Tennessee Comprehensive Assessment Program

TCAP

Algebra I
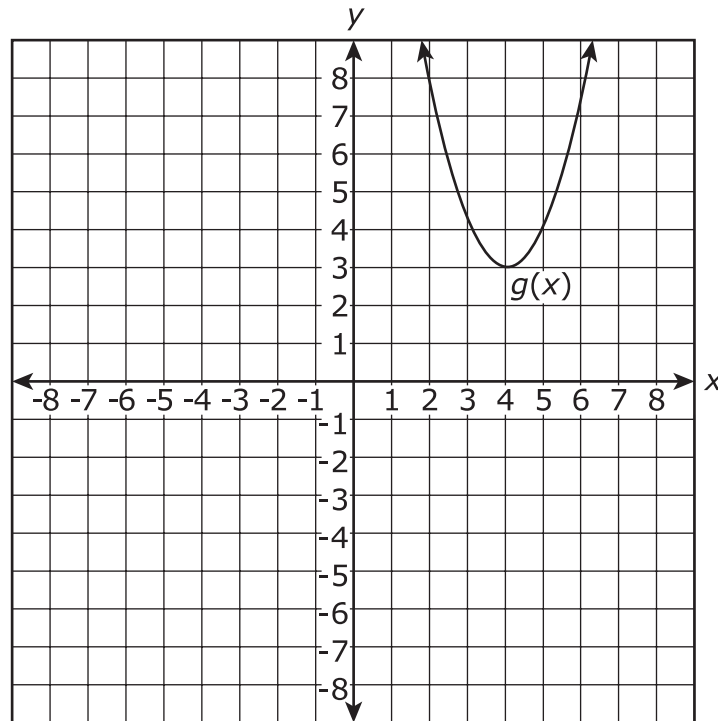## Item Release

Spring 2021

TN Department of Education

00. What is the domain of the graphed function?
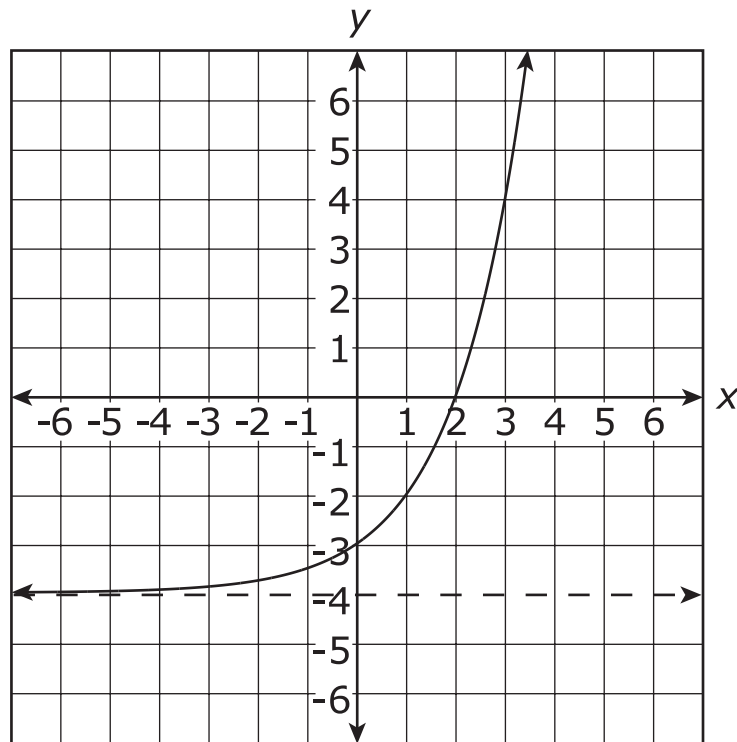
A. all real values

B. all real values except −4

C. all real values greater than −4

D. all real values less than 4

00. Function $f(x)$ is represented algebraically, and function $g(x)$ is represented graphically.

$$f(x) = -\frac{1}{4}x + 4$$

Which statement about these two functions is true?

A. $f(x)$ and $g(x)$ will never intersect.

B. $f(x)$ and $g(x)$ have the same minimum value.

C. $f(x)$ and $g(x)$ have the same value for $x = 4$.

D. $f(x)$ and $g(x)$ both have negative values in the range.

00. Function $f(x)$ is shown.

$$f(x) = (x^2 - 49)(x^2 + 6x + 9)$$

What are the zeros of the function $f(x)$?

A. 3, 7

B. -3, 3, 7

C. -7, -3, 7

D. -7, -3, 3, 7

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00. Mr. Kelly buys a total of 40 boxes of pens and pencils for his class. Each box of pens costs $5. Each box of pencils costs $2. Mr. Kelly spends a total of $131 on the pens and pencils.

Which equations form a system of equations that can be used to determine the number of boxes of pens, x, and the number of boxes of pencils, y, that Mr. Kelly buys? Select **two** correct answers.

A. $x + y = 40$

B. $x + y = 131$

C. $5x + 2y = 40$

D. $2x + 5y = 40$

E. $5x + 2y = 131$

F. $2x + 5y = 131$

00. A park has too many resident geese. The park rangers post signs one year asking the public to stop feeding the 500 resident geese. After the signs are posted, the resident geese population decreases by 3% each year since some geese fly to a different location with more food.

Which function models the resident geese population after x years?

A. $p(x) = 500(0.03)^x$

B. $p(x) = 500(0.97)^x$

C. $p(x) = 500 + 0.03x$

D. $p(x) = 500 + 0.97x$

00. Which equation could be used to find the intersection of the graphs of $y = 4x^2 - 5x + 3$ and $y = 3^x$?

A. $3^x = 0$

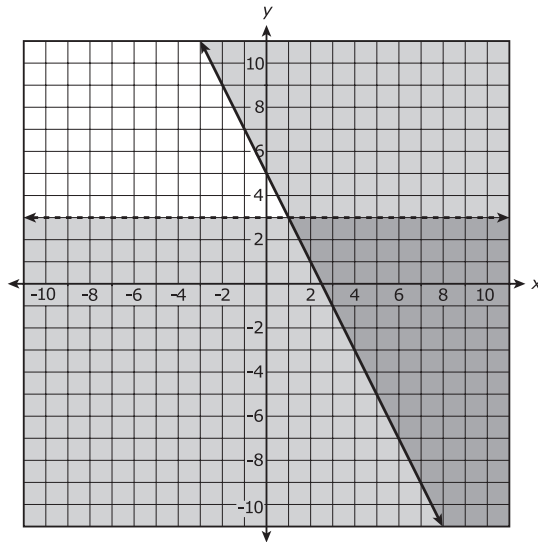**B.** $0 = 4x^2 - 5x + 3$

C. $4x^2 - 5x + 3 = 3$

D. $3^x = 4x^2 - 5x + 3$

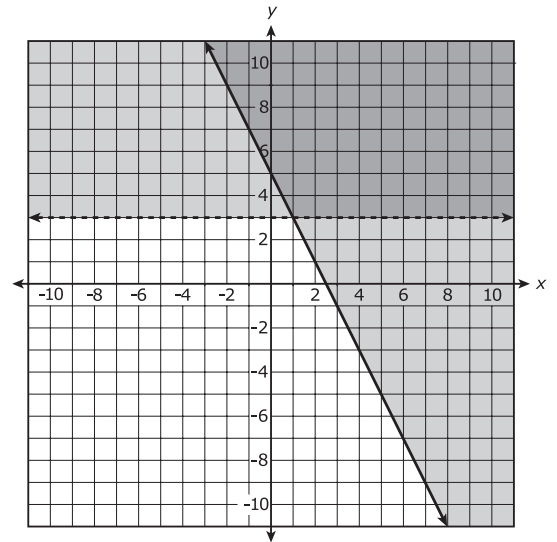**00.** Consider this system of inequalities.

$$\begin{cases} 3 < y \\ y \geq -2x + 5 \end{cases}$$
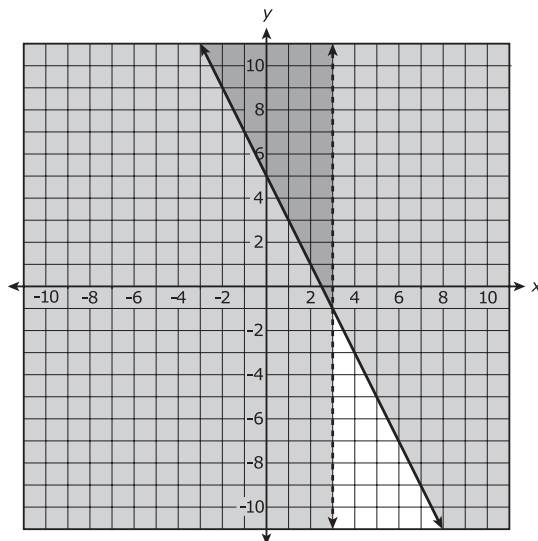
Which coordinate plane shows the system of inequalities?

A.

C.

B.

D.

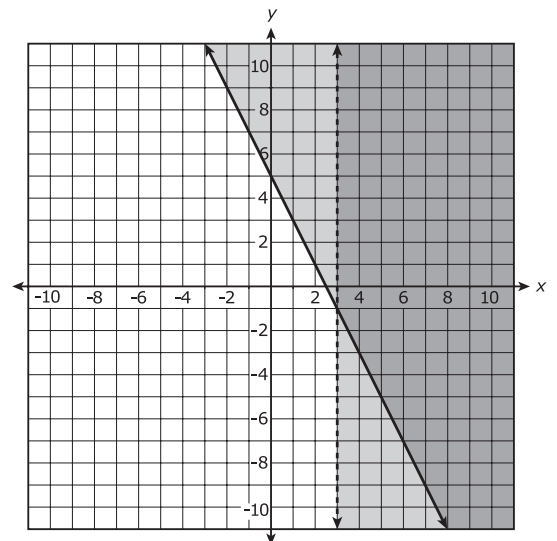**00.** Concert tickets cost $3 for students and $5 for adults. There are *s* student tickets sold and *n* adult tickets sold.

Which expression represents the total number of concert tickets sold?

A. $s + n$

B. $3s + 5n$

C. $\dfrac{s}{3} + \dfrac{n}{5}$

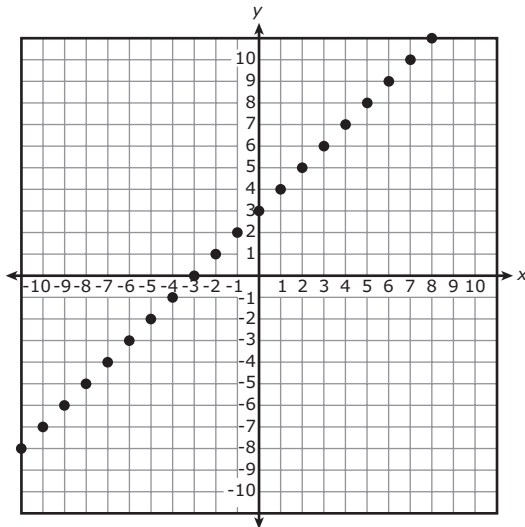**D.** $\dfrac{s}{5} + \dfrac{n}{3}$

00. An equation is shown.

$$y = x^2 + 3$$

Which graph correctly represents all the solutions to the equation?

A.

C.
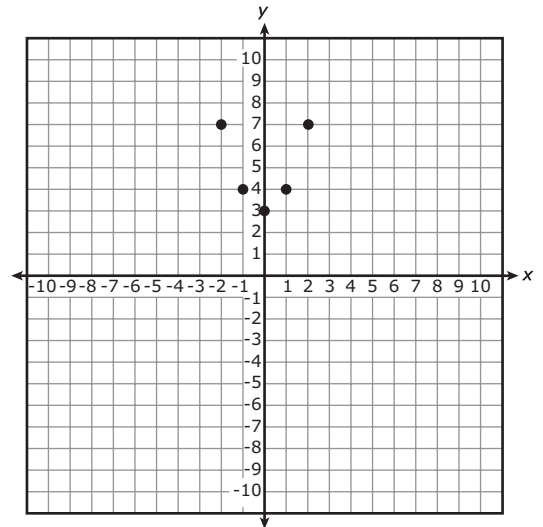
B.
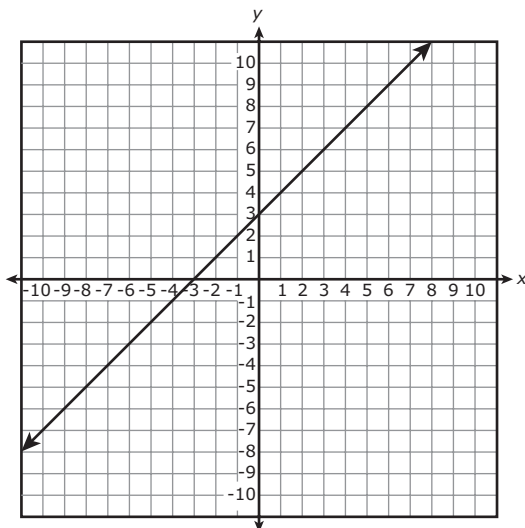
D.
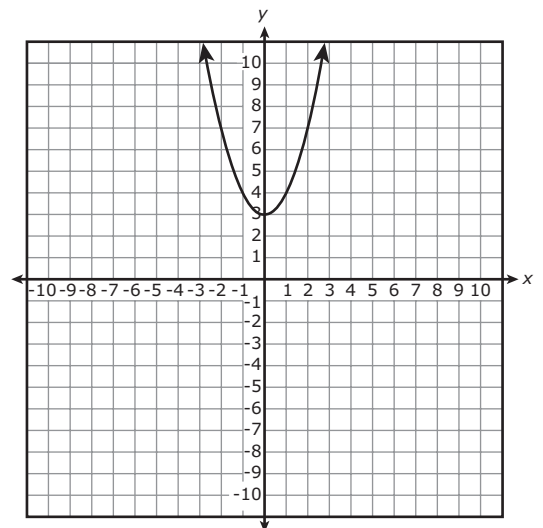
00. Which **two** values could represent a strong, but not exact, correlation coefficient?

    A. -1

    B. -0.8

    C. -0.2

    D. 0.3

    E. 0.9

    F. 1

00. An expression is shown.

$$(x^2 - 3x + 12) + (x^2 - 4)$$

Which expression is equivalent to the expression shown?

A. $x^2 - 3x + 8$

B. $x^2 - 7x + 12$

C. $2x^2 - 3x + 8$

D. $2x^2 - 7x + 12$

00. Solve: $6 - 4(2x - 1) = -9$

A. $x = \dfrac{1}{8}$

B. $x = \dfrac{7}{4}$

C. $x = \dfrac{11}{8}$

D. $x = \dfrac{19}{8}$

00. Which expression is equivalent to the expression shown?

$$17(52 + 18) + 41(35 + 35)$$

A. $17(41)(70)$

B. $(17 + 41)70$

C. $(17 + 41)(52 + 18)(35 + 35)$

D. $(17 + 41) + (52 + 18) + (35 + 35)$

00. The table contains data regarding the number of high school graduates and the number of high school graduates enrolled in college in the United States between 2010 and 2016.

U.S. High School Graduates and College Enrollees (in millions)

	2010	2011	2012	2013	2014	2015	2016
High School Graduates (in millions)	3.2	3.1	3.2	3.0	2.9	3.0	3.1
Graduates Enrolled in College (in millions)	2.2	2.1	2.1	2.0	2.0	2.1	2.2

Which function best represents the set of data where x represents the number of high school graduates, in millions, and $f(x)$ represents the number of high school graduates enrolled in college?

A. $f(x) = 0.54x + 0.45$

B. $f(x) = 0.45x + 0.54$

C. $f(x) = 1x + 0.97$

D. $f(x) = 0.97x + 1$

00. Which function has the greatest value for $x = 20$?

A.

x	f(x)
0	0
1	5
2	10
3	15
4	20

C.

x	h(x)
0	0
1	1
2	8
3	27
4	64

B.

x	g(x)
0	0
1	1
2	4
3	9
4	16

D.

x	p(x)
0	1
1	2
2	4
3	8
4	16

00. The box plot summarizes the number of books eight friends read over the summer.

Summer Reading

Number of Books Read
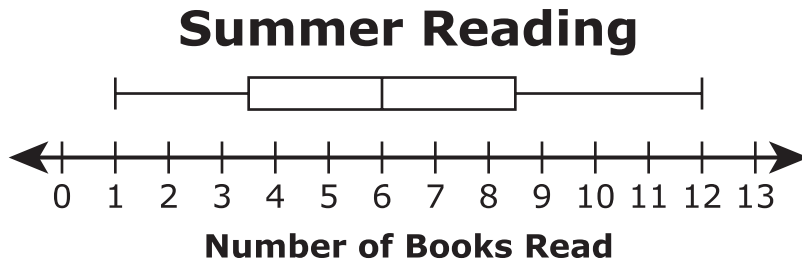
Which data sets could represent the number of books the eight friends read over the summer?

Select **two** data sets.

A. {1, 3, 4, 5, 7, 8, 9, 12}

B. {1, 2, 4, 6, 6, 9, 9, 12}

C. {2, 2, 4, 5, 7, 8, 9, 12}

D. {1, 2, 5, 6, 6, 7, 10, 12}

E. {1, 2, 5, 5, 6, 8, 10, 12}

Metadata- Math

Items

Page Number	UIN	Grade	Item Type	Key	DOK	TN Standards	Calculator
4	TN0001604	Algebra I	MC	A	2	A1.F.IF.B.4	Y
5	TN0001607	Algebra I	MC	C	3	A1.F.IF.C.8	N
6	TN0017742	Algebra I	MC	C	2	A1.A.APR.B.2	N
7	TN0017744	Algebra I	MS	A,E	2	A1.A.CED.A.3	N
8	TN0018361	Algebra I	MC	B	2	A1.F.BF.A.1a	Y
9	TN0025888	Algebra I	MS	D	1	A1.A.REI.D.6	Y
10	TN0026282	Algebra I	MC	C	1	A1.A.REI.D.7	Y
11	TN0031369	Algebra I	MS	A	2	A1.A.SSE.A.1a	N
12	TN0032137	Algebra I	MC	D	1	A1.A.REI.D.5	Y
13	TN0032166	Algebra I	MC	B,E	1	A1.S.ID.C.6	Y
14	TN0032847	Algebra I	MC	C	1	A1.A.APR.A.1	N
15	TN0063006	Algebra I	MC	D	2	A1.A.REI.B.2	Y
16	TN0069120	Algebra I	MC	B	2	A1.A.SSE.A.2	N
17	TN0069429	Algebra I	MC	A	2	A1.S.ID.B.4a	Y
18	TN0069566	Algebra I	MC	D	3	A1.F.LE.A.3	Y
19	TN0082737	Algebra I	MC	A,D	1	A1.S.ID.A.1	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
Key	Correct answer. This may be blank for constructed response items where students write or type their responses.
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.