MATH ASSESSMENT PROGRAM

8TH GRADE

UEFA EURO 2024 GERMANY

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MCAP

LIDL

PARCC
Partnership for Assessment of
Readiness for College and Careers

New York State
EDUCATION DEPARTMENT
Knowledge ❯ Skill ❯ Opportunity

New York State Testing Program
Grade 8
Mathematics Test

Released Questions

2021

New York State administered the Mathematics Tests in May 2021 and is now making the questions from Session 1 of these tests available for review and use. Only Session 1 was required in 2021.

New York State Testing Program
Grades 3–8 Mathematics

Released Questions from 2021 Tests

Background

In 2013, New York State (NYS) began administering tests designed to assess student performance in accordance with the instructional shifts and rigor demanded by the new New York State P–12 Learning Standards in Mathematics. To help in this transition to new assessments, the New York State Education Department (NYSED) has been releasing an increasing number of test questions from the tests that were administered to students across the State in the spring. This year, SED is again releasing 2021 NYS Grades 3–8 English Language Arts and Mathematics test materials for review, discussion, and use.

In February 2021, with the ongoing COVID-19 pandemic still forcing restrictions on all educational and learning activities statewide, NYSED submitted two federal waiver requests related to state assessment and accountability requirements. The waiver requests addressed the unique circumstances caused by the pandemic that have resulted in many students receiving some or all of their instruction remotely.

Later that month, the United States Department of Education (USDE) informed states that it would not grant a blanket waiver for state assessments. However, the USDE agreed to uncouple state assessments from the Every Student Succeeds Act (ESSA) accountability requirements so that test results will be used solely as a measure of student learning. Additionally, it was decided that NYSED would administer only Session 1 of the Grades 3–8 ELA and Mathematics Tests for the Spring 2021 administration and that the tests would include previously administered questions.

The decision to use previously administered test questions in this extraordinary year was based on guidance from nationally recognized experts in the assessment field and was recommended in a [publication](#) from the Council of Chief State School Officers to state education departments. Reusing test questions provided the benefit of having established scale scores and stable item parameters. Using previously administered test questions also ensured that it will be possible to develop new test forms for 2022 and beyond. Although it was not the driver of the decision, the reuse of previously administered test questions provided an opportunity for cost savings during these unique circumstances where the instructional models used by schools varied throughout the State.

For 2021, the entire Session 1 booklet is being released as this is all that students were required to take. Additionally, NYSED is providing a map that details what learning standards each released question measures, and the correct response to each question. These released materials will help students, families, educators, and the public better understand the tests and NYSED's expectations for students.

Understanding Math Questions

Multiple-Choice Questions

Multiple-choice questions are designed to assess the New York State P–12 Learning Standards for Mathematics. Mathematics multiple-choice questions will be used mainly to assess standard algorithms and conceptual standards. Multiple-choice questions incorporate both the grade-level standards and the "Standards for Mathematical Practices." Many questions are framed within the context of real-world applications or require students to complete multiple steps. Likewise, many of these questions are linked to more than one standard, drawing on the simultaneous application of multiple skills and concepts.

New York State P–12 Learning Standards Alignment

The alignment to the New York State P–12 Learning Standards for Mathematics is intended to identify the primary analytic skills necessary to successfully answer each question. The released questions do not represent the full spectrum of the standards assessed on the State tests, nor do they represent the full spectrum of how the standards should be taught and assessed in the classroom. It should not be assumed that a particular standard will be measured by an identical question in future assessments. Specific criteria for writing test questions, as well as additional assessment information, are available at http://www.engageny.org/common-core-assessments.

Name:_____

New York State Testing Program

Mathematics Test
Session 1

Grade 8

v202

Released Questions

Grade 8 Mathematics Reference Sheet

CONVERSIONS

1 inch = 2.54 centimeters

1 meter = 39.37 inches

1 mile = 5,280 feet

1 mile = 1,760 yards

1 mile = 1.609 kilometers

1 kilometer = 0.62 mile

1 pound = 16 ounces

1 pound = 0.454 kilogram

1 kilogram = 2.2 pounds

1 ton = 2,000 pounds

1 cup = 8 fluid ounces

1 pint = 2 cups

1 quart = 2 pints

1 gallon = 4 quarts

1 gallon = 3.785 liters

1 liter = 0.264 gallon

1 liter = 1,000 cubic centimeters

FORMULAS

|	
Triangle	$A = \frac{1}{2}bh$
Parallelogram	$A = bh$
Circle	$A = \pi r^2$
Circle	$C = \pi d$ or $C = 2\pi r$
General Prisms	$V = Bh$
Cylinder	$V = \pi r^2 h$
Sphere	$V = \frac{4}{3}\pi r^3$
Cone	$V = \frac{1}{3}\pi r^2 h$
Pythagorean Theorem	$a^2 + b^2 = c^2$

TIPS FOR TAKING THE TEST

Here are some suggestions to help you do your best:

- Read each question carefully and think about the answer before making your choice.

- You have been provided with mathematics tools (a ruler, a protractor, and a calculator) and a reference sheet to use during the test. It is up to you to decide when each tool and the reference sheet will be helpful. You should use mathematics tools and the reference sheet whenever you think they will help you to answer the question.

1 Which graph represents a linear function of x?

A

C

B

D
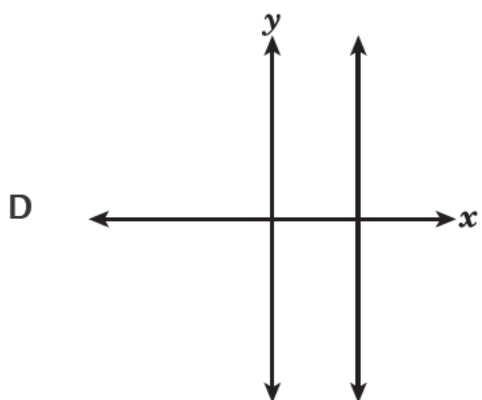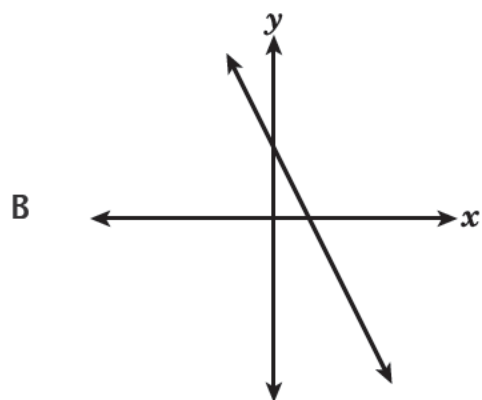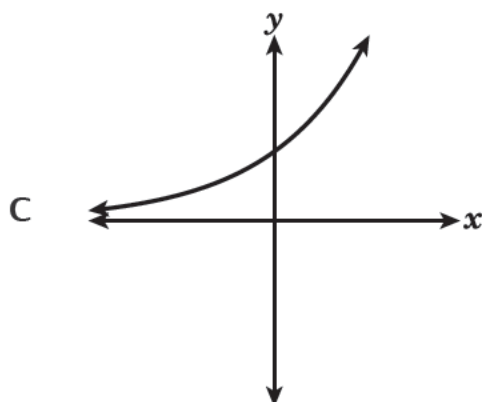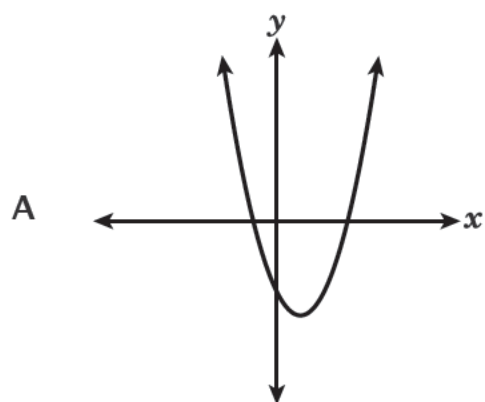
2 What is the value of the expression shown below?

$$\frac{1.6 \times 10^5}{0.2 \times 10^2}$$

A $\quad 0.8 \times 10^3$

B $\quad 8 \times 10^3$

C $\quad 0.8 \times 10^7$

D $\quad 8 \times 10^7$

GO ON

3 At a factory, the cost of making different numbers of toothbrushes is shown in the table below.

COST OF TOOTHBRUSHES

Number of Toothbrushes	3	6	9	12
Cost (dollars)	$4.50	$9.00	$13.50	$18.00

A linear function models the cost based on the number of toothbrushes made. Which statement about the rate of change of this function is true?

A The cost increases by $1.50 for each additional toothbrush made.

B The cost increases by $4.50 for each additional toothbrush made.

C The cost increases by $9.00 for each additional 3 toothbrushes made.

D The cost increases by $18.00 for each additional 3 toothbrushes made.

4 A company makes two different-sized ice cream cones. The smaller cones are 3.5 inches tall and have a diameter of 3 inches. The larger cones are 5.1 inches tall and have a diameter of 4.5 inches. About how much greater, to the nearest tenth of a cubic inch, is the volume of the larger cone than the volume of the smaller cone?

A 18.8

B 56.4

C 75.2

D 225.5

5 Chris and Sam earn money shoveling snow, as described below.

- The amount of money Chris earns can be modeled by the equation $y = 8.25x$, where y is the total amount of money, in dollars, earned in x hours.

- The table below shows the relationship between the total amount of money earned, y, in dollars, and the total amount of time worked, x, in hours, for Sam.

SAM'S EARNINGS

x	4	6	8
y	30	45	60

Which statement correctly compares the rates at which Chris and Sam earn money shoveling snow?

A Sam earns $0.75 more per hour than Chris.

B Chris earns $0.75 more per hour than Sam.

C Sam earns $0.25 more per hour than Chris.

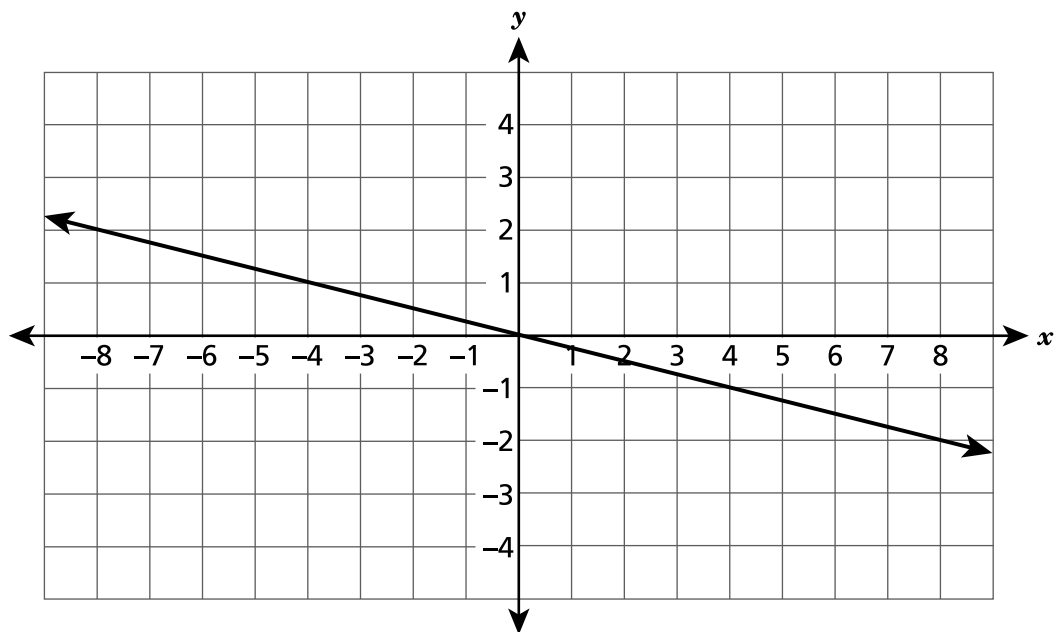**D** Chris earns $0.25 more per hour than Sam.

6 Which equation represents a function of x that is **not** linear?

A $y = 4(x + 3)$

B $y = 4^2 + 3x$

C $y = 4x + 3x^2$

D $y = \dfrac{4 + x}{3}$

GO ON

7 Which equation represents the line shown on the coordinate plane below?

A $y = 4x$

B $y = -4x$

C $y = \dfrac{1}{4}x$

D $y = -\dfrac{1}{4}x$

8 The closest distance between Earth and Mars is approximately 3.39×10^7 miles. The fastest rocket leaving Earth travels at an average speed of approximately 3.6×10^4 miles per hour. At that rate, which expression could be used to determine the approximate number of hours it would take the rocket to travel that distance?
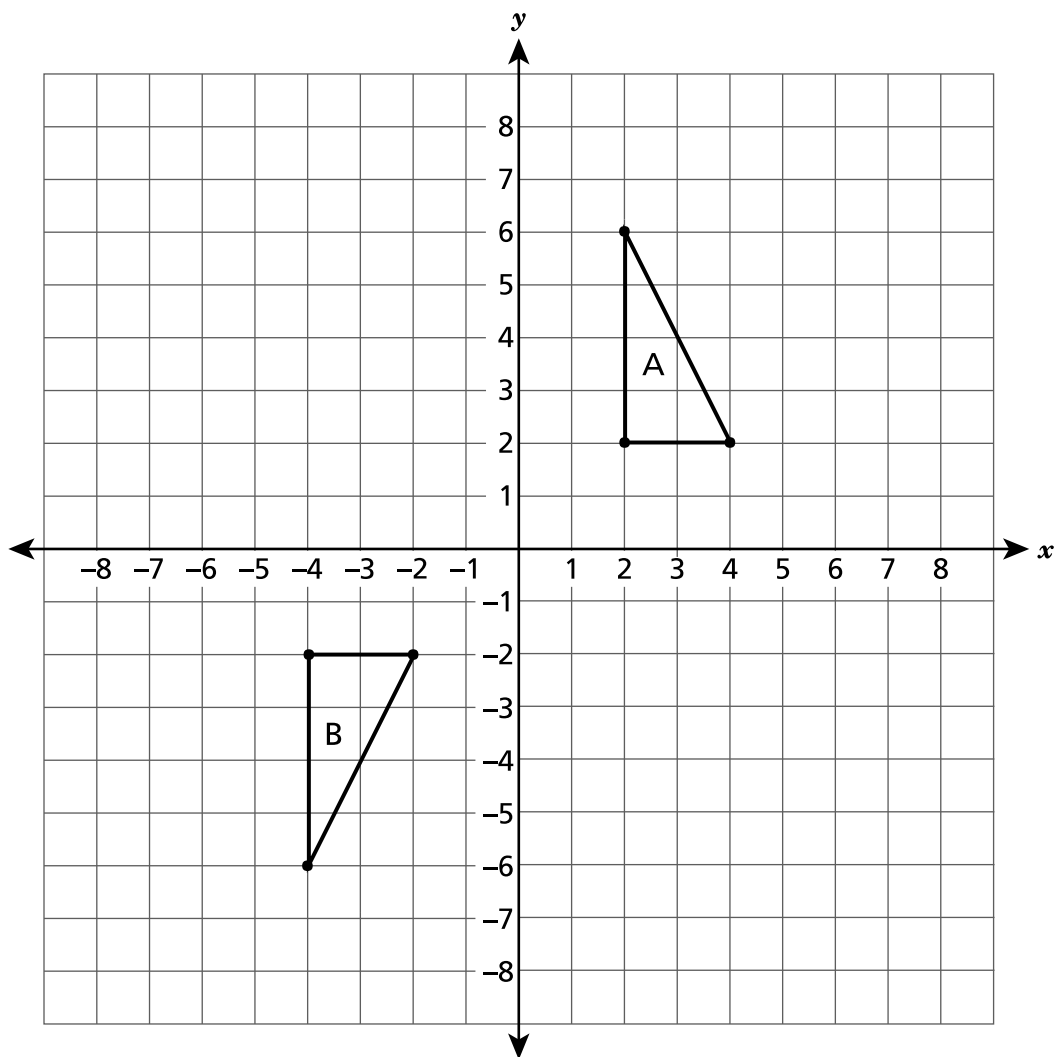
A $\left(3.39 \times 10^7\right) - \left(3.6 \times 10^4\right)$

B $\left(3.6 \times 10^4\right) - \left(3.39 \times 10^7\right)$

C $\left(3.39 \times 10^7\right) \div \left(3.6 \times 10^4\right)$

D $\left(3.6 \times 10^4\right) \div \left(3.39 \times 10^7\right)$

GO ON

9 Triangle A and triangle B are graphed on the coordinate plane below.

Which sequence of transformations will map triangle A onto its congruent image, triangle B ?

A a reflection over the x-axis, then a reflection over the y-axis

B a translation 8 units down, then a reflection over the y-axis

C a reflection over the x-axis, then a translation 6 units to the left

D a rotation $90°$ clockwise about the origin, then a translation 6 units to the left
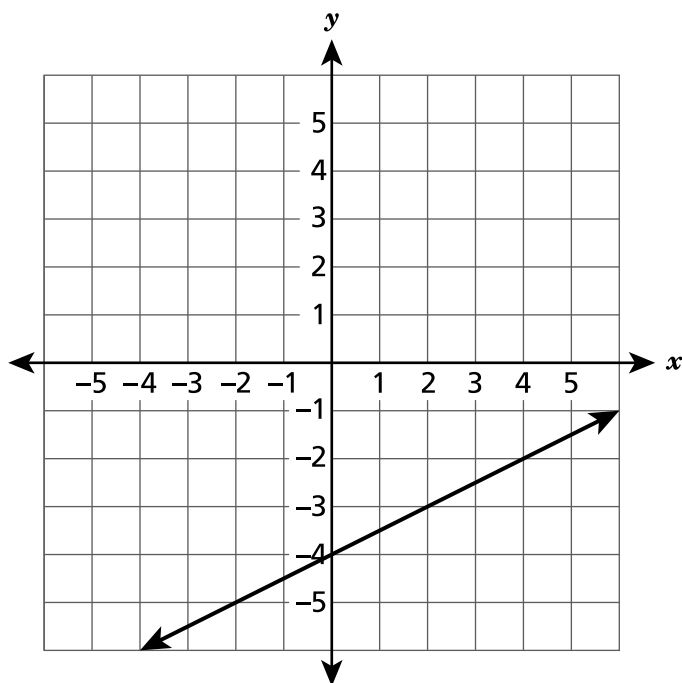
10 Which system of equations has no solution?

A $\begin{cases} 3x + 4y = 5 \\ 6x + 8y = 10 \end{cases}$

B $\begin{cases} 7x - 2y = 9 \\ 7x - 2y = 13 \end{cases}$

C $\begin{cases} 2x - y = -11 \\ -2x + y = 11 \end{cases}$

D $\begin{cases} 3x + 6y = 1 \\ x + y = 0 \end{cases}$

GO ON

11 A line is graphed on the coordinate plane below.

Line $y = -x + 2$ will be graphed on the same coordinate plane to create a system of equations. What is the solution to that system of equations?

A $(-2, 4)$

B $(0, -4)$

C $(2, -4)$

D $(4, -2)$

GO ON

Session 1

Page 9

12 Linear function K passes through points $(-3, 7)$ and $(3, 3)$. What is the rate of change of function K?
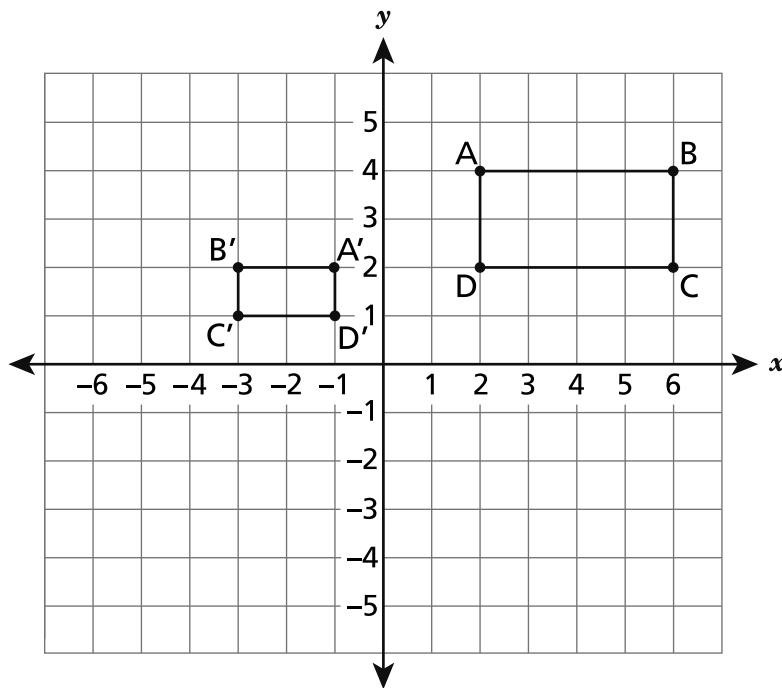
A $-\dfrac{3}{2}$

B $-\dfrac{2}{3}$

C $\dfrac{3}{2}$

D $\dfrac{2}{3}$

GO ON

Session 1

13 Rectangle $A'B'C'D'$ is similar to rectangle $ABCD$, as shown on the coordinate plane below.

Which sequence of transformations maps rectangle $ABCD$ onto rectangle $A'B'C'D'$?

A a translation 8 units to the left, then a dilation by a scale factor of $\dfrac{1}{2}$ with a center of dilation at the origin

B a reflection over the y-axis, then a dilation by a scale factor of $\dfrac{1}{2}$ with a center of dilation at the origin

C a dilation by a scale factor of $\dfrac{1}{2}$ with a center of dilation at the origin, then a $90°$ counterclockwise rotation about the origin

D a $90°$ counterclockwise rotation about the origin, then a dilation by a scale factor of $\dfrac{1}{2}$ with a center of dilation at the origin

GO ON

14 Patty has a flower box in the shape of a rectangular prism with interior dimensions that

are 15 inches in length, 8 inches in width, and 6 inches in height. Patty will fill the

flower box $\dfrac{3}{4}$ full of soil. How many cubic inches of soil will be in the flower box?

A   387

B   516

C   540

D   720

15 On a coordinate plane, the graph of a line passes through the origin and the
point $(10, 14)$. What is the equation of the line?

A $y = \dfrac{5}{7}x$

B $y = \dfrac{7}{5}x$

C $y = x + \dfrac{5}{7}$

D $y = x + \dfrac{7}{5}$

GO ON

16 Which statement about the solution to the equation shown below is true?

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

A   There is no solution.

B   There is only one solution, $x = -1$.

C   There is only one solution, $x = -9$.

D   There are an infinite number of solutions.

17 A study was conducted to determine the relationship between the age, x, in years, of a certain brand of motorcycle and its value, y, in dollars. The equation $y = -750x + 8{,}500$ best models the data. Based on the equation, what is the estimated value of a motorcycle that is 5 years old?

A $3,750

B $4,750

C $7,750

D $12,250

18 Which statement **best** describes the data in a scatter plot where the y-values are decreasing as the x-values are increasing?

A   The data can best be modeled by a vertical line.

B   The data can best be modeled by a horizontal line.

C   The data can best be modeled by a line with a positive slope.

D   The data can best be modeled by a line with a negative slope.

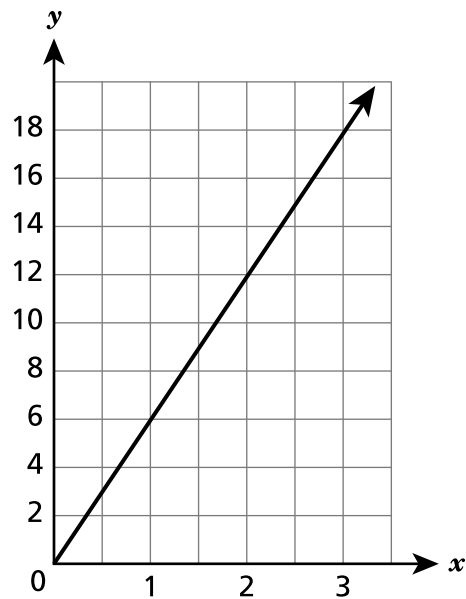**19** Which proportional relationship has the greatest rate of change?

A $y = 7x$

C

x	y
0	0
2	8
4	16
6	24

B The value of y increases by 12 for every increase of 4 in the value of x.

D

20 A flower vase is in the shape of a cylinder and has a diameter of 5 inches and a height of 7 inches. Which equation could be used to determine the volume, in cubic inches, of the vase?

A $V = \pi(5)^2(7)$

B $V = \pi(7)^2(5)$

C $V = \pi(7)^2(2.5)$

D $V = \pi(2.5)^2(7)$

GO ON

Session 1

21 The planet Mercury is approximately 3.6×10^7 miles away from the sun, and the planet Jupiter is approximately 4.8×10^8 miles away. About how many times farther from the sun is planet Jupiter than planet Mercury?

A   1.3

B   7.5

C   13.3

D   17.3

22 Which expression is equivalent to $\left(5^{-2}\right)^5 \times 5^4$?

A 5^{12}

B 5^7

C $\dfrac{1}{5^6}$

D $\dfrac{1}{5^{40}}$

23 Linear functions M and P are shown below.

FUNCTION M

| x	y
–2	–9
0	1
2	11
4	21

FUNCTION P

$$y = 7x + 9$$

In comparing the rates of change, which statement about Function M and Function P is true?

A Their rates of change differ by 2.

B Their rates of change differ by 4.

C Function M has a greater rate of change than Function P.

D Function M and Function P have the same rate of change.

24 The scatter plot below shows the average number of customers who visit a food truck per day, depending on the number of days the food truck stays in the same location.

FOOD TRUCK CUSTOMERS
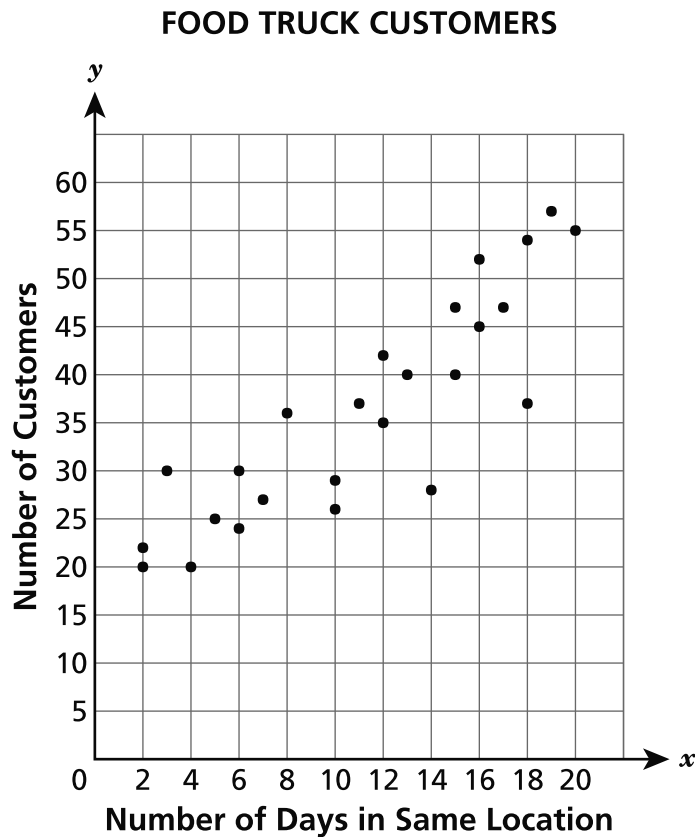
Which statement **best** describes the association between the number of days the food truck is in the same location and the number of customers who visit the food truck per day?

A There is no association.

B There is a nonlinear association.

C There is a positive linear association.

D There is a negative linear association.

GO ON

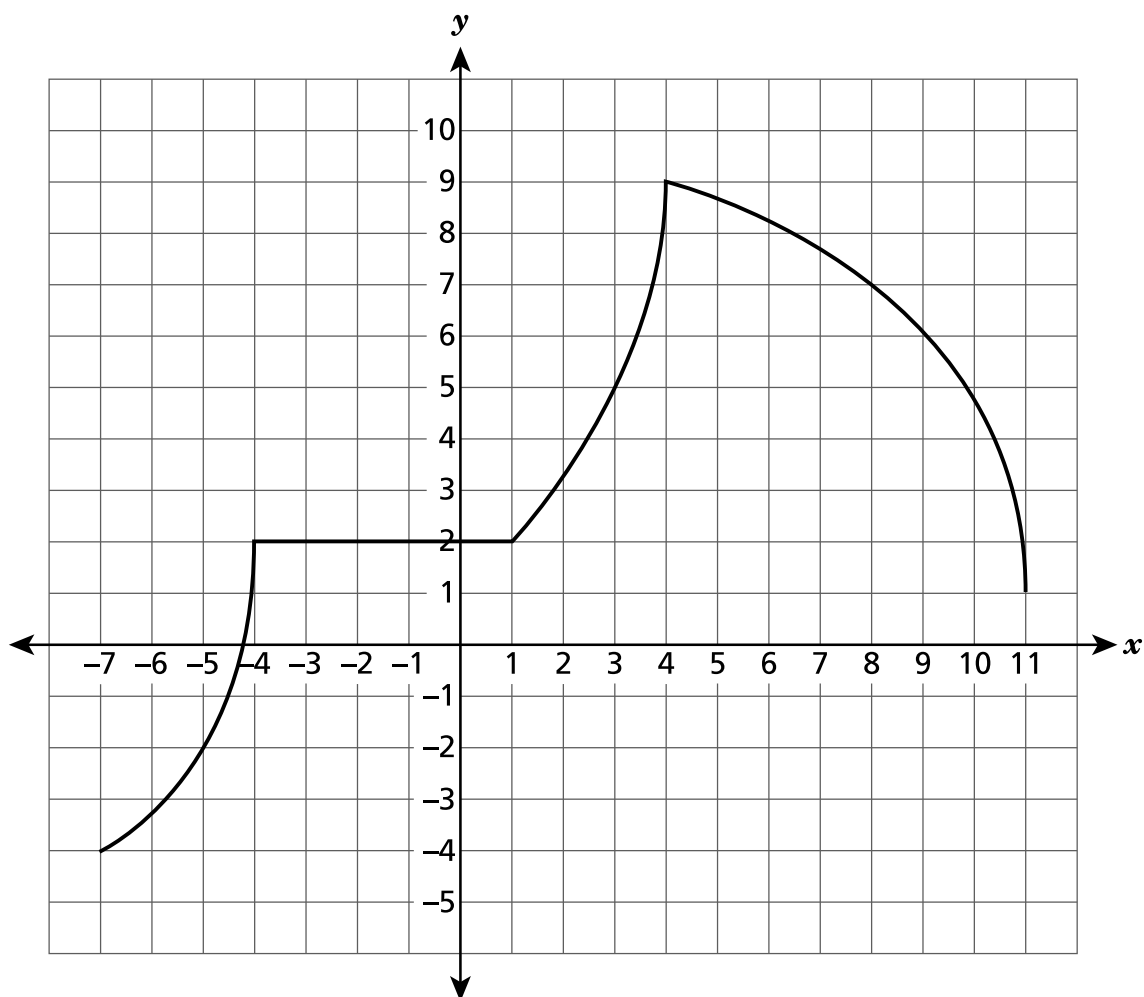**25** The measures of the angles in triangle UVW are shown in the diagram below.

U

$(3x - 9)°$

30°   24°

V   W
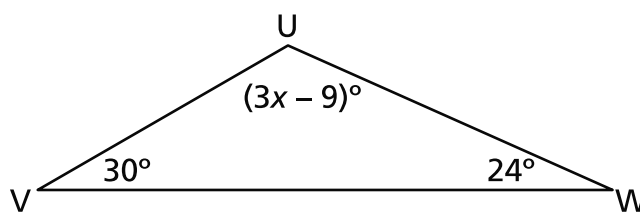
What is the value of x?

A   21

B   39

C   45

D   126

GO ON

26 The graph of a function is shown on the coordinate plane below.

Which statement correctly describes the function on a given interval?

A The function is decreasing and nonlinear between $x = -7$ and $x = -4$.

B The function is increasing and linear between $x = -4$ and $x = 1$.

C The function is increasing and linear between $x = 1$ and $x = 4$.

D The function is decreasing and nonlinear between $x = 4$ and $x = 11$.

BUKAYO SAKA

STERLING

WE GOT NOW
new balance

MANE

WE GOT NOW
new balance

SAKA

WE GOT NOW
new balance soccer