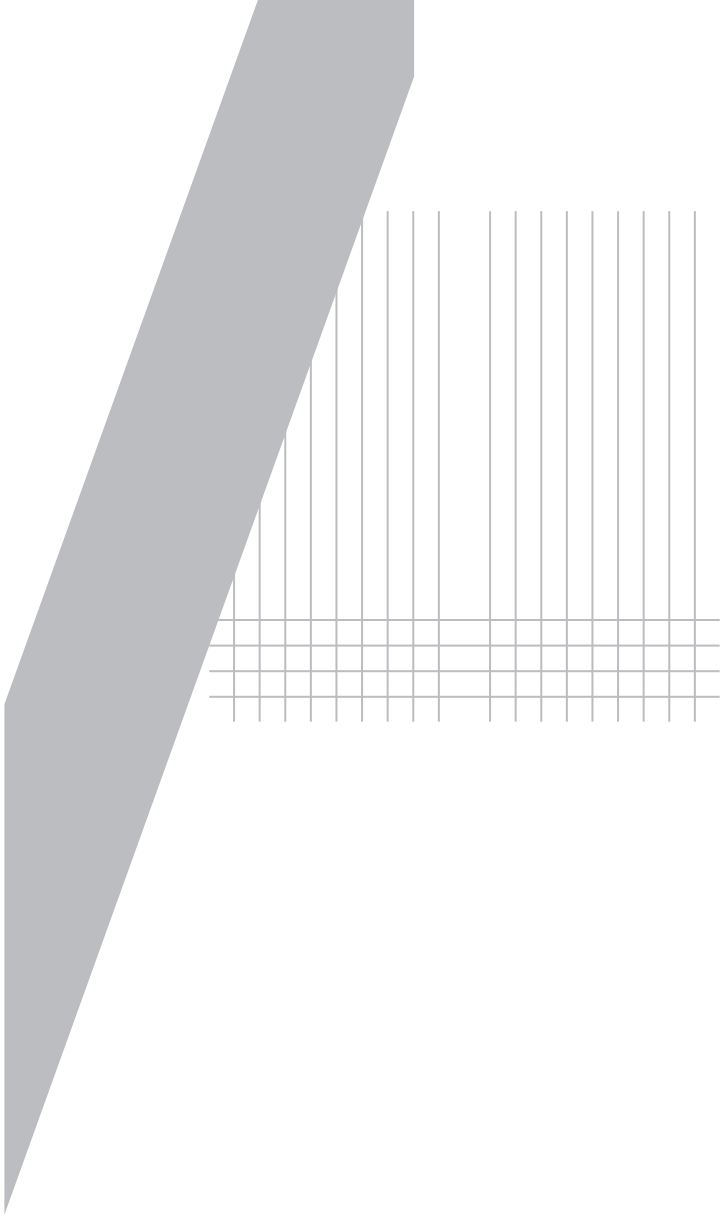

Office Worker•s Salary.
y
Annual Salary (dollars).
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0 1 2 3 4 5 6 7 8 9 10
x
Number of
Annual Increases

D


Office Worker•s Salary
y
Annual Salary (dollars).
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0 1 2 3 4 5 6 7 8 9 10
x
Number of
Annual Increases

GO ON

x	Š 4	Š 2	0	2	3	4	6
h(x)	41	17	1	Š 7	Š 8	Š 7	1



16 Which statement about $k(x) = x^2 \quad 2x + 15$ is true?

F The zeros are 3 and 5, because $k(x) = (x + 3)(x \quad 5)$.

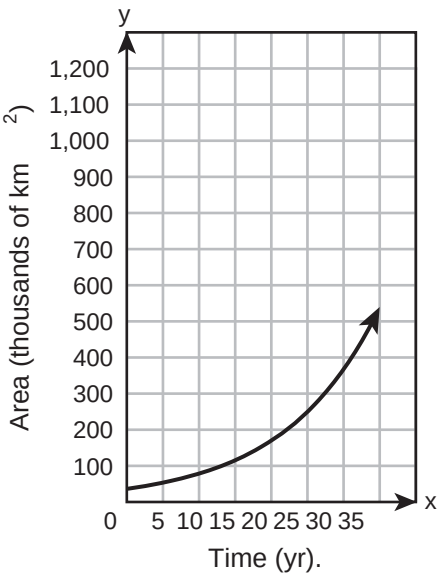
G The zeros are 5 and 3, because $k(x) = (x + 5)(x \quad 3)$.

H The zeros are 5 and 3, because $k(x) = (x + 5)(x + 3)$.

J The zeros are 3 and 5, because $k(x) = (x \quad 3)(x \quad 5)$.

17 The exponential function modeled below represents the number of square kilometers of land occupied by cane toads x years after this animal was first introduced into Australia.

Area Occupied by Cane Toads



Time (yr)	Area (km^2)
0	36,500
5	53,600
10	78,800
15	115,780
20	170,120
25	250,000
30	367,300
35	539,700

Based on the data, which measurement is are 3 below

18 Which of the following is equivalent to $3x - 4y = 6$?

F

G

H

J

19 The table represents some points on the graph of a linear function.

x	y
Š2	12
0	3
3	Š10.5
7	Š28.5

What is the rate of change of y with respect to x for this function?

A $\frac{2}{9}$

B $\frac{9}{2}$

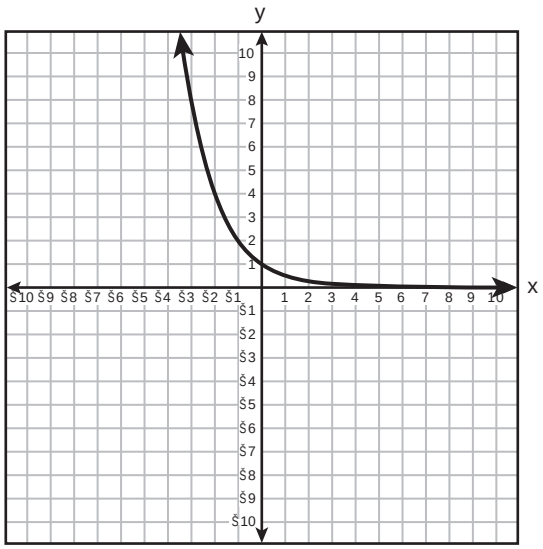
$\frac{9}{2}$

$\frac{2}{9}$

20 A manager purchased a total of 21 coffee mugs and key chains. Each coffee mug cost $8.50, and each key chain cost $2.75. If the manager spent a total of $132.50, how many coffee mugs did the manager purchase?

Record your answer and fill in the bubbles on your answer document.

21 The graph of an exponential function is shown on the grid.



Based on the graph, which statement about the function is true?

A The range is the set of all real numbers less than 0.

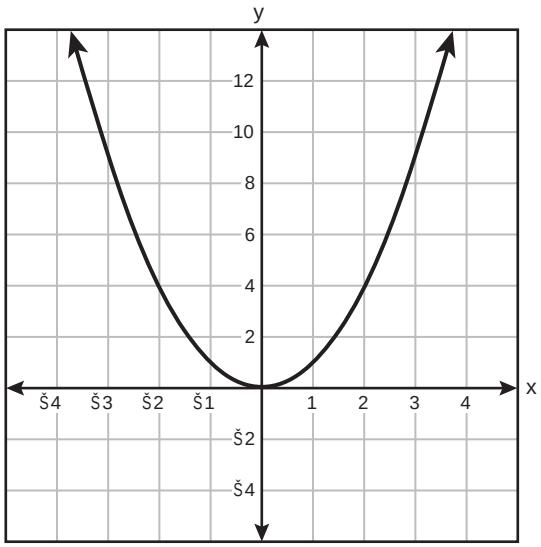
B The domain is the set of all real numbers greater than 4.

C The range is the set of all real numbers greater than 0.

D The domain is the set of all real numbers less than 4.

GO ON

24 The graph of $f(x) = x^2$ is shown on the grid.



Which statement about the relationship between the graph of f and the graph of $g(x) = 7x^2$ is true?

F The graph of g is narrower than the graph of f.

G The graph of g is wider than the graph of f.

H The graph of g is 7 units below the graph of f.

J The graph of g is 7 units above the graph of f.

---

25 Which expression is a factor of $36x^2$ 49?

A $18x$ 7

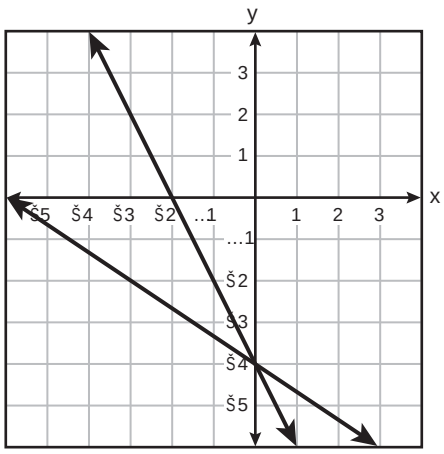
B $6x$ 49

C $18x$ 49

D $6x$ 7

GO O

Base


y
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...1
Š2
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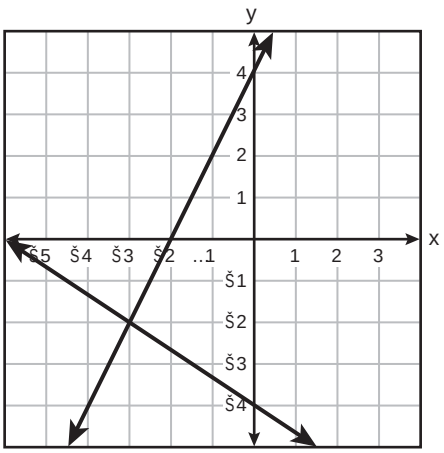
Š5


y
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Š5 Š4 Š3 Š2 ..1
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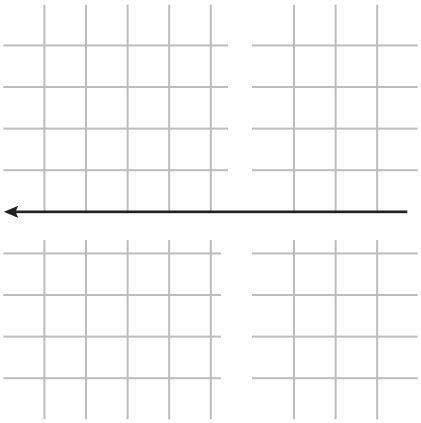
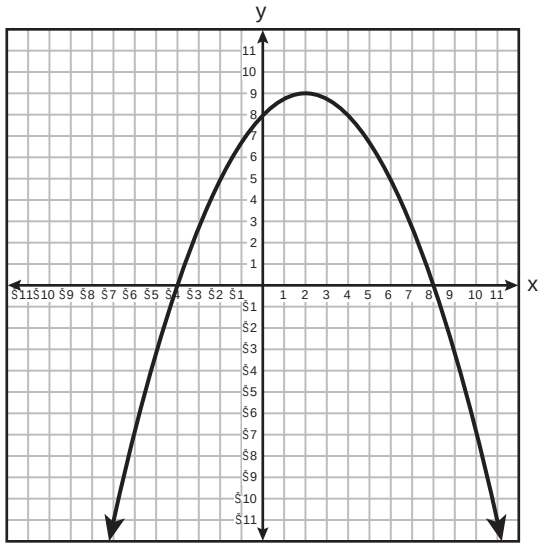


34 The graph of quadratic function g is shown on the grid. The coordinates of the x-intercepts, the y-intercept, and the vertex are integers.



What is the maximum value of g?

Record your answer and fill in the bubbles on your answer document.

---

35 An organization has a monthly budget of x dollars. Every month $2,070 is spent on salaries. One-fourth of the remaining budget is spent on monthly activities. Which function can be used to find the amount in dollars spent on monthly activities?

A $f(x) = 2{,}070 + \frac{x}{4}$

B $f(x) = 2{,}070 \quad \frac{x}{4}$

C $f(x) = \frac{x + 2{,}070}{4}$

D $f(x) = \frac{x \quad 2{,}070}{4}$

GO O

36 Which table represents y as a function of x?

F

x	y
Š5	Š5
3	Š2
Š5	5
Š3	Š2

H

x	y
Š3	Š4
1	4
Š3	4
1	Š4

G

x	y
6	Š6
Š6	6
8	Š8
Š8	8

J

x	y
2	Š1
2	Š2
2	Š3
2	Š4

---

37 Which statement about $f(x) = 2x^2 \quad 3x \quad 5$ is true?

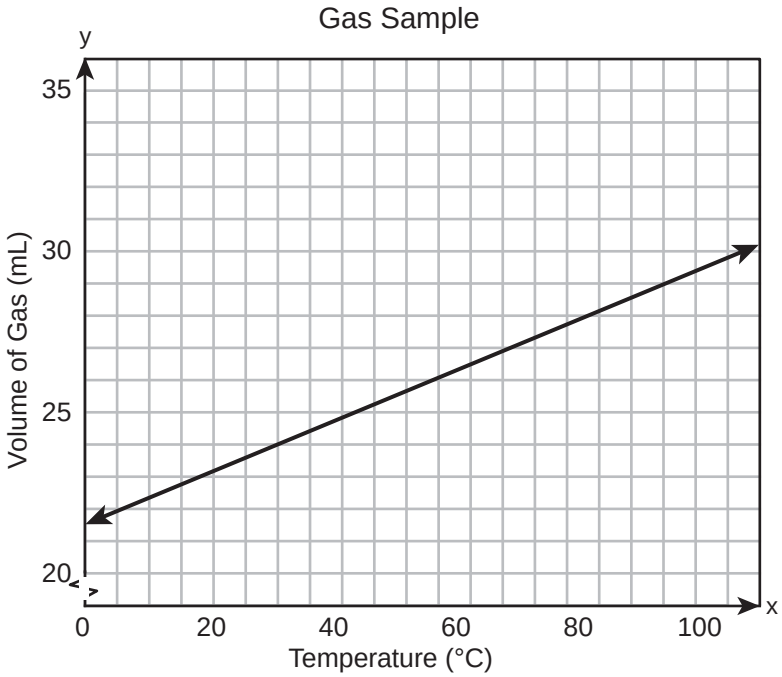
A The zeros are $\frac{5}{2}$ and 1, because $f(x) = (x + 1)(2x + 5)$.

B The zeros are $\frac{5}{2}$ and 1, because $f(x) = (x \quad 1)(2x + 5)$.

C The zeros are 1 and $\frac{5}{2}$, because $f(x) = (x + 1)(2x \quad 5)$.

D The zeros are 1 and $\frac{5}{2}$, because $f(x) = (x \quad 1)(2x \quad 5)$.

GO ON



Which of these best represents the rate of change in the volume of the gas sample with respect to the temperature?

F

G

H 12 mL/°C

J

GO ON

39 What is the solution to this system of equations?

A (6, 7)

B (2, 33)

C (7, 6)

D (33, 2)

40 The table contains some points on the graph of an exponential function.

x	y
0	0.0625
1	0.25
2	1
3	4

Based on the table, which function represents the same relationship?

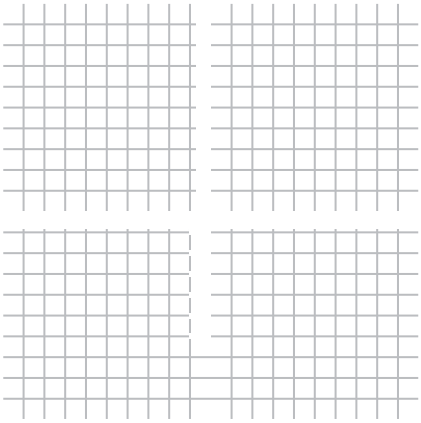
F $q(x) = (0.25)^x$

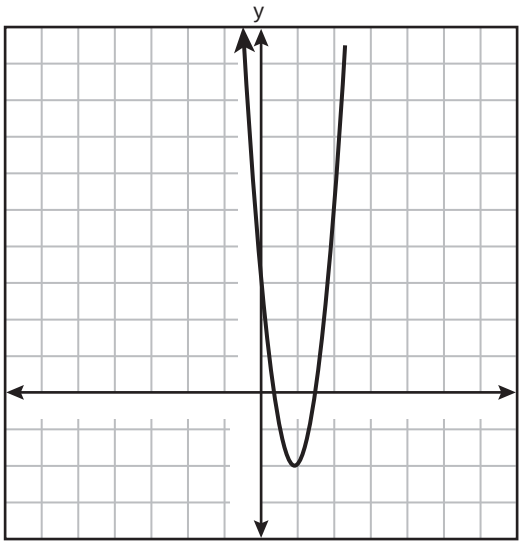
G $q(x) = 256(0.25)^x$

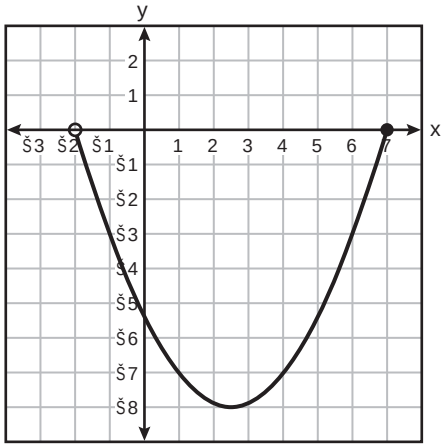
H $q(x) = 0.0625(4)^x$

J $q(x) = 0.5(4)^x$

GO ON




y


y
x
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Š3 Š2 Š1
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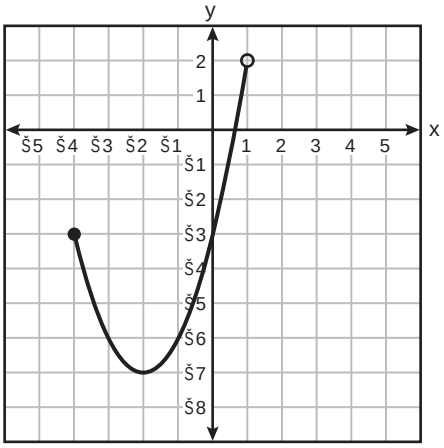
y
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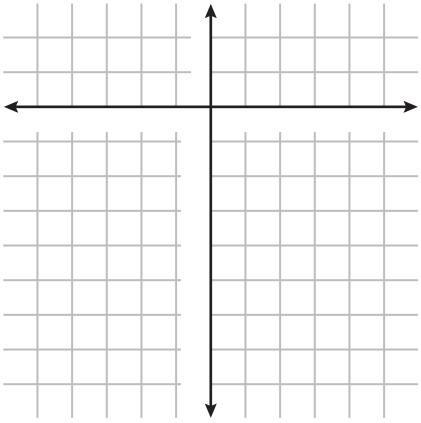
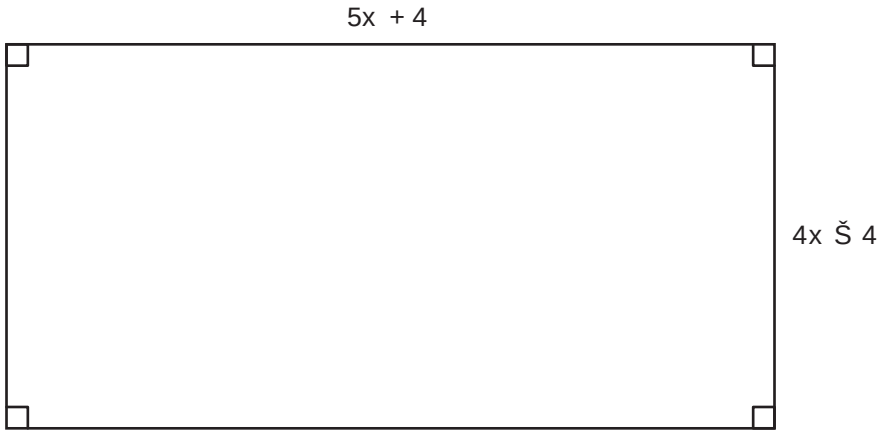
Š8





Which expression represents the area of the storage facility in square feet?

F $20x^2 + 36x \quad 16$

G $20x^2 \quad 4x \quad 16$

H $16x^2 \quad 16$

J $9x^2 \quad 16$

BE SURE YOU HAVE RECORDED ALL OF YOUR ANSWERS ON THE ANSWER DOCUMENT.

STOP

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Algebra I
May 2016