Tennessee Comprehensive Assessment Program

TCAP

Algebra I
Grade HS Item Release

Spring 2023

TN Department of **Education**

*Standards implemented from 2023-24 Tennessee Academic Standards for Math

00. Franco owns an ice cream store. He claims that the sales of ice cream are affected by the weather. He studies his sales, and makes a scatter plot of his data.

Which quantities are the **best** choices for the *x*- and *y*-values on the graph?

A. *x* = the day of the year

y = the yearly sales to date

B. *x* = the daily sales of ice cream

y = the total number of customers

C. *x* = the high temperature for the day

y = the daily sales of ice cream

D. *x* = the average temperature for the date

y = the average profit per customer

00. The sale price of a jacket is represented by the expression $x - 0.2x$.

Which statement about the expression is true or false.

Mark **one** box in each row.

		A True	*B* False
1	The sale price is 20% less than the original price.	◯	◯
2	The original price of the jacket is x.	◯	◯
3	The sale price is 20% of the original price.	◯	◯
4	The amount of discount is represented by $0.2x$.	◯	◯

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00. What is the product of $\left(2x - \frac{3}{2}\right)(-x + 0.5)$?

A. $-2x^2 - \frac{1}{2}x - \frac{3}{4}$

B. $-2x^2 + \frac{5}{2}x - \frac{3}{4}$

C. $-2x^2 - \frac{3}{4}$

D. $-2x^2 + x$

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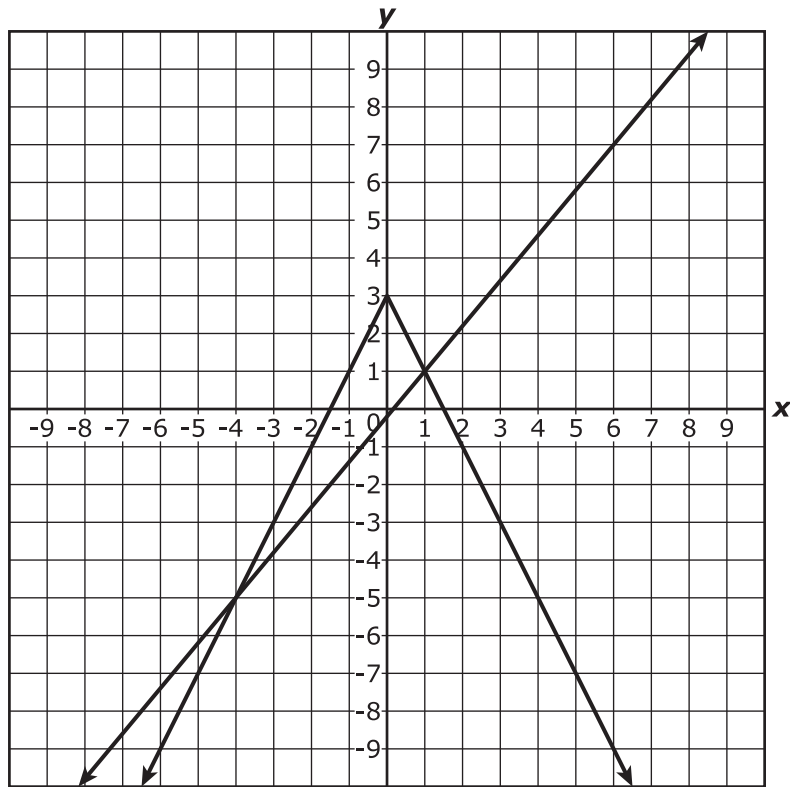**00.** Determine all of the values of x that make each equation **true**.

Mark **all** the correct boxes in each **row** in the table for **each** equation.

		A $x = -6$	B $x = -1$	C $x = 0$	D $x = 1$	E $x = 6$
1	$x^2 - 36 = 0$	◯	◯	◯	◯	◯
2	$x^2 = 6x$	◯	◯	◯	◯	◯
3	$x^2 = 5x + 6$	◯	◯	◯	◯	◯

00. The graphs of $f(x) = -|-2x| + 3$ and $g(x) = 1.2x - 0.2$ are shown.

What are the solutions to $f(x) = g(x)$?

Select the **two** correct answers.

A. -5

B. -4

C. 0

D. 1

E. 3

00. The graph below shows the revenue, *r*, a landscaping contractor earns for each hour worked, *h*.
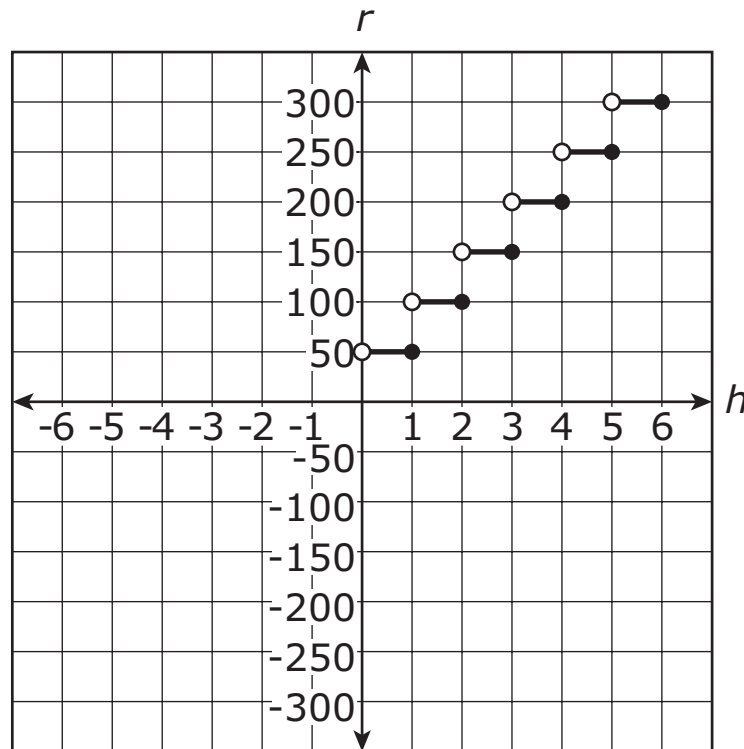
Which statements are true about the contractor's business based on the domain of this graph?

Select the **two** correct answers.

A. The contractor only works in whole integer hours.

B. The contractor earns at least $50 in revenue per job.

C. The contractor does not work less than one hour at a time.

D. The range of the graph of the function is all positive integers.

E. The domain of the graph of the function is all positive real numbers.

00. Given: $f(x) = 4^x$ $g(x) = f(x) + 5$

Which statement is true about the graphs of $f(x)$ and $g(x)$?

A. The graph of $f(x)$ is shifted 5 units up from the graph of $g(x)$.

B. The graph of $g(x)$ is shifted 5 units up from the graph of $f(x)$.

C. The graph of $f(x)$ is shifted 5 units to the right of the graph of $g(x)$.

D. The graph of $g(x)$ is shifted 5 units to the right of the graph of $f(x)$.

00. The number of teams remaining in a tournament decreases as each round of the tournament is completed. The function $T(x) = 256(1 - b)^x$ models the total number of teams remaining after x rounds.

Which statement about the function is true?

A. The number 256 represents the decay rate of the function.

B. The number 256 represents the growth rate of the function.

C. The expression $1 - b$ represents the decay rate of the function.

D. The expression $1 - b$ represents the growth rate of the function.

00. A company began selling a new type of phone last year. The table shows the number of phones the company sold with respect to the number of weeks since the company began selling the new type of phone.

Phone Sales

Number of Weeks Since the Release	Number of Phones Sold
1	500
2	750
3	1,200
4	1,590
5	2,750
6	3,180
7	7,250
8	8,130
9	13,460
10	24,780
11	33,450

Which equation **best** models the relationship between the number of phones sold, y, with respect to the number of weeks since the company began selling the new type of phone, x?

A. $y = 250x + 250$

B. $y = 250x + 500$

C. $y = 320(0.5)^x$

D. $y = 320(1.5)^x$

00. Suppose the relationship between daily low temperature x, in Celsius, and daily sales at a frozen yogurt shop, y, can be modeled by the equation $y = 1100 + 35x$.

Which statements about the relationship between temperature and sales are true?

Select the **two** correct answers.

A. If the low temperature increases by 1 degree, then sales are expected to increase by $35.

B. If the low temperature increases by 1 degree, then sales are expected to increase by $1,100.

C. If the low temperature increases by 1 degree, then sales are expected to increase by $1,135.

D. If the low temperature is 0 degrees, then sales are expected to be $1,100.

E. If the low temperature is 0 degrees, then sales are expected to be $35.

F. If the low temperature is 0 degrees, then sales are expected to be $1,135.

Metadata- Math

Items

Page Number	UIN	Grade	Item Type	Key	DOK	TN Standards	Calculator
1	TN154175	Algebra 1	MC	C	2	A1.N.Q.A.1.c	Y
2	TN0001585_P	Algebra 1	MS	A, C, F, G	2	A1.A.SSE.A.1.a	N
3	T1A03S066	Algebra 1	MC	B	2	A1.A.APR.A.1	N
4	TN0032855_P	Algebra 1	MS	A, E, H, J, L, O	2	A1.A.REI.B.3.a	Y
5	TN0080795	Algebra 1	MS	B,D	1	A1.A.REI.D.6	N
6	TN516645	Algebra 1	MS	B,E	2	A1.F.IF.B.5	Y
7	TN0076292	Algebra 1	MC	B	1	A1.F.BF.B.2	N
8	T1A04S657	Algebra 1	MC	C	2	A1.F.LE.B.3	N
9	T1A03S649	Algebra 1	MC	D	2	A1.S.ID.B.4	Y
10	TN448198	Algebra 1	MS	A,D	2	A1.S.ID.C.5	Y

Metadata Definitions:

UIN	Unique letter/number code used to identify the item.
Grade	Grade level or Course.
Item Type	Indicates the type of item. MC= Multiple Choice; MS= Multiple Select; FIB = Fill-in-the-blank
Key	Correct answer.
DOK	Depth of Knowledge (cognitive complexity) is measured on a three-point scale. 1 = Recall or simple reproduction of information; 2 = Skills and concepts: comprehension and processing of text; 3 = Strategic thinking, prediction, elaboration.
TN Standards	Primary educational standard assessed.
Calculator	Y for items that permit calculator use.

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