Sigma Prep

170 New SAT Math Questions

The November 2026 Question Bank update, in the same order as the video

63	45	43	19
Algebra	Advanced Math	Problem-Solving & Data	Geometry & Trig

How to use this: pause the video before each question, try it yourself, then watch how it's solved. Every question links to its answer, and every answer links back.
Stuck on any Question Bank problem? Type its ID at **sigmaprep.io/learn** to watch just that explanation.

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Answer key →

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Answer key →

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Answer key →

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NOVEMBER 2026 ADDITIONS

Algebra

36 Easy | 15 Medium | 12 Hard

SKILLS COVERED

- Linear equations in one variable
- Linear equations in two variables
- Linear functions
- Linear inequalities in one or two variables
- Systems of two linear equations in two variables

Algebra · Easy

1 Easy Linear equations in one variable · ID 4d56adc6 Answer ↓

If $8x = 320$, what is the value of $4x$?

A 640

B 320

C 316

D 160

2 Easy Linear equations in one variable · ID 764efb37 Answer ↓

$$70 - w = 30$$

What value of w is the solution to the given equation?

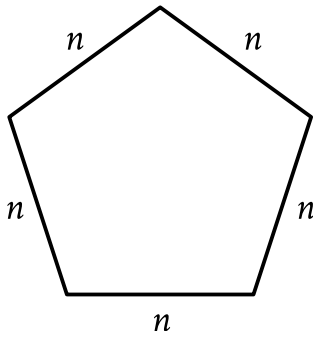
A -10

B 3

C 7

D 40

3 Easy Linear equations in one variable · ID 0118f060 Answer ↓



The perimeter of the pentagon is 80 feet, and each side has length n feet. Which equation gives the perimeter in terms of n?

A $80 = \frac{n}{5}$

B $80 = 5n$

C $80 = n - 5$

D $80 = n + 5$

4 Easy Linear equations in one variable · ID 4bac9af3 Answer ↓

Mara has read 120 pages of a 160-page research paper. On average, she reads 1 page every minute. At this rate, how much time, in minutes, will she spend reading the remaining pages of the research paper?

Student-produced response: enter your answer

5 Easy Linear equations in one variable · ID 87cc4d49 Answer ↓

$$1.3x = 1{,}300$$

What value of x is the solution to the given equation?

Student-produced response: enter your answer

6 Easy Linear equations in one variable · ID e3e5b02b Answer ↓

What value of p is the solution to the equation $18p - 19p = 10$?

A -10

B $-\frac{1}{10}$

C $\frac{1}{10}$

D 10

7 Easy Linear equations in two variables · ID 1a29a3c3 Answer ↓

$$x + y = 50$$

Each member of a 50-member sports team uses either field A or field B at a practice. The given equation represents the possible combinations of the number of members who use field A, x, and the number of members who use field B, y, for this practice. If at this practice 24 members use field A, how many members use field B?

A 24

B 25

C 26

D 50

8 Easy Linear equations in two variables · ID 3c3eeec0 Answer ↓

A lab technician combines 30 grams of compound A, 40 grams of compound B, and x grams of compound C. The resulting mixture has a mass of 130 grams. What is the value of x?

A 10

B 30

C 40

D 60

9 Easy Linear equations in two variables · ID 629a0e17 Answer ↓

x	y
27	1
27	2
27	3

For a linear relationship between x and y, the table gives three values of x and their corresponding values of y. Which equation represents this relationship?

A $x = -27$

B $x = 27$

C $y = -27$

D $y = 27$

10 Easy Linear equations in two variables · ID 5d8c790a Answer ↓

During a 6-day period, a woman purchased a total of 3.7 liters of bottled water. During this period, the woman purchased n liters of bottled sparkling water and p liters of bottled still water. Which equation represents this situation?

A $n + p = 3.7$

B $n - p = 3.7$

C $p - n = 3.7$

D $np = 3.7$

11 Easy Linear equations in two variables · ID 69c49da1 Answer ↓

$$60x + 36y = 720$$

Ben saved $\$60$ each week for x weeks, and Stacy saved $\$36$ each week for y weeks. The given equation represents this situation, where Ben and Stacy saved a total of $\$720$. If Ben saved for 6 weeks, for how many weeks did Stacy save?

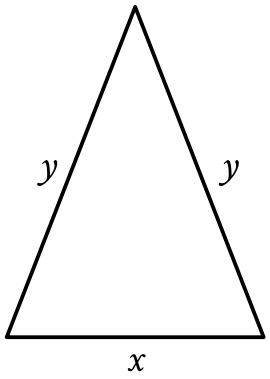
A 10

B 12

C 20

D 60

12 Easy Linear equations in two variables · ID b837de6a Answer ↓



Note: Figure not drawn to scale.

The triangle shown has one side with a length of x inches and two sides each with a length of y inches. The perimeter of the triangle is 23 inches. Which equation represents this situation?

A $x + y = 23$

B $x + 2y = 23$

C $2x + y = 23$

D $2x + 2y = 23$

13 Easy Linear equations in two variables · ID babbaa4c Answer ↓

Line v is defined by $y = 2x + 5$. Line w is perpendicular to line v in the *xy*-plane. What is the slope of line w?

A $-\frac{1}{2}$

B $-\frac{1}{3}$

C $-\frac{1}{5}$

D $-\frac{1}{7}$

14 Easy Linear equations in two variables · ID e3d9aacc Answer ↓

The *y*-intercept of the graph of $5x + 3y = -27$ in the *xy*-plane is $(0, y)$. What is the value of y?

Student-produced response: enter your answer

15 Easy Linear functions · ID 904b9c89 Answer ↓

If $y = 4x + 10$, what is the value of y when $x = 3$?

A 17

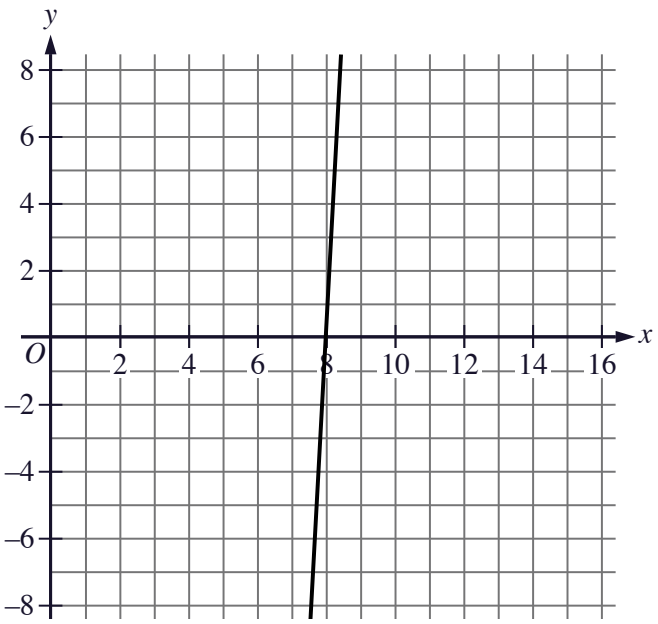
B 22

C 34

D 43

16 Easy Linear functions · ID dae59626

Answer ↓



At what point does the line graphed cross the *x*-axis?

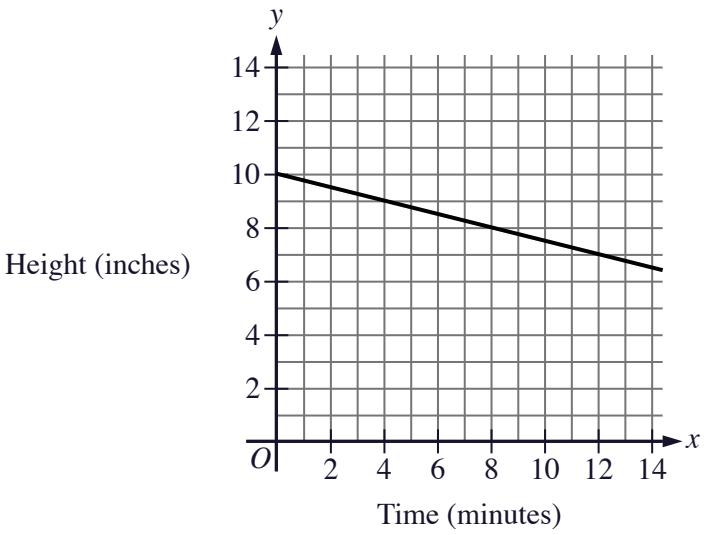
A $(8, 0)$

B $\left(\frac{1}{8}, 0\right)$

C $\left(-\frac{1}{8}, 0\right)$

D $(-8, 0)$

17 Easy Linear functions · ID 197e1c77 Answer ↓



The function h models the height, in inches, of the remaining water level in a tank as a function of the time x, in minutes, after the water began to drain. The graph of $y = h(x)$ is shown. According to the model, what was the height, in inches, of the remaining water level 12 minutes after the water began to drain?

A 4

B 7

C 8

D 10

18 Easy Linear functions · ID 1fe09f90 Answer ↓

The function f is defined by $f(x) = 9x + 21$. What is the value of $f(x)$ when $x = 1$?

Student-produced response: enter your answer

19 Easy Linear functions · ID 4a80d71f Answer ↓

The length of a crystal formation was estimated to be 270 centimeters at the beginning of a study. The length of this crystal formation was estimated to increase at a rate of 9 centimeters per year. What was the estimated length, in centimeters, of this crystal formation 10 years after the study began?

A 90

B 279

C 360

D $2{,}700$

20 Easy Linear functions · ID 7cb1150f Answer ↓

The equation $d = 29w + 100$ gives the total amount of money, d, in dollars, that Lorie has in a piggy bank w weeks after she starts to save. What is the total amount of money, in dollars, Lorie has in the piggy bank 10 weeks after she starts to save?

A 340

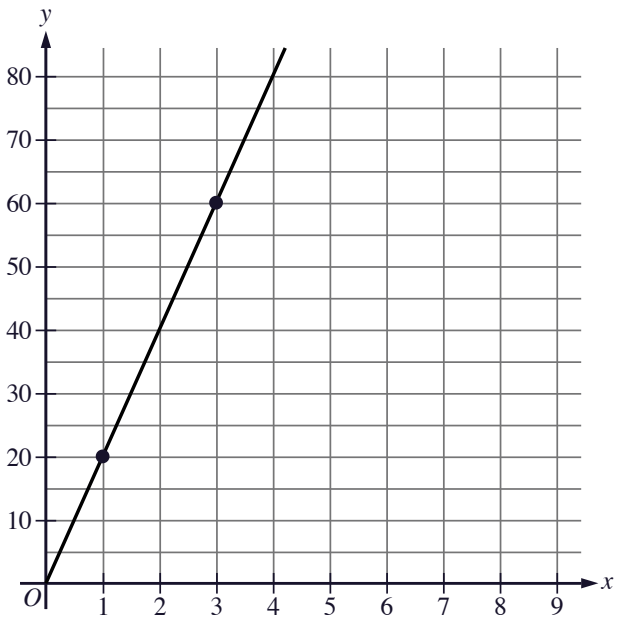
B 390

C 440

D 490

21 Easy Linear functions · ID cf2b40db

Answer ↓



The graph shows the relationship between two variables, x and y. If the value of x is 1, what is the value of y, to the nearest integer?

Student-produced response: enter your answer

22 Easy Linear functions · ID 1059a42a

Answer ↓

For the linear function g, the graph of $y = g(x)$ in the *xy*-plane has a slope of 37 and passes through the point $(0, 6)$. Which of the following equations defines g?

A $g(x) = \frac{37}{6}x$

B $g(x) = 6x + \frac{37}{6}$

C $g(x) = 37x + 6$

D $g(x) = 37x + 37$

23 Easy Linear functions · ID 141a0005 Answer ↓

$$h(x) = 5x + 6$$

For the given linear function h, which table gives three values of x and their corresponding values of $h(x)$?

A

x	$h(x)$
-1	1
0	6
1	10

B

x	$h(x)$
-1	1
0	6
1	11

C

x	$h(x)$
-1	11
0	5
1	-1

D

x	$h(x)$
-1	11
0	5
1	16

24 Easy Linear functions · ID 8375e970 Answer ↓

The function f is defined by $f(x) = \frac{1}{7}x - 7$. What is the value of $f(70)$?

A 3

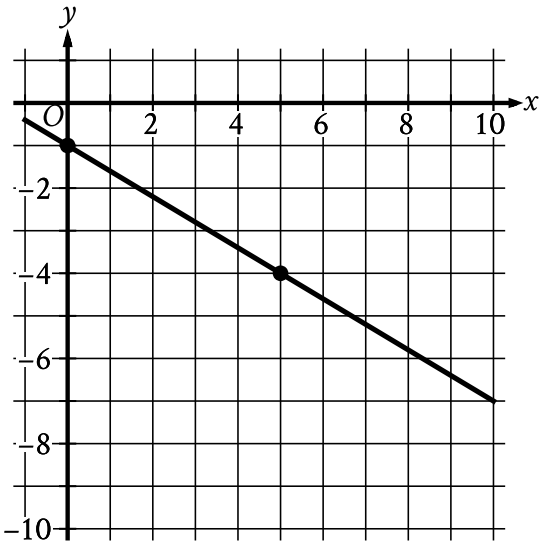
B 4

C 9

D 17

25 Easy Linear functions · ID e8b9be7a

Answer ↓



The graph of the linear function f is shown, where $y = f(x)$. Which equation defines f?

A $f(x) = \frac{3}{5}x - 1$

B $f(x) = \frac{5}{3}x - 1$

C $f(x) = -\frac{3}{5}x - 1$

D $f(x) = -\frac{5}{3}x - 1$

26 Easy Linear inequalities in one or two variables · ID a849f10b

Answer ↓

To earn a certificate of completion for a training program, participants are required to complete at least 120 training hours. If a participant has completed 44 training hours, what is the minimum number of additional training hours the participant is required to complete to earn the certificate of completion?

A 20

B 76

C 120

D 164

27 Easy Linear inequalities in one or two variables · ID 9c47560d Answer ↓

During a storm in a certain region, the lowest recorded level of snowfall was 4 inches and the highest recorded level of snowfall was 9 inches. Which inequality best represents this situation, where s represents a possible recorded level of snowfall, in inches, in this region during this storm?

A $5 \leq s \leq 13$

B $4 \leq s \leq 9$

C $s \geq 13$

D $s \leq 4$

28 Easy Linear inequalities in one or two variables · ID 89ba62ac Answer ↓

To win a skills challenge, a competitor needs to score at least 90 total points from two rounds. Completed tasks in the first round are worth 5 points each, and completed tasks in the second round are worth 6 points each. Which inequality models this situation, where x is the number of completed tasks in the first round and y is the number of completed tasks in the second round?

A $x + y \leq 90$

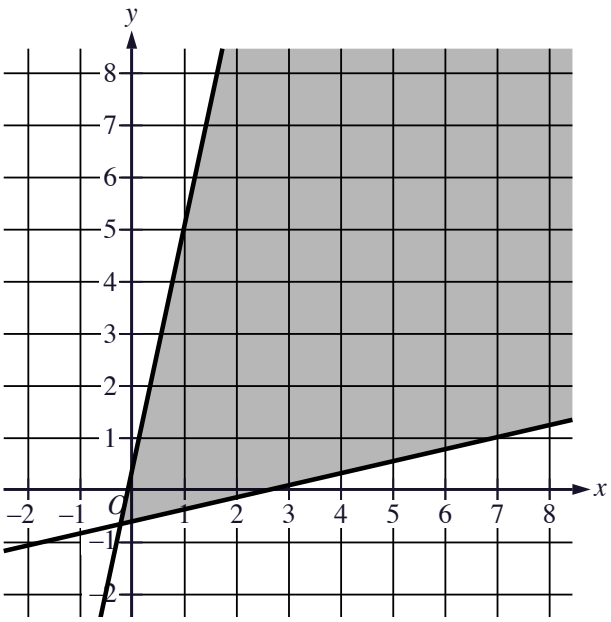
B $5x + 6y \geq 90$

C $6x + y \geq 90$

D $6x + 5y \leq 90$

29 Easy Linear inequalities in one or two variables · ID 9145ff4f

Answer ↓



The shaded region represents the solutions to a system of inequalities. Which ordered pair (x, y) is a solution to this system of inequalities?

A $(-2, 2)$

B $(1, 6)$

C $(2, -2)$

D $(6, 1)$

30 Easy Systems of two linear equations in two variables · ID 11b04fd3

Answer ↓

$$y = 4x - 13$$

$$y = ax - 13$$

In the given system of equations, a is a constant. The system has infinitely many solutions. What is the value of a?

A 4

B -9

C -13

D -17

31 Easy Systems of two linear equations in two variables · ID 1a0baf64 Answer ↓

$$3x + 8y = 68$$
$$y = 7$$

The solution to the given system of equations is (x, y). What is the value of x?

Student-produced response: enter your answer

32 Easy Systems of two linear equations in two variables · ID 45998262 Answer ↓

Laura spent $\$58$ at a bake sale and bought a total of 21 baked goods. She bought t tarts for $\$4$ each and m muffins for $\$2$ each. Which system of equations represents this situation?

A $t + m = 21$
$2t + 4m = 58$

B $t + m = 21$
$4t + 2m = 58$

C $t + m = 58$
$2t + 4m = 21$

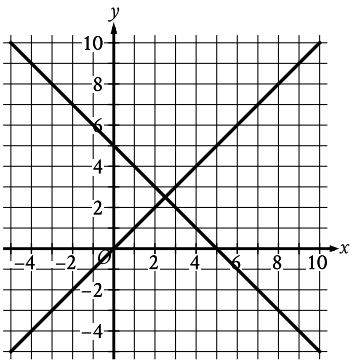
D $t + m = 58$
$4t + 2m = 21$

33 Easy Systems of two linear equations in two variables · ID 5e137eae

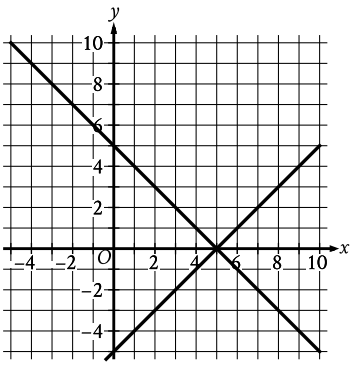
Answer ↓

The solution to a system of linear equations is $(5, 5)$. Which of the following could be the graph of the equations in the system?

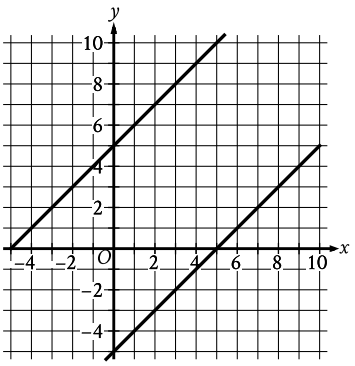
A



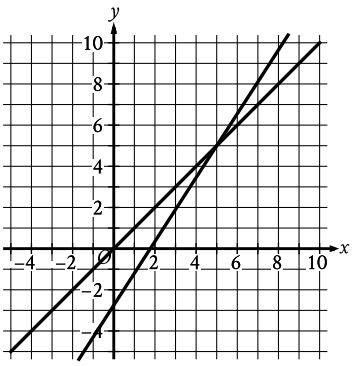
B



C



D



34 Easy Systems of two linear equations in two variables · ID cfa392c3

Answer ↓

$$x + 3y = 25$$

$$3y = 13$$

The solution to the given system of equations is (x, y). What is the value of x?

A -12

B -4

C 12

D 38

35 Easy Systems of two linear equations in two variables · ID 8a90b184 Answer ↓

If the equations $-10x + y = 19$ and $10x + y = 19$ are graphed in the *xy*-plane, at what point (x, y) do the graphs intersect?

A $(0, 19)$

B $(0, 10)$

C $(10, 0)$

D $(19, 0)$

36 Easy Systems of two linear equations in two variables · ID c43a9964 Answer ↓

$$8x = 16$$

$$8x - 4y = 28$$

The solution to the given system of equations is (x, y). What is the value of x?

Student-produced response: enter your answer

Algebra · Medium

37 Medium Linear equations in one variable · ID e34da75f Answer ↓

A plant's stem will grow at a constant rate from a length of 3 inches to a length of 7 inches. The equation $0.6t + 3 = 7$ describes this situation, where t is the number of weeks it will take for the plant's stem to reach a length of 7 inches. Which of the following is the best interpretation of 0.6 in this context?

A The time, in weeks, it will take the plant's stem to grow 1 inch

B The length, in inches, the plant's stem will grow each week

C The time, in weeks, it will take the plant's stem to reach a length of 7 inches

D The length, in inches, the plant's stem will grow in 7 weeks

38 Medium Linear equations in two variables · ID 01d5ae98 Answer ↓

$$32x + 84y = 360$$

The given equation represents the volume of compost x, in cubic feet, and the volume of soil y, in cubic feet, in a mixture of compost and soil that weighs 360 pounds. If the volume of soil in the mixture is 2 cubic feet, what is the volume of compost in the mixture, in cubic feet?

Student-produced response: enter your answer

39 Medium Linear equations in two variables · ID 5e34b099 Answer ↓

The graph of $9x + y = 14$ in the *xy*-plane is a line. What is the slope of the line?

Student-produced response: enter your answer

40 Medium Linear equations in two variables · ID 773f698f Answer ↓

In the *xy*-plane, line k passes through the points $(5, 0)$ and $(0, 7)$. Which of the following is an equation of line k?

A $7x + 5y = 35$

B $5x + 7y = 35$

C $7x - 5y = 35$

D $5x - 7y = 35$

41 Medium Linear equations in two variables · ID 81ca4d02 Answer ↓

In one week, Sophia earned a total of $\$1{,}007$ by working at her full-time job and at a part-time job. The equation $23h + 10c = 1{,}007$ represents this situation, where h is the number of hours worked at her full-time job and c is the number of hours worked at her part-time job. Which of the following is the best interpretation of 23 in this context?

A The amount, in dollars, Sophia earned for each hour she worked at her full-time job

B The amount, in dollars, Sophia earned for each hour she worked at her part-time job

C The number of hours Sophia worked in one week at her full-time job

D The number of hours Sophia worked in one week at her part-time job

42 Medium Linear equations in two variables · ID a4c1cb45 Answer ↓

Line q in the *xy*-plane passes through the points $(0, 20)$ and $(1, 36)$. Which equation defines line q?

A $16x - y + 20 = 0$

B $16x - y + \frac{1}{20} = 0$

C $16x - y - \frac{1}{20} = 0$

D $16x - y - 20 = 0$

43 Medium Linear equations in two variables · ID 1eb5ec45 Answer ↓

$$18.5x + 29.25y = 154$$

A contractor ordered sand and landscaping pebbles, which cost a total of $\$154$, for a project. The given equation represents the relationship between the number of cubic yards of sand, x, and the number of tons of landscaping pebbles, y, the contractor ordered. How much more, in dollars, did a ton of landscaping pebbles cost the contractor than a cubic yard of sand?

Student-produced response: enter your answer

44 Medium Linear functions · ID 8987f1d0 Answer ↓

The function f is defined by $f(x) = \frac{5}{11}x$. What is the slope of the graph of $y = f(x)$ in the *xy*-plane?

A 0

B $\frac{5}{11}$

C $\frac{11}{5}$

D The slope is undefined.

45 Medium Linear functions · ID 957a51b9 Answer ↓

Number of special exhibit tickets	Total amount paid
10	$\$56.00$
15	$\$63.50$
25	$\$78.50$

At a museum, a group pays a fixed entrance fee. They then purchase tickets for special exhibits, which each have the same cost. The table shows the relationship between the number of special exhibit tickets, x, that are purchased and the total amount paid y, in dollars, for both the entrance fee and the special exhibit tickets. Which equation represents the relationship between x and y?

A $y = \frac{3}{2}x + 41$

B $y = \frac{3}{2}x - 74$

C $y = \frac{2}{3}x + \frac{148}{3}$

D $y = \frac{2}{3}x + \frac{82}{3}$

46 Medium Linear functions · ID 966c41ff Answer ↓

A remote-controlled machine is designed to collect stone and sand samples. During an experiment, the machine moves at a constant velocity on a straight path toward a designated location. The equation $y = 500 - 148x$ gives the machine's distance from the designated location y, in meters, x hours after the start of the experiment. What is the best interpretation of 500 in this context?

A The number of hours it takes the machine to reach the designated location

B The machine's velocity, in meters per hour, during the experiment

C The machine's distance, in meters, from the designated location at the start of the experiment

D The total distance, in meters, the machine travels in 1 hour

47 Medium Linear functions · ID a42c12aa Answer ↓

Luca plants 205 seedlings per hour. On Monday, he planted seedlings for 1 hour. On Tuesday, he planted seedlings for t hours. Which function s gives the total number of seedlings Luca planted on Monday and Tuesday?

A $s(t) = 205t$

B $s(t) = 205t + 205t$

C $s(t) = 205 + 205(t + 1)$

D $s(t) = 205(t + 1)$

48 Medium Linear functions · ID d44bfa1d Answer ↓

The gas mileage of a certain car is 25 miles per gallon when driven on the highway. If the car begins with 15 gallons of gas in the tank, which function predicts the amount of gas remaining in the tank, $f(d)$, after the car is driven d miles on the highway?

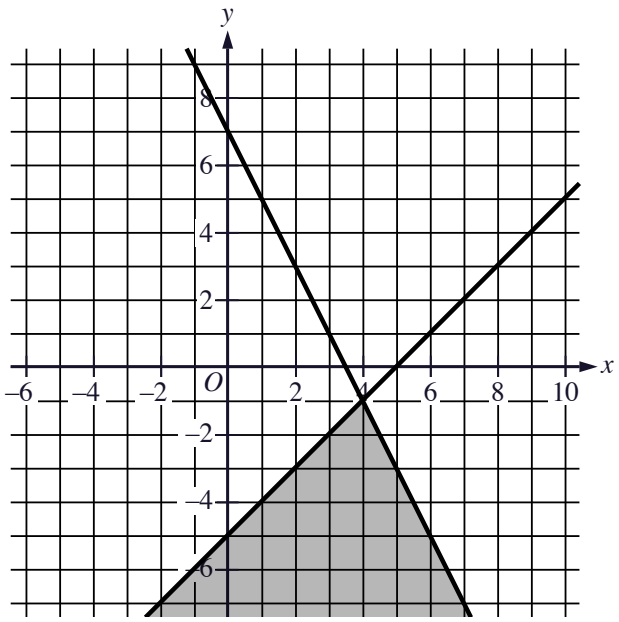
A $f(d) = \frac{d}{25} - 15$

B $f(d) = d - 15$

C $f(d) = 15 - \frac{d}{25}$

D $f(d) = 15 - d$

49 Medium Linear inequalities in one or two variables · ID 272c7da7 Answer ↓



The graphs of $y = -2x + 7$ and $y = x - 5$ are shown. Point P (not shown) has coordinates $(4, -5)$ and lies in the shaded region. The coordinates of P satisfy which of the following inequalities?

I. $y < -2x + 7$
II. $y > x - 5$

A I only

B II only

C I and II

D Neither I nor II

50 Medium Systems of two linear equations in two variables · ID 07898d2b Answer ↓

$$6x + 6y = 50$$
$$-6x + 2y = 6$$

The solution to the given system of equations is (x, y). What is the value of y?

A -14

B -7

C 7

D 14

51 Medium Systems of two linear equations in two variables · ID 2de12266 Answer ↓

When x liters of a 20% saline solution is mixed with y liters of a 40% saline solution, 8 liters of a 35% saline solution is produced. Which system of equations represents this situation? (Assume that the volume of the mixture is the sum of the volumes of the two solutions before they were mixed.)

A $x + y = 0.35(8)$
$0.20x + 0.40y = 0.35(8)$

B $x + y = 0.35(8)$
$0.35(x + y) = (0.40 + 0.20)(x + y)$

C $x + y = 8$
$0.20x + 0.40y = 0.35(8)$

D $x + y = 8$
$0.40x + 0.20y = 0.35(8)$

52 Hard Linear equations in one variable · ID 3c20deb8 Answer ↓

If $\frac{x-19}{24} = \frac{x-19}{8}$, what is the value of $x + 19$?

A 0

B 3

C 19

D 38

53 Hard Linear equations in one variable · ID 6cec2b22 Answer ↓

$$\frac{36x+55}{11} = \frac{k}{22}x + n$$

In the given equation, k and n are constants. The equation has infinitely many solutions. What is the value of kn?

A 180

B 360

C $1{,}980$

D $3{,}960$

54 Hard Linear equations in two variables · ID 17dffba1 Answer ↓

In the *xy*-plane, line k and line ℓ are perpendicular and intersect at the point $(2, 8)$. If line k is defined by the equation $y = mx + b$, where m and b are constants and $m > 1$, which of the following points lies on line ℓ?

A $\left(3, 8 - \frac{1}{m}\right)$

B $\left(3, 8 + \frac{1}{m}\right)$

C $(3, 8 - m)$

D $(3, 8 + m)$

55 Hard Linear functions · ID bfede33b Answer ↓

For the linear function p, $p(c) = -2$, where c is a constant, $p(5) = 22$, and the slope of the graph of $y = p(x)$ in the *xy*-plane is 4. For the linear function t, $t(c) = -5$ and $t(6) = 44$. What is the slope of the graph of $y = t(x)$ in the *xy*-plane?

A -1

B 2

C 4

D 7

56 Hard Linear functions · ID ccd7cd55 Answer ↓

At a time of h hours after an orbit adjustment was made, the estimated altitude above Earth A_1, in kilometers (km), of a satellite is given by $A_1 = 10h + 171$, which is a combination of the estimated change in altitude and the original altitude of the satellite. After maintaining a certain altitude, the altitude of the satellite increased for d additional hours. The estimated altitude A_2, in km, of the satellite during these d hours is given by $A_2 = 10d + 471$. Which of the following is the best interpretation of 471 in this context?

A The estimated altitude, in km, of the satellite at a time of d hours

B The estimated increase in altitude, in km, the satellite experienced for each increase in time by 1 hour

C The estimated increase in altitude, in km, the satellite experienced for each increase in time by d hours

D The estimated altitude, in km, of the satellite when it began to increase in altitude d additional hours

57 Hard Linear functions · ID e144dfaf Answer ↓

A decorative chain is a connected series of rectangles whose length is defined as the sum of the lengths of the rectangles it is made of. One of these decorative chains with a length of 29 centimeters (cm) is extended by adding rectangles that each have a length of $4 - r$ cm. Which function f represents the total length, in cm, of the extended decorative chain after x rectangles are added?

A $f(x) = 29(4 - r) + x$

B $f(x) = 4x - rx + 29$

C $f(x) = 4x - r + 29$

D $f(x) = (33 - r)x$

58 Hard Linear functions · ID e4de142f Answer ↓

Line j in the xy-plane passes through the points $\left(0, \frac{4}{31}\right)$ and $\left(\frac{62}{k}, -\frac{4}{k} + \frac{4}{31}\right)$, where k is a constant. What is the x-coordinate of the x-intercept of line j?

A $\frac{k}{31}$

B $4k$

C $\frac{4}{31}$

D 2

59 Hard Linear inequalities in one or two variables · ID 00f411df Answer ↓

When several resistors are connected in series in a circuit, the total resistance of the circuit is the sum of the resistances of these resistors. A certain circuit consists of 7 resistors connected in series, where the resistance of each resistor is positive. This circuit has a total resistance of 110 ohms. The total resistance of 3 resistors in this circuit is 90 ohms. Which inequality best represents all possible values of the resistance x, in ohms, of one of the other 4 resistors in this circuit?

A $0 < x < 5$

B $0 < x < 20$

C $20 < x < 90$

D $20 < x < 110$

60 Hard Linear inequalities in one or two variables · ID 66038b7c Answer ↓

$$y < 48 - 8x$$

$$\frac{y}{8} > 10$$

Which inequality represents the x values for all solutions (x, y) that satisfy the given system of inequalities in the *xy*-plane?

A $x > 6$

B $x < 6$

C $x > -4$

D $x < -4$

61 Hard Linear inequalities in one or two variables · ID 6c813877 Answer ↓

If $x \geq -8$ represents all solutions to the inequality $ax - 24 \leq 32$, where a is a constant, what is the greatest possible value of a?

Student-produced response: enter your answer

62 Hard Systems of two linear equations in two variables · ID 150c0c1b Answer ↓

$$\frac{x}{2} + 9(y - 11) = 25$$
$$\frac{x}{7} - 9(y - 11) = 47$$

The solution to the given system of equations is (x, y). What is the value of $9x$?

Student-produced response: enter your answer

63 Hard Systems of two linear equations in two variables · ID f535157f Answer ↓

A scientist combines two different concentrations of an oxygen-nitrogen gas mixture at a constant temperature to fill a tank to a total pressure of 80 atmospheres (atm), of which 36% is contributed by oxygen. Gas mixture A contributes x atm of pressure to the tank, of which 27% is contributed by oxygen. Gas mixture B contributes y atm of pressure to the tank, of which 45% is contributed by oxygen. Which system of equations represents this situation?

A $x + y = 80$
$0.45x + 0.27y = 0.36(80)$

B $x + y = 80$
$0.27x + 0.45y = 0.36(80)$

C $x + y = 0.36(80)$
$0.45x + 0.27y = 80$

D $x + y = 0.36(80)$
$0.27x + 0.45y = 80$

NOVEMBER 2026 ADDITIONS

Advanced Math

18 Easy | 19 Medium | 8 Hard

SKILLS COVERED

- Equivalent expressions
- Nonlinear equations in one variable and systems of equations in two variables
- Nonlinear functions

Advanced Math · Easy

1 Easy Equivalent expressions · ID d1a9db8a Answer ↓

Which expression is equivalent to $2x^2 + 12x$?

A $2x(x + 6)$

B $12x(6x + 1)$

C $x^2(x + 2)$

D $2x^2(1 + 6x)$

2 Easy Equivalent expressions · ID dd61df23 Answer ↓

Which expression is equivalent to $10x + 2x + 10y + 7y + 3$?

A $32xy$

B $29xy + 3$

C $20x + 9y + 3$

D $12x + 17y + 3$

3 Easy Equivalent expressions · ID 7f89638c Answer ↓

Which expression is equivalent to $4xy(2x^2 + 6y)$?

A $6x^3y + 10xy^2$

B $8x^2y + 6y$

C $8x^2y + 24xy$

D $8x^3y + 24xy^2$

4 Easy Equivalent expressions · ID 8ab51c14 Answer ↓

Which expression is equivalent to $114t^3 - 26t^2u$?

A $2t(57t^2 - 13u)$

B $2t^2(57t - 13u)$

C $2tu(57t^2 - 13)$

D $2t^2u(57t - 13)$

5 Easy Nonlinear equations in one variable and systems of equations in two variables · ID f14d324c Answer ↓

$$2|x| = 46$$

Which value is a solution to the given equation?

A 23

B 44

C 48

D 92

6 Easy Nonlinear equations in one variable and systems of equations in two variables · ID 1f64eb7a Answer ↓

$$y - 38 = mx$$

The given equation relates the distinct positive numbers m, x, and y. Which equation correctly expresses y in terms of m and x?

A $y = mx + 38$

B $y = 38x + m$

C $y = 38m + x$

D $y = 38mx$

7 Easy Nonlinear equations in one variable and systems of equations in two variables · ID 3edd35c8

Answer ↓

$$y = x^2 + 16x + 63$$

$$x + 9 = 11$$

The solution to the given system of equations is (x, y). What is the value of y?

A 2

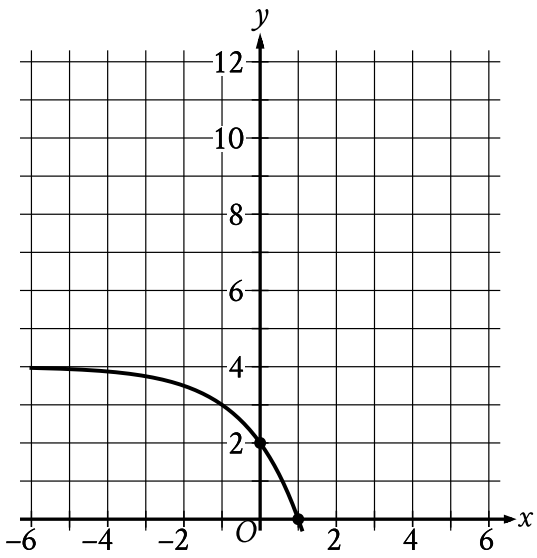
B 11

C 88

D 99

8 Easy Nonlinear functions · ID 0a0d8986

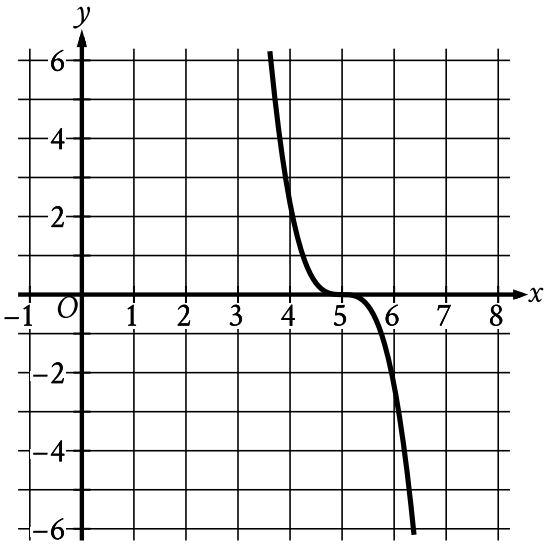
Answer ↓



The y-intercept of the graph shown is $(0, y)$. What is the value of y?

Student-produced response: enter your answer

9 Easy Nonlinear functions · ID 54777964 Answer ↓



The x-intercept of the graph shown is $(x, 0)$. What is the value of x?

A -5

B 0

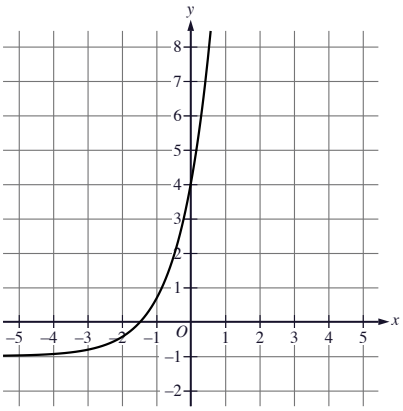
C 5

D 8

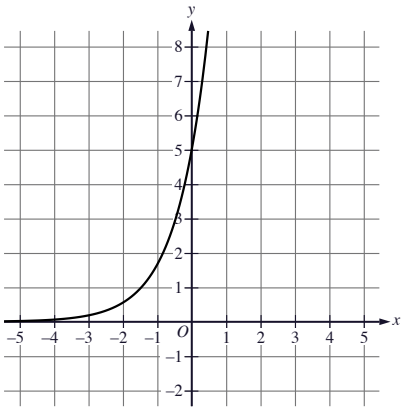
10 Easy Nonlinear functions · ID b7dc5b11 Answer ↓

Which of the following graphs has a y-intercept of $(0, 5)$?

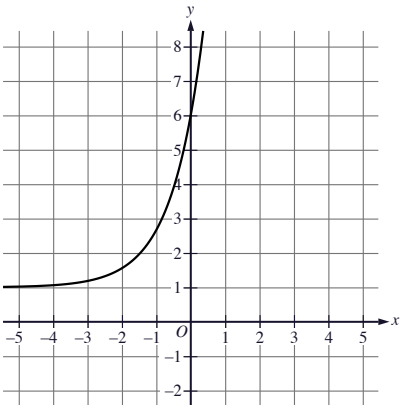
A



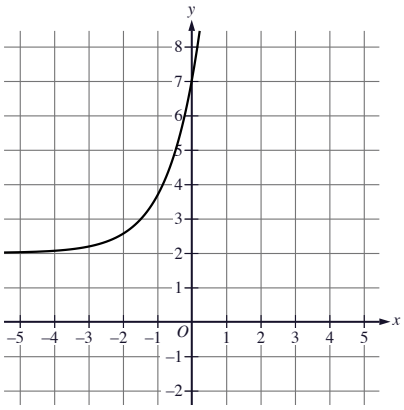
B



C

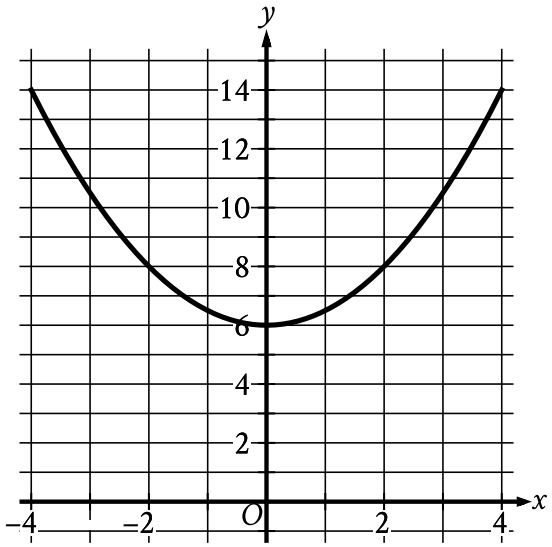


D



11 Easy Nonlinear functions · ID dc8fe4be

Answer ↓



What is the *y*-intercept of the graph shown?

A $\left(0, \frac{1}{6}\right)$

B $(0, 0)$

C $(0, 6)$

D $\left(0, -\frac{1}{6}\right)$

12 Easy Nonlinear functions · ID 0a47ef4c

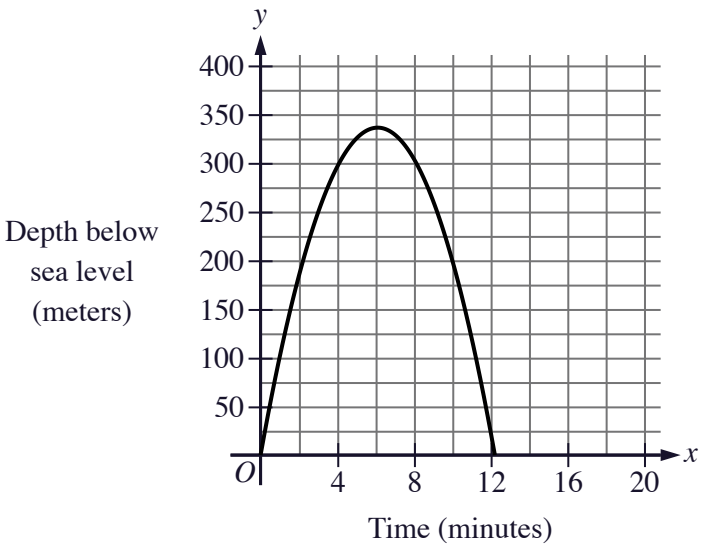
Answer ↓

The function f is defined by $f(x) = \frac{12}{11-x}$. What is the value of $f(x)$ when $x = 5$?

Student-produced response: enter your answer

13 Easy Nonlinear functions · ID 69a28a0d

Answer ↓



The graph shows the predicted depth below sea level y, in meters, of a certain penguin x minutes after the penguin dives into the water. Based on the graph, which of the following is closest to the predicted depth below sea level, in meters, of the penguin 2 minutes after the penguin dives into the water?

A 0

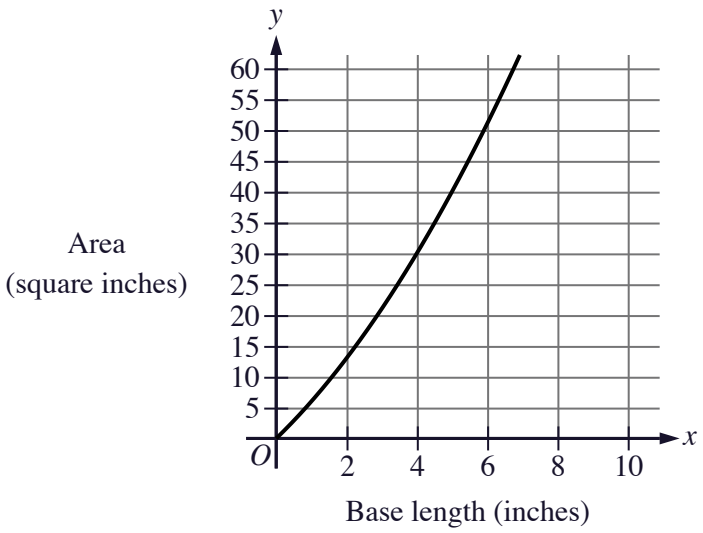
B 184

C 296

D 336

14 Easy Nonlinear functions · ID a0540eeb

Answer ↓



Karl cuts triangular pieces of plywood to be used in a wall art project. The graph gives the area y, in square inches, for each piece of plywood, where x is the base length, in inches, of the piece of plywood and $x > 0$. According to the graph, what is the best estimate of the area, in square inches, of one of Karl's triangular pieces of plywood with a base length of 4 inches?

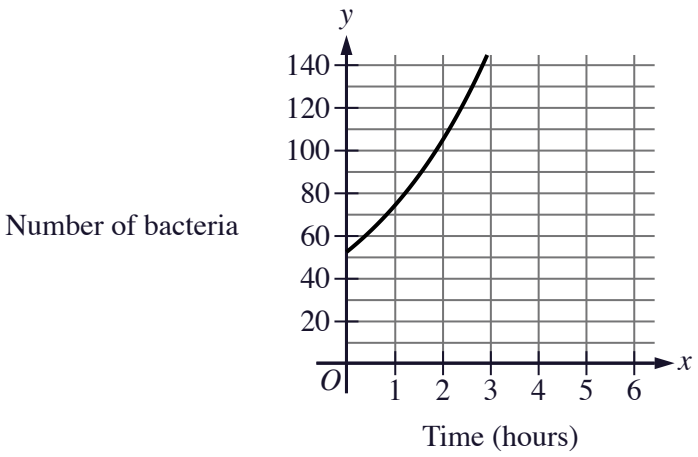
A 4

B 8

C 16

D 30

15 Easy Nonlinear functions · ID b63e49c3 Answer ↓



Under certain conditions, the number of bacteria in a population doubles every 2 hours. The graph models the number of bacteria, y, in the population x hours after an initial observation. Based on the graph, what is the estimated number of bacteria in the population 2 hours after the initial observation?

A 52

B 73

C 104

D 208

16 Easy Nonlinear functions · ID ff3baf3a Answer ↓

A sample of material with a mass of 28 grams started to decay. Each week after the sample started to decay, the remaining mass of the sample was approximately 70% of the mass the preceding week. Which function f gives the approximate remaining mass, in grams, of the sample x weeks after the sample started to decay?

A $f(x) = 28(0.3)^x$

B $f(x) = 28(0.7)^x$

C $f(x) = 28(1.3)^x$

D $f(x) = 28(1.7)^x$

17 Easy Nonlinear functions · ID 6eb6ba92 Answer ↓

The relationship between the variables x and y is defined by an exponential equation. When $x = 0$, the value of y is 60, and for every increase in the value of x by 1, the corresponding value of y increases by 10% of its previous value. Which equation represents this relationship?

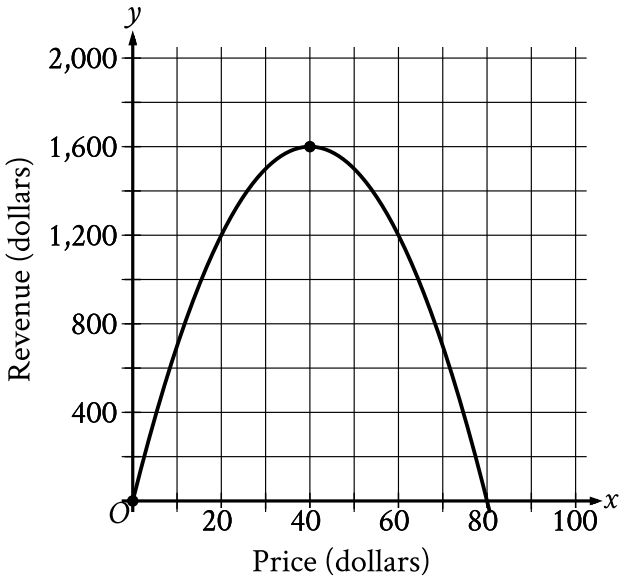
A $y = 60(1.10)^x$

B $y = 60(1.01)^x$

C $y = 10(1.60)^x$

D $y = 10(1.06)^x$

18 Easy Nonlinear functions · ID c400b60b Answer ↓



The graph gives the estimated revenue, in dollars, for a company when the price of the company's product is x dollars. What does the y-value of the vertex of the graph represent in this context?

A The price, in dollars, of the company's product

B The minimum estimated revenue, in dollars

C The maximum estimated revenue, in dollars

D The estimated revenue, in dollars, when the price of the company's product is 0 dollars

Advanced Math · Medium

19 Medium Equivalent expressions · ID 050c375c Answer ↓

The expression $4x^3 + 32$ is equivalent to $k(x^3 + 8)$, where k is a constant. What is the value of k?

Student-produced response: enter your answer

20 Medium Equivalent expressions · ID 83193ebb Answer ↓

Which expression is equivalent to $(3x^8 + 4)(x^8 + 10)$?

A $3x^{16} + 18x^8 + 40$

B $3x^{16} + 34x^8 + 40$

C $4x^{64} + 18x^8 + 40$

D $4x^{16} + 34x^8 + 40$

21 Medium Nonlinear equations in one variable and systems of equations in two variables · ID 15601317 Answer ↓

$$12r + 13s = t$$

The given equation relates the numbers r, s, and t. Which equation correctly expresses s in terms of r and t?

A $s = \frac{t-12r}{13}$

B $s = \frac{1}{13}t - 12r$

C $s = \frac{12r-t}{13}$

D $s = 13t - 12r$

22 Medium Nonlinear equations in one variable and systems of equations in two variables · ID 229abfe6 Answer ↓

$$5x - 6y = x^2$$

$$5x - 6y = 16$$

A solution to the given system of equations is (x, y), where x is positive. What is the value of x?

Student-produced response: enter your answer

23 Medium Nonlinear equations in one variable and systems of equations in two variables · ID 861a8eff Answer ↓

$$2x^2 - 24x + 72 = 0$$

What is the solution to the given equation?

Student-produced response: enter your answer

24 Medium Nonlinear equations in one variable and systems of equations in two variables · ID 1dd3a492 Answer ↓

$$(x - 245)(x + 246) = 0$$

What is a solution to the given equation?

Student-produced response: enter your answer

25 Medium Nonlinear equations in one variable and systems of equations in two variables · ID 50a5696a Answer ↓

$$x^2 - 2x = 38$$

What is one of the solutions to the given equation?

A $\sqrt{38}$

B $1 + \sqrt{39}$

C 39

D $38 + \sqrt{2}$

26 Medium Nonlinear functions · ID 3514f2df Answer ↓

$$g(x) = (14 - 2x)(8 + 2x)$$

The function g is defined by the given equation. For what value of x does $g(x)$ reach its maximum?

A 1.5

B 3

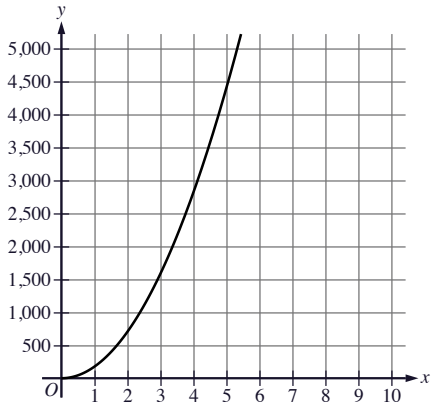
C 5.5

D 11

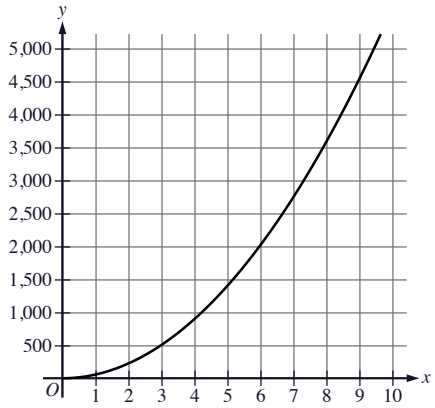
27 Medium Nonlinear functions · ID 39241e8c Answer ↓

A glass jar can be modeled by a right circular cylinder with a height of 56 millimeters. The equation $y = 56\pi x^2$ gives the volume y, in cubic millimeters, of the right circular cylinder that models the jar, where x is the radius, in millimeters, of the base of the cylinder. Which graph best represents this equation in the *xy*-plane?

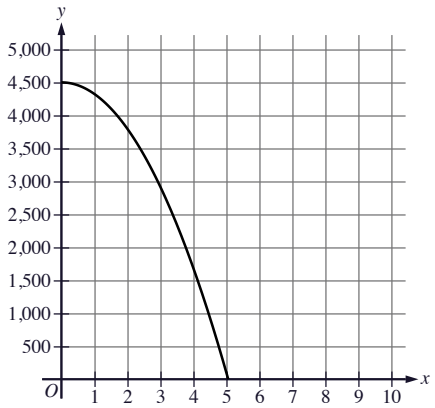
A



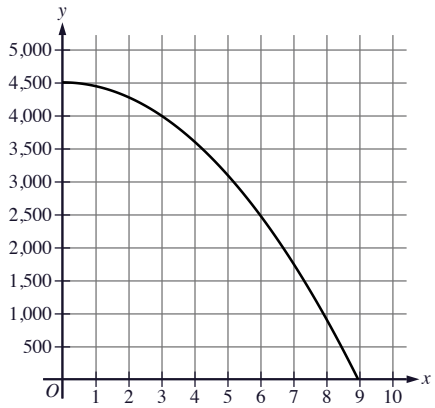
B



C



D



28 Medium Nonlinear functions · ID 46e768ca Answer ↓

The function $A(b) = 7b^2$ gives the area of a right triangle, in square centimeters (cm^2), if the length of its base is b cm and the length of its height is 14 times the length of its base. Which of the following is the best interpretation of $A(19) = 2{,}527$?

A If the length of the base of the triangle is 19 cm, then the length of the height of the triangle is $2{,}527$ cm.

B If the length of the base of the triangle is $2{,}527$ cm, then the length of the height of the triangle is 19 cm.

C If the length of the base of the triangle is 19 cm, then the area of the triangle is $2{,}527$ cm^2.

D If the length of the base of the triangle is $2{,}527$ cm, then the area of the triangle is 19 cm^2.

29 Medium Nonlinear functions · ID 5c2bfe44 Answer ↓

The function f is defined by the equation $f(x) = 4|x - 3| - 13$. What is the value of $f(-3)$?

A -37

B -13

C 11

D 37

30 Medium Nonlinear functions · ID 956823cb Answer ↓

The length of rectangle R is 7 times the length of a side of square S. The width of rectangle R is 4 times the length of a side of square S. The area of rectangle R is $1{,}792$ square inches. What is the side length, in inches, of square S?

A 8

B 32

C 64

D 128

31 Medium Nonlinear functions · ID aa3aa5b5 Answer ↓

$$g(x) = \frac{1}{8}(3)^x$$

If the given function g is graphed in the *xy*-plane, where $y = g(x)$, what is the *y*-intercept of the graph?

A $(0, 0)$

B $(0, \frac{1}{8})$

C $(0, \frac{3}{8})$

D $(0, 3)$

32 Medium Nonlinear functions · ID afa2bc05 Answer ↓

The product of a positive number x and the number that is 1 less than x is equal to 72. What is the value of x?

A 0.5

B 9

C 71

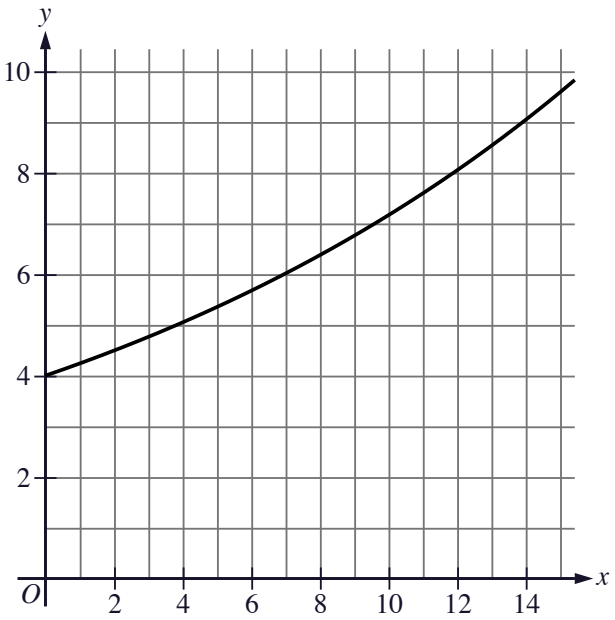
D 73

33 Medium Nonlinear functions · ID e6a8ce94 Answer ↓

The function g is defined by $g(x) = \sqrt{(3x - 9)(3x + 9) + 4}$. What is the value of $g(3)$?

Student-produced response: enter your answer

34 Medium Nonlinear functions · ID ecac53ca Answer ↓



The graph models the population, in thousands, of a community x years since 2010, where $0 \leq x \leq 15$. Which statement is the best interpretation of the point $(1, 4.24)$?

A In 2010, the estimated population of the community was $4{,}240$.

B In 2011, the estimated population of the community was $4{,}240$.

C In 2024, the estimated population of the community was $4{,}240$.

D In 2025, the estimated population of the community was $4{,}240$.

35 Medium Nonlinear functions · ID 3ee271a7 Answer ↓

A company takes out a loan where a bank starts adding interest to the balance of the loan 1 year after the loan is taken out. The function $f(x) = 53{,}000(1.02)^{x-1}$ gives the balance of the loan $f(x)$, in dollars, x years after the loan is taken out, where $x \geq 1$, if no payments are made to the loan. What is the best interpretation of $53{,}000$ in this context?

A The balance of the loan, in dollars, 1 year after the loan is taken out

B 2% less than the balance of the loan, in dollars, 1 year after the loan is taken out

C The balance of the loan, in dollars, 1 year after the bank starts adding interest to the loan

D 2% more than the balance of the loan, in dollars, 1 year after the bank starts adding interest to the loan

36 Medium Nonlinear functions · ID a5628865 Answer ↓

The function $f(x) = 273(1.016)^x$ models the value, in dollars, of an investment from 1959 through 1974, where x is the number of years after the end of 1959. Which of the following is the best interpretation of "$f(5)$ is approximately equal to 296" in this context?

A The value of the investment is estimated to be approximately 5 dollars greater at the end of 1964 than at the end of 1959.

B The value of the investment is estimated to be approximately 296 dollars at the end of 1964.

C The value, in dollars, of the investment is estimated to be approximately 5 times greater at the end of 1964 than at the end of 1959.

D The value of the investment is estimated to increase by approximately 296 dollars every 5 years between the end of 1959 and the end of 1974.

37 Medium Nonlinear functions · ID d1b468f1 Answer ↓

$$f(x) = (x - 5)(x - 33)$$

The function f is defined by the given equation. For what value of x does $f(x)$ reach its minimum?

A 165

B 33

C 19

D 5

38 Hard Nonlinear equations in one variable and systems of equations in two variables · ID 12251fea

Answer ↓

$$\sqrt{(x+13)^2} = x + 13$$

What is the least value of x that is a solution to the given equation?

A -14

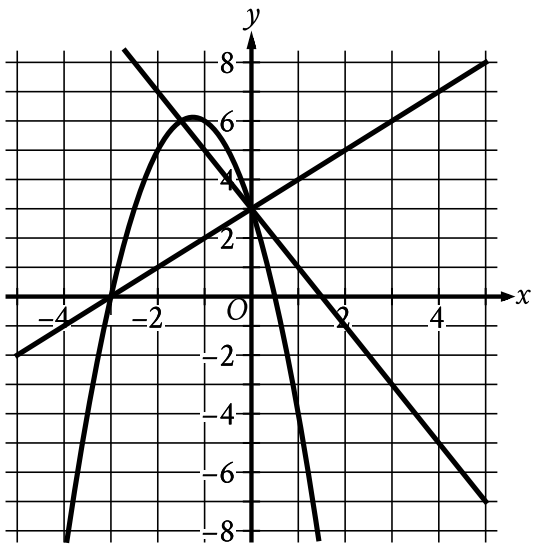
B -13

C 0

D 13

39 Hard Nonlinear equations in one variable and systems of equations in two variables · ID 6b18d1fe

Answer ↓



The graph of a system of three equations is shown. The system consists of two linear equations and one quadratic equation. How many solutions does this system have?

A 1

B 2

C 3

D 4

40 Hard Nonlinear equations in one variable and systems of equations in two variables · ID b94f72cb

Answer ↓

$$3x^2 - 3x - 1 = 0$$

What are all possible solutions to the given equation?

A $x = \frac{1}{2} \pm \frac{\sqrt{3}}{6}$

B $x = -\frac{1}{2} \pm \frac{\sqrt{3}}{6}$

C $x = \frac{1}{2} \pm \frac{\sqrt{21}}{6}$

D $x = -\frac{1}{2} \pm \frac{\sqrt{21}}{6}$

41 Hard Nonlinear equations in one variable and systems of equations in two variables · ID 0bcb3184

Answer ↓

The solutions to $x^2 + 6x + 4 = 0$ are r and s, where $r < s$. The solutions to $x^2 + 10x + 5 = 0$ are t and u, where $t < u$. The solutions to $x^2 + 16x + c = 0$, where c is a constant, are $r + u$ and $s + t$. What is the value of c?

Student-produced response: enter your answer

42 Hard Nonlinear equations in one variable and systems of equations in two variables · ID ae712b49

Answer ↓

$$\frac{7}{9}x^2 - \left(\frac{7}{9}r + s\right)x + rs = 0$$

In the given equation, r and s are positive constants. The product of the solutions to the given equation is rst, where t is a constant. What is the value of t?

Student-produced response: enter your answer

43 Hard Nonlinear equations in one variable and systems of equations in two variables · ID d38cf701 Answer ↓

$$y = x - c$$

$$y = -2(x - 8)^2$$

In the given system of equations, c is a constant. The system has two distinct real solutions. Which of the following could be the value of c?

A 3

B 7

C $\frac{63}{8}$

D 13

44 Hard Nonlinear functions · ID 55ce172b Answer ↓

The exponential function f is defined by $f(x) = ab^x$, where a and b are positive constants. If $f(n) = p$ and the value of $f(n + 1)$ is 83.00% less than the value of p, where n and p are constants, what is the value of b?

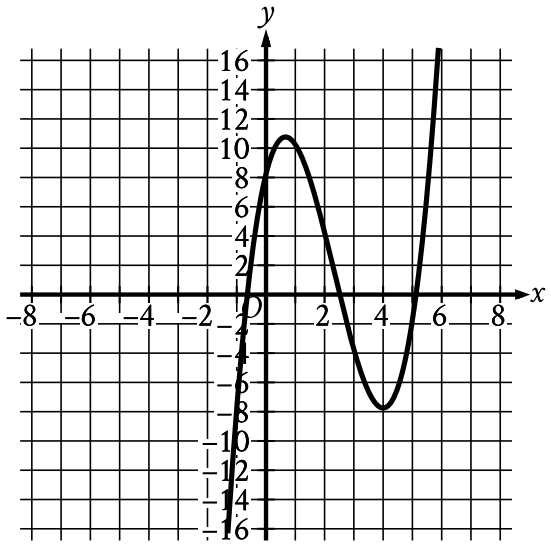
A 0.17

B 0.83

C 1.17

D 1.83

45 Hard Nonlinear functions · ID bf4a7fa0 Answer ↓



The graph of $y = f(x) - k$ is shown in the xy-plane. If k, a, and b are positive constants, which equation could define f?

A $f(x) = (x - a)^2(x + b)$

B $f(x) = (x + a)^2(x - b)$

C $f(x) = (x - a)^2(x + b)^2$

D $f(x) = (x + a)^2(x - b)^2$

NOVEMBER 2026 ADDITIONS

Problem-Solving & Data

22 Easy | 9 Medium | 12 Hard

SKILLS COVERED

- One-variable data: Distributions and measures of center and spread
- Percentages
- Ratios, rates, proportional relationships, and units
- Two-variable data: Models and scatterplots
- Inference from sample statistics and margin of error
- Probability and conditional probability

Problem-Solving & Data · Easy

1 Easy One-variable data: Distributions and measures of center and spread · ID bd95327c Answer ↓

The table shows the frequency of each data value in a data set.

Data value	Frequency
10	7
20	33
30	14
40	11

Which data value has a frequency of 33 in this data set?

A 40

B 30

C 20

D 10

2 Easy One-variable data: Distributions and measures of center and spread · ID 1ca1692a Answer ↓

The table shown summarizes the distribution of 58 homes based on the number of years since they were designed by a certain architecture firm.

Number of years	Number of homes
0 to 5	8
6 to 10	4
11 to 15	14
16 to 20	5
21 to 25	6
26 to 30	12
31 to 35	9

How many of the 58 homes were designed by the architecture firm 21 or more years ago?

Student-produced response: enter your answer

3 Easy One-variable data: Distributions and measures of center and spread · ID 30dfdafd Answer ↓

Data set A: $8, 8, 8, 9, 9, 10, 11, 11, 12, 12, 12$

Data set B: $8, 9, 9, 10, 10, 10, 10, 10, 11, 11, 12$

Data set A and data set B each have 11 values. Which of the following statements best compares the median of data set A and the median of data set B?

A The median of data set A is greater than the median of data set B.

B The median of data set A is less than the median of data set B.

C The medians of data sets A and B are equal.

D There is not enough information to compare the medians.

4 Easy One-variable data: Distributions and measures of center and spread · ID aa389b37 Answer ↓

The mean weight of an original group of 10 steel storage containers is $3{,}245$ pounds. The weights, in pounds, of 4 of the containers in this group are listed in the table.

Containers	Weight (in pounds)
A	$1{,}800$
B	$3{,}100$
C	$3{,}500$
D	$8{,}600$

One of the 4 containers in the table will be removed from the original group to create a new group of 9 containers. Removing which one of these 4 containers from the original group will result in the largest difference between the mean weight of the original group and the mean weight of the new group?

A Container A

B Container B

C Container C

D Container D

5 Easy Percentages · ID 4d729046 Answer ↓

There are 45 business owners in a certain shopping mall. 100% of these business owners attended the first owners' meeting of the year. How many of these business owners attended the meeting?

A 0

B 45

C 450

D $4{,}500$

6 Easy Percentages · ID b46d1dfb Answer ↓

What is 10% of 640?

Student-produced response: enter your answer

7 Easy Percentages · ID fcae5027 Answer ↓

If x is a positive integer, the expression $0.24x$ represents what percent of x?

A 176

B 124

C 76

D 24

8 Easy Percentages · ID b887c432 Answer ↓

A store has p postcards in its inventory. The number of postcards in the store's inventory that contain reproductions of artwork is represented by the expression $0.67p$. What percentage of the postcards in the store's inventory contain reproductions of artwork?

A 0.67%

B 6.7%

C 67%

D 670%

9 Easy Ratios, rates, proportional relationships, and units · ID 8706e422 Answer ↓

Tyler searched an area of 10 square feet for pine cones and found an average of 3 pine cones per square foot. How many pine cones did Tyler find?

Student-produced response: enter your answer

10 Easy Ratios, rates, proportional relationships, and units · ID cf454b6a Answer ↓

What length, in meters, is equivalent to a length of 320 decimeters?
$(1 \text{ meter} = 10 \text{ decimeters})$

Student-produced response: enter your answer

11 Easy Ratios, rates, proportional relationships, and units · ID fb15e088 Answer ↓

A vehicle travels 9 feet per second. How far, in feet, does the vehicle travel in 7 seconds?

A -9

B -2

C 7

D 63

12 Easy Ratios, rates, proportional relationships, and units · ID 0c42577f Answer ↓

During a race, a bicyclist's speed was 37 feet per second. What is this speed in feet per **minute**?

A 67

B 97

C $1{,}110$

D $2{,}220$

13 Easy Ratios, rates, proportional relationships, and units · ID 0e552763 Answer ↓

A certain recreational speedboat can travel at a maximum speed of 20 meters per second. At this maximum speed, how many meters would this boat travel in 4 seconds?

Student-produced response: enter your answer

14 Easy Ratios, rates, proportional relationships, and units · ID 1ae151d8 Answer ↓

What length, in meters, is equivalent to a length of 130 decimeters?
$(1 \text{ meter} = 10 \text{ decimeters})$

A 1.3

B 13

C 130

D $1{,}300$

15 Easy Ratios, rates, proportional relationships, and units · ID 4e79ec0e Answer ↓

Hexagon G and hexagon H are similar. The length of each side of hexagon G is 2.8 times the length of its corresponding side in hexagon H. If the length of one side of hexagon H is h, which expression represents the length of its corresponding side in hexagon G?

A $\frac{h}{2.8}$

B $\frac{2.8}{h}$

C $2.8h$

D $2.8 + h$

16 Easy Ratios, rates, proportional relationships, and units · ID 70fdd26c Answer ↓

The ratio s to t is equivalent to the ratio 1 to 7. If the value of s is multiplied by 20, how will the value of t change to maintain this ratio?

A It will be multiplied by 1.

B It will be multiplied by 13.

C It will be multiplied by 20.

D It will be multiplied by 27.

17 Easy Ratios, rates, proportional relationships, and units · ID 76232971 Answer ↓

An object's average acceleration, in meters per second squared, is the change in the object's speed, in meters per second, divided by the time during which the change occurred, in seconds. A car's speed changes by 58 meters per second in 8 seconds. What is the car's average acceleration, in meters per second squared, during this time period?

A 0.14

B 7.25

C 50

D 66

18 Easy Ratios, rates, proportional relationships, and units · ID df79fab6 Answer ↓

How many millimeters are equivalent to $2{,}300$ centimeters?
$(1 \text{ centimeter} = 10 \text{ millimeters})$

Student-produced response: enter your answer

19 Easy Ratios, rates, proportional relationships, and units · ID f262457b

Answer ↓

The ratio a to b is equivalent to the ratio 27 to 16. What is the value of a when $b = 144$?

A 3

B 85

C 243

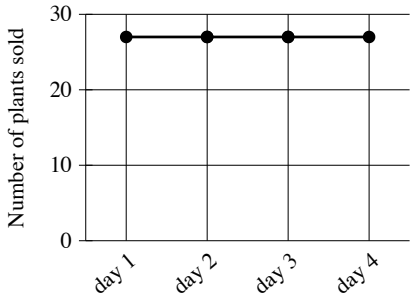
D $2{,}304$

20 Easy Two-variable data: Models and scatterplots · ID 5611ae7b

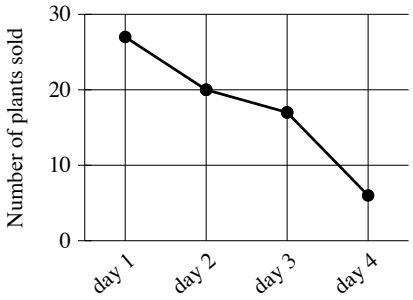
Answer ↓

The owner of a plant store recorded the number of plants sold each day during a four-day period in the spring. If the number of plants sold increased each day, which of the following line graphs could represent the number of plants sold during this four-day period?

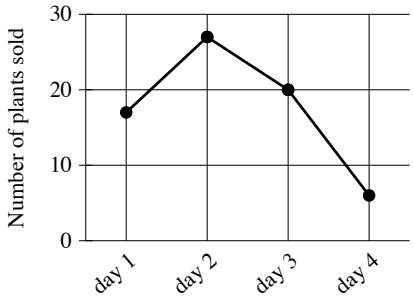
A



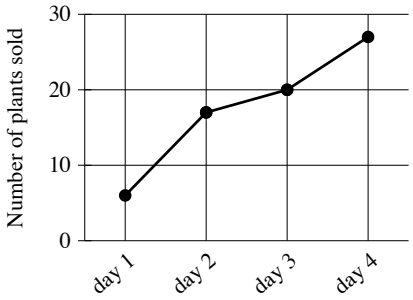
B



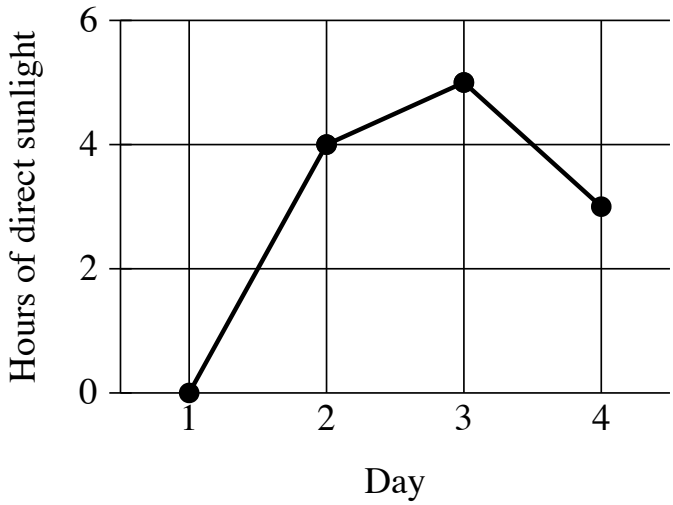
C



D



21 Easy Two-variable data: Models and scatterplots · ID ae04b960 Answer ↓



The line graph shows the number of hours of direct sunlight a hydrangea plant receives each day for a four-day period. According to the line graph, for which day during this four-day period is the number of hours of direct sunlight the greatest?

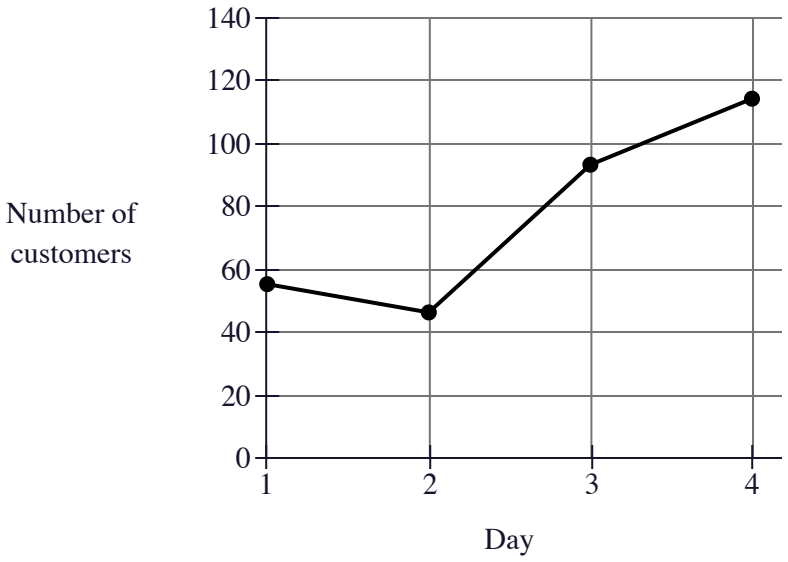
A Day 1

B Day 2

C Day 3

D Day 4

22 Easy Two-variable data: Models and scatterplots · ID b85a0d60 Answer ↓



The line graph shows the number of customers who visited a coffee shop each day during a four-day period in the winter. According to the line graph, for which day during this four-day period did the coffee shop have the smallest number of customers who visited?

A Day 1

B Day 2

C Day 3

D Day 4

Problem-Solving & Data · Medium

23 Medium Inference from sample statistics and margin of error · ID e693f988 Answer ↓

A food manufacturer advertises that bags of cereal produced by the manufacturer weigh, on average, 1 pound each. To test this, Jordan selected at random 35 bags of cereal produced by the manufacturer and weighed each bag. Based on his measurements, Jordan estimated that for all bags of cereal produced by the manufacturer, the average weight per bag is 1.03 pounds, with a margin of error of 0.05 pounds. For all bags of cereal produced by the manufacturer, which of the following is the most appropriate conclusion about the average weight w, in pounds, per bag?

A $w = 1.03$

B $0.98 \leq w \leq 1.03$

C $0.98 \leq w \leq 1.08$

D $1.03 \leq w \leq 1.08$

24 Medium Percentages · ID 2e08f681 Answer ↓

What number is 20% greater than 85?

A 102

B 105

C 153

D 165

25 Medium Percentages · ID f9a6a602 Answer ↓

If 120% of n is 60, what is the value of n?

A $7{,}200$

B 720

C 200

D 50

26 Medium Percentages · ID 772a79c1 Answer ↓

The expression $1.28n$ represents the result of increasing the positive quantity n by $p\%$. What is the value of p?

A 0.72

B 2.8

C 28

D 72

27 Medium Probability and conditional probability · ID 74a16a71 Answer ↓

A total of 50 people joined a gym during a promotion and were given a free T-shirt in a choice of 4 colors. The table shows the number of people who chose each color of T-shirt.

Color of T-shirt	Number of people
White	14
Red	24
Blue	3
Green	9
Total	50

If one of these people is selected at random, what is the probability of selecting a person who chose a green T-shirt? (Express your answer as a decimal or fraction, not as a percent.)

Student-produced response: enter your answer

28 Medium Probability and conditional probability · ID b511e998 Answer ↓

Omar has a bag of 40 tiles, where 34 are labeled with a star and 6 are labeled with a diamond. If Omar selects a tile from the bag at random, what is the probability of selecting a tile that is labeled with a diamond? (Express your answer as a decimal or fraction, not as a percent.)

Student-produced response: enter your answer

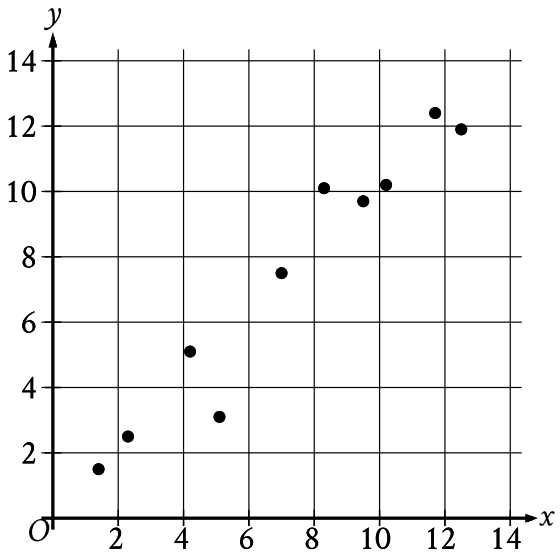
29 Medium Ratios, rates, proportional relationships, and units · ID 0335a0c5 Answer ↓

The ratio of the side length of square A to the side length of square B is 2 to 4. Square A has a side length of 23 inches. What is the side length, in inches, of square B?

Student-produced response: enter your answer

30 Medium Two-variable data: Models and scatterplots · ID 60512da5 Answer ↓

The scatterplot shows the relationship between two variables, x and y.



Which of the following equations is the most appropriate linear model for the data shown?

A $y = -2x$

B $y = -x$

C $y = x$

D $y = 2x$

31 Medium Two-variable data: Models and scatterplots · ID da71621b Answer ↓

For 5 years, an arborist measured the growth rates of two trees that were growing near each other: a silver maple tree and a red maple tree. Each year, the silver maple tree's height increase was 2.3 feet. Each year, the red maple tree's height increase was 32% less than the silver maple tree's height increase in the same year. Which of the following types of functions best models how the height of the red maple tree changed over time during these 5 years?

A Decreasing exponential

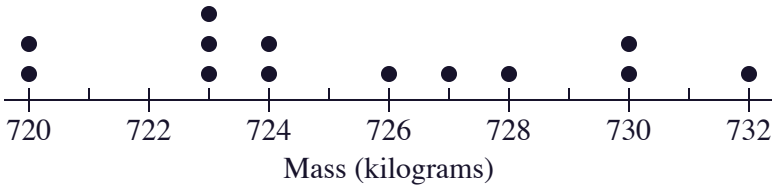
B Increasing exponential

C Decreasing linear

D Increasing linear

Problem-Solving & Data · Hard

32 Hard One-variable data: Distributions and measures of center and spread · ID d2d9b6af Answer ↓



A data set of the masses, rounded to the nearest whole number of kilograms (kg), for 13 mature Highland bulls is represented in the dot plot. An additional mature Highland bull with a mass of 553 kg is added to the original data set to create a new data set of 14 masses. Which statement best compares the mean and median of the new data set to the mean and median of the original data set?

A The mean of the new data set is equal to the mean of the original data set, and the median of the new data set is equal to the median of the original data set.

B The mean of the new data set is equal to the mean of the original data set, and the median of the new data set is less than the median of the original data set.

C The mean of the new data set is less than the mean of the original data set, and the median of the new data set is less than the median of the original data set.

D The mean of the new data set is less than the mean of the original data set, and the median of the new data set is equal to the median of the original data set.

33 Hard One-variable data: Distributions and measures of center and spread · ID 663113fd Answer ↓

A researcher is investigating the properties of 175 chemical compounds by finding the boiling point of each chemical compound. The mean boiling point of all 175 chemical compounds is 184 degrees Celsius. The researcher classifies each of these chemical compounds as either Type A or Type B. Of the 175 chemical compounds, 50 were classified as Type A, and these 50 chemical compounds have a mean boiling point of 339 degrees Celsius. The remaining 125 chemical compounds were classified as Type B. What is the mean boiling point, in degrees Celsius, of the 125 chemical compounds classified as Type B?

Student-produced response: enter your answer

34 Hard One-variable data: Distributions and measures of center and spread · ID 87fa9a4c Answer ↓

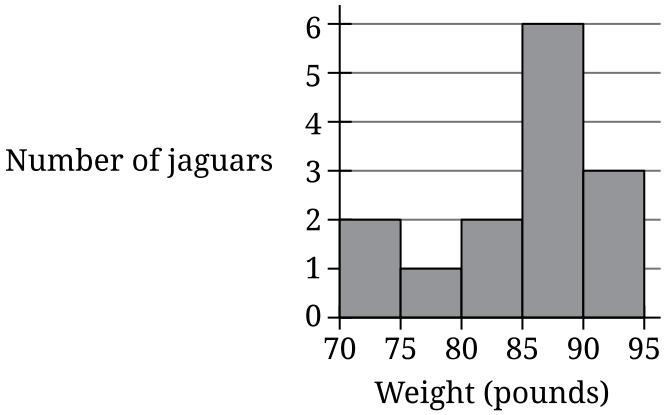
A meteorologist created a data set by recording the daily low temperature, to the nearest integer, for each of the 31 days in January 2024 in a town in Ohio. The frequency table summarizes this data set.

Daily low temperature (degrees Fahrenheit)	Frequency
-5 to 4	1
5 to 14	4
15 to 24	4
25 to 34	7
35 to 44	10
45 to 54	4
55 to 64	1

Based on the frequency table, what could be the median of the recorded daily low temperatures, in degrees Fahrenheit?

Student-produced response: enter your answer

35 Hard One-variable data: Distributions and measures of center and spread · ID ce3575b7 Answer ↓



The histogram summarizes a data set of the weights, in pounds, of 14 young female jaguars. If an additional weight of 32 pounds is added to the original data set to create a new data set of 15 weights, which of the following measures must be less for the new data set than for the original data set?

I. The median
II. The mean

A I only

B II only

C I and II

D Neither I nor II

36 Hard Percentages · ID 5313e8c2 Answer ↓

Of the land used by a school district, 44.0% of the square footage is used by middle schools and the remaining square footage is used by elementary schools. There are buildings on exactly 24.5% of the square footage of the land used by middle schools, and there are buildings on exactly 12.0% of the square footage of the land used by elementary schools. If there are buildings on exactly $p\%$ of the square footage of the land used by the school district, what is the value of p?

Student-produced response: enter your answer

37 Hard Percentages · ID 82e272c4 Answer ↓

A square drawing has a side length of 45 inches, and 1 inch on the drawing represents an actual measurement of 13 feet. A smaller version of the same drawing is printed as a square with the side length 85% shorter than the side length of the previous drawing. On the smaller drawing, which of the following is closest to the actual measurement, in feet, represented by 1 inch?

A 1.95

B 7.03

C 38.25

D 86.67

38 Hard Probability and conditional probability · ID d2f63b67 Answer ↓

A rack displays sweatshirts for two sports teams. The table shows the number of sweatshirts on the rack, classified by size and sports team.

	Tigers	Badgers	Total
Small	6	9	15
Medium	24	33	57
Large	18	24	42
Total	48	66	114

One sweatshirt from the rack will be selected at random. What is the probability of selecting a sweatshirt that is medium, given that the sweatshirt is a Tigers sweatshirt?

A 0.21

B 0.24

C 0.42

D 0.50

39 Hard Ratios, rates, proportional relationships, and units · ID 1f049bef Answer ↓

A polar bear weighs 94 stones. What is the weight of the polar bear, in **kilograms**? (Use 1 stone $= 14$ pounds and 1 kilogram $= 2.2$ pounds.)

Student-produced response: enter your answer

40 Hard Ratios, rates, proportional relationships, and units · ID 9a539a47 Answer ↓

A sphere has a radius of 3 inches and a density of 76 ounces per cubic inch. What is the mass, in ounces, of the sphere?

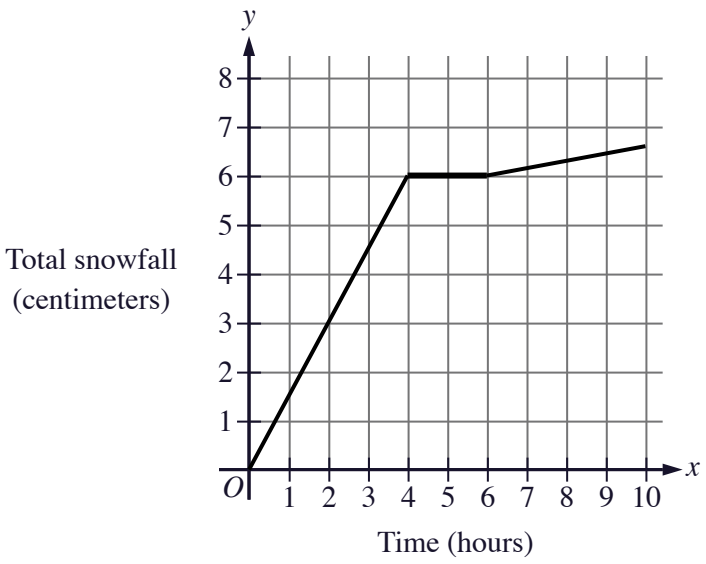
A $\frac{9\pi}{19}$

B $\frac{19\pi}{9}$

C 228π

D $2{,}736\pi$

41 Hard Two-variable data: Models and scatterplots · ID b2eac426 Answer ↓



The graph shows the total amount of snowfall y, in centimeters, from the start of a 10-hour period in Anchorage, Alaska, where x is the number of hours after the start of the period. Which of the following statements about the snowfall during this time period is true?

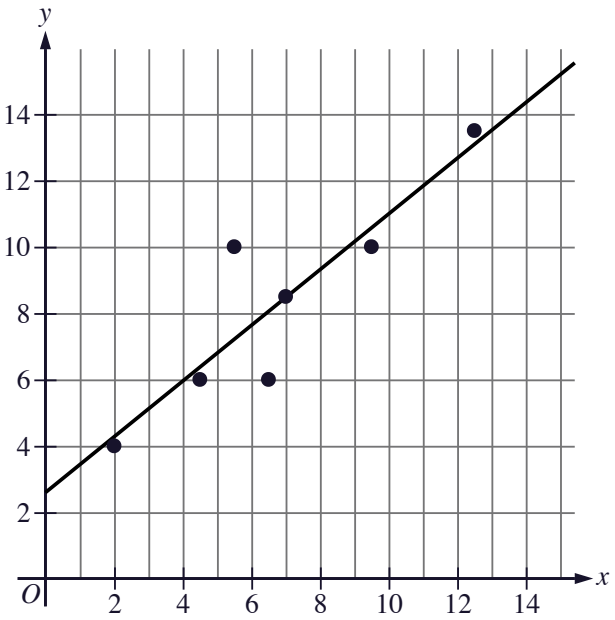
A The rate of snowfall was 6 centimeters per hour between $x = 4$ and $x = 6$.

B The rate of snowfall was the greatest between $x = 6$ and $x = 10$.

C The rate of snowfall increased between $x = 0$ and $x = 4$.

D The rate of snowfall was 0 centimeters per hour between $x = 4$ and $x = 6$.

42 Hard Two-variable data: Models and scatterplots · ID 0ca5a331 Answer ↓



The scatterplot shows the relationship between two variables, x and y, for the 7 data points in data set W. A line of best fit for data set W is also shown. This line can be represented by an equation in the form $y = a + cx$, where a and c are constants. Data set V consists of all the data points in data set W as well as the point $(14, 8)$. A line of best fit for data set V can be represented by the equation $y = j + kx$, where j and k are constants. Assuming the lines of best fit are calculated the same way, which of the following statements must be true?

I. $a > j$
II. $c > k$

A I only

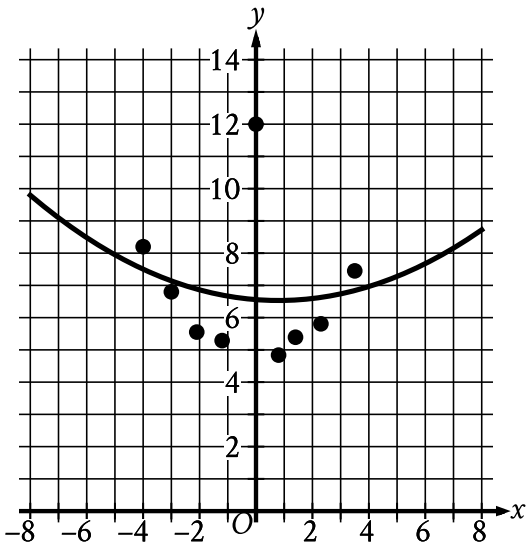
B II only

C I and II

D Neither I nor II

43 Hard Two-variable data: Models and scatterplots · ID b0fcabd0 Answer ↓

The scatterplot shows the relationship between x and y for the 9 data points in data set A.



A quadratic model for the data in data set A can be written as $y = 0.04x^2 - 0.07x + 6.56$. The graph of this model is shown in the *xy*-plane. The data point at $x = 0$ was found to be the result of a recording error and was removed from data set A to create data set B, consisting of the remaining 8 data points. A quadratic model for the data in data set B can be written as $y = ax^2 + bx + c$, where a, b, and c are constants. If the quadratic models for data sets A and B are calculated in the same way, which of the following statements must be true?

I. $a > 0.04$
II. $c < 6.56$

A I only

B II only

C I and II

D Neither I nor II

NOVEMBER 2026 ADDITIONS

Geometry & Trig

9 Easy | 7 Medium | 3 Hard

SKILLS COVERED

- Area and volume
- Lines, angles, and triangles
- Right triangles and trigonometry

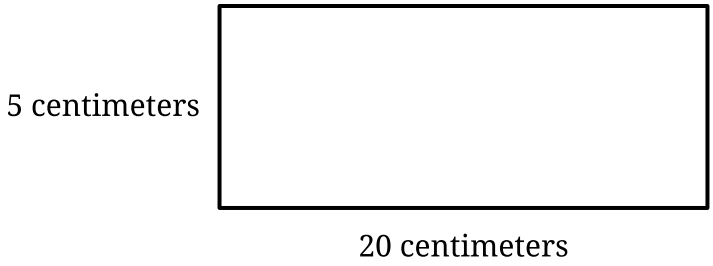
Geometry & Trig · Easy

1 Easy Area and volume · ID 1c0bc3fc Answer ↓

A rectangle has a length of 20 inches and a width of 1 inch. What is the area, in square inches, of the rectangle?

Student-produced response: enter your answer

2 Easy Area and volume · ID 331270b2 Answer ↓



Note: Figure not drawn to scale.

What is the area, in square centimeters, of the rectangle shown?

A 5

B 15

C 25

D 100

3 Easy Area and volume · ID c8c88888 Answer ↓

The perimeter of a square is 388 centimeters. What is the side length, in centimeters, of this square?

Student-produced response: enter your answer

4 Easy Area and volume · ID de5f51e9 Answer ↓

Square X has a side length of 24 centimeters. The perimeter of square Y is 2 times the perimeter of square X. What is the length, in centimeters, of one side of square Y?

A 48

B 26

C 22

D 12

5 Easy Lines, angles, and triangles · ID b21ff6c5 Answer ↓

The length of each side of triangle A is 280 millimeters. The length of each side of triangle B is double the length of each side of triangle A. What is the length, in millimeters, of each side of triangle B?

A 280

B 282

C 560

D $1{,}120$

6 Easy Lines, angles, and triangles · ID cba197c9 Answer ↓

In triangle XYZ, two of the angles have the same measure. If the measure of angle X is 136° and the measure of angle Y is 22°, what is the measure of angle Z?

A 180°

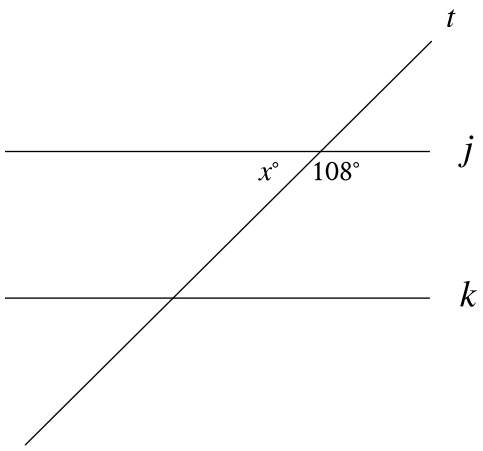
B 136°

C 44°

D 22°

7 Easy Lines, angles, and triangles · ID cc54131c

Answer ↓



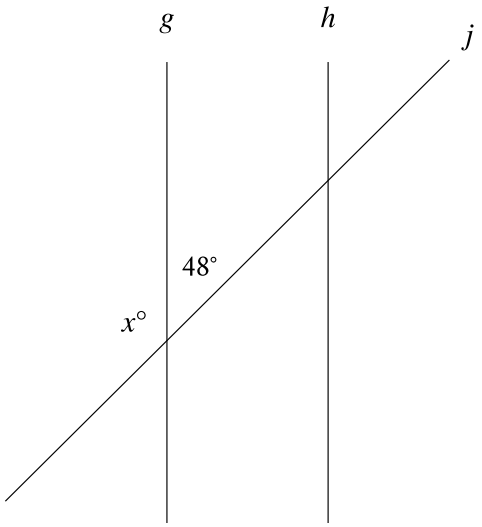
Note: Figure not drawn to scale.

In the figure, line j is parallel to line k. What is the value of x?

Student-produced response: enter your answer

8 Easy Lines, angles, and triangles · ID cce343bd

Answer ↓



Note: Figure not drawn to scale.

In the figure, line g is parallel to line h, and line j intersects both lines. What is the value of x ?

A 24

B 48

C 132

D 138

9 Easy Right triangles and trigonometry · ID 940de228

Answer ↓

The lengths of the legs of a right triangle are 6 and 9. The length of the hypotenuse is c. Which expression represents the value of c^2?

A $6^2 + 9^2$

B $9^2 - 6^2$

C $6^2 - 9^2$

D $\left(6^2\right) \cdot \left(9^2\right)$

Geometry & Trig · Medium

10 Medium Area and volume · ID 0565e4b1 Answer ↓

The perimeter of a square can be expressed as $4(85)$ units. What is the length, in units, of a side of this square?

Student-produced response: enter your answer

11 Medium Area and volume · ID 0cfa8528 Answer ↓

A cylinder has a diameter of 12 inches and a height of 21 inches. What is the volume, in cubic inches, of the cylinder?

A 36π

B 252π

C 756π

D $3{,}024\pi$

12 Medium Area and volume · ID c0950aad Answer ↓

A right square pyramid has a base with side lengths of 13 centimeters. The height of the pyramid is 15 centimeters. What is the volume, in cubic centimeters, of this pyramid?

A 65

B 130

C 845

D $2{,}535$

13 Medium Lines, angles, and triangles · ID aedb3374 Answer ↓

In $\triangle DEF$, the measure of $\angle D$ is 163°. Which of the following could be the measure, in degrees, of $\angle E$?

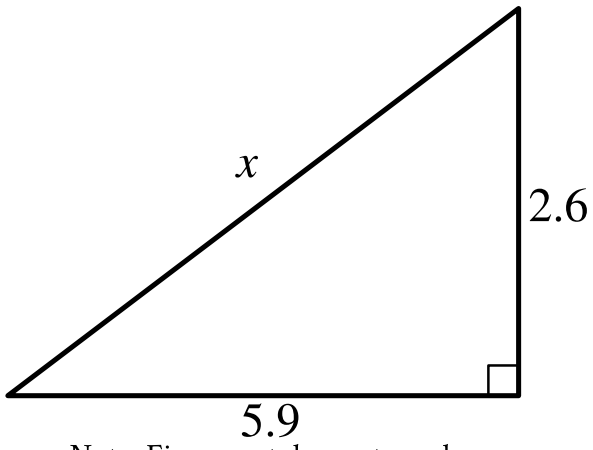
A 16

B 18

C 90

D 164

14 Medium Right triangles and trigonometry · ID 8c3a3a4b Answer ↓



Note: Figure not drawn to scale.

For the triangle shown, the value of x is between which two consecutive integers?

A 2 and 3

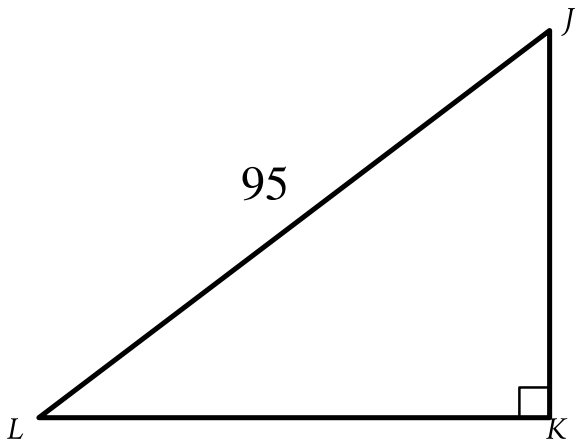
B 6 and 7

C 8 and 9

D 41 and 42

15 Medium Right triangles and trigonometry · ID 6b838d7d

Answer ↓



Note: Figure not drawn to scale.

In right triangle JKL, the tangent of $\angle L$ is $\frac{3}{4}$. What is the length of $\overline{JK}$?

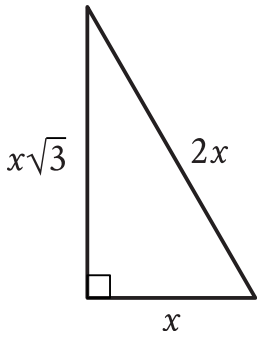
A $\frac{35}{16}$

B $\frac{15}{4}$

C 57

D 76

16 Medium Right triangles and trigonometry · ID f6c32d0e Answer ↓



In the triangle shown, $x = 19$. Which of the following is the measure of one of the angles of this triangle?

A 19°

B 30°

C 38°

D 45°

Geometry & Trig · Hard

17 Hard Area and volume · ID dae3c46a Answer ↓

A right rectangular prism has a height of 29 units and a volume of $5{,}568$ cubic units. The length of the base of the prism is 75% of the width of the base of the prism. What is the perimeter of the base of the prism, in units?

Student-produced response: enter your answer

18 Hard Lines, angles, and triangles · ID ab03cab6 Answer ↓

Triangle ABC is similar to triangle XYZ, where A and B correspond to X and Y, respectively. The length of each side of triangle XYZ is k times the length of its corresponding side in triangle ABC, where k is an integer greater than 1. The measure, in degrees, of angle Z can be represented by the expression $7x + 25$, where x is an integer. Which of the following expressions represents the measure, in degrees, of angle C for all possible values of x?

A $7x + 25$

B $k(7x + 25)$

C $90 - (7x + 25)$

D $180 - k(7x + 25)$

19 Hard Lines, angles, and triangles · ID 903546ff Answer ↓

In triangle ABC and triangle DEF, sides AB and DE each have a side length of 6 inches, and angles A and D each have an angle measure of 65°. Which of the following additional pieces of information is(are) sufficient to prove whether triangle ABC is congruent to triangle DEF?

I. The measures of angles B and C are equal.
II. The lengths of sides AC and DF are equal.
III. The lengths of sides BC and EF are equal.

A I is sufficient, but II and III are not.

B II is sufficient, but I and III are not.

C III is sufficient, but I and II are not.

D II is sufficient and III is sufficient, but I is not.

Answer key

Tap any answer to go back to its question.

Algebra · Answer key

1	E	D	4d56adc6	2	E	D	764efb37	3	E	B	0118f060
4	E	40	4bac9af3	5	E	1000	87cc4d49	6	E	A	e3e5b02b
7	E	C	1a29a3c3	8	E	D	3c3eeec0	9	E	B	629a0e17
10	E	A	5d8c790a	11	E	A	69c49da1	12	E	B	b837de6a
13	E	A	babbaa4c	14	E	-9	e3d9aacc	15	E	B	904b9c89
16	E	A	dae59626	17	E	B	197e1c77	18	E	30	1fe09f90
19	E	C	4a80d71f	20	E	B	7cb1150f	21	E	20	cf2b40db
22	E	C	1059a42a	23	E	B	141a0005	24	E	A	8375e970
25	E	C	e8b9be7a	26	E	B	a849f10b	27	E	B	9c47560d
28	E	B	89ba62ac	29	E	D	9145ff4f	30	E	A	11b04fd3
31	E	4	1a0baf64	32	E	B	45998262	33	E	D	5e137eae
34	E	C	cfa392c3	35	E	A	8a90b184	36	E	2	c43a9964
37	M	B	e34da75f	38	M	6	01d5ae98	39	M	-9	5e34b099
40	M	A	773f698f	41	M	A	81ca4d02	42	M	A	a4c1cb45
43	M	10.75, 43/4	1eb5ec45	44	M	B	8987f1d0	45	M	A	957a51b9
46	M	C	966c41ff	47	M	D	a42c12aa	48	M	C	d44bfa1d
49	M	A	272c7da7	50	M	C	07898d2b	51	M	C	2de12266
52	H	D	3c20deb8	53	H	B	6cec2b22	54	H	A	17dffba1
55	H	D	bfede33b	56	H	D	ccd7cd55	57	H	B	e144dfaf
58	H	D	e4de142f	59	H	B	00f411df	60	H	D	66038b7c
61	H	-7	6c813877	62	H	1008	150c0c1b	63	H	B	f535157f

Advanced Math · Answer key

1	E	A	d1a9db8a	2	E	D	dd61df23	3	E	D	7f89638c
4	E	B	8ab51c14	5	E	A	f14d324c	6	E	A	1f64eb7a
7	E	D	3edd35c8	8	E	2	0a0d8986	9	E	C	54777964
10	E	B	b7dc5b11	11	E	C	dc8fe4be	12	E	2	0a47ef4c
13	E	B	69a28a0d	14	E	D	a0540eeb	15	E	C	b63e49c3
16	E	B	ff3baf3a	17	E	A	6eb6ba92	18	E	C	c400b60b
19	M	4	050c375c	20	M	B	83193ebb	21	M	A	15601317
22	M	4	229abfe6	23	M	6	861a8eff	24	M	245, -246	1dd3a492
25	M	B	50a5696a	26	M	A	3514f2df	27	M	A	39241e8c
28	M	C	46e768ca	29	M	C	5c2bfe44	30	M	A	956823cb
31	M	B	aa3aa5b5	32	M	B	afa2bc05	33	M	2	e6a8ce94
34	M	B	ecac53ca	35	M	A	3ee271a7	36	M	B	a5628865
37	M	C	d1b468f1	38	H	B	12251fea	39	H	A	6b18d1fe
40	H	C	b94f72cb	41	H	59	0bcb3184	42	H	1.285, 1.286, 9/7	ae712b49
43	H	D	d38cf701	44	H	A	55ce172b	45	H	A	bf4a7fa0

Problem-Solving & Data · Answer key

1	E	C	bd95327c	2	E	27	1ca1692a	3	E	C	30dfdafd
4	E	D	aa389b37	5	E	B	4d729046	6	E	64	b46d1dfb
7	E	D	fcae5027	8	E	C	b887c432	9	E	30	8706e422
10	E	32	cf454b6a	11	E	D	fb15e088	12	E	D	0c42577f
13	E	80	0e552763	14	E	B	1ae151d8	15	E	C	4e79ec0e
16	E	C	70fdd26c	17	E	B	76232971	18	E	23000	df79fab6
19	E	C	f262457b	20	E	D	5611ae7b	21	E	C	ae04b960
22	E	B	b85a0d60	23	M	C	e693f988	24	M	A	2e08f681
25	M	D	f9a6a602	26	M	C	772a79c1	27	M	0.18, 9/50	74a16a71
28	M	0.15, 3/20	b511e998	29	M	46	0335a0c5	30	M	C	60512da5
31	M	D	da71621b	32	H	D	d2d9b6af	33	H	122	663113fd
34	H	any of 25–34	87fa9a4c	35	H	B	ce3575b7	36	H	17.5, 35/2	5313e8c2
37	H	D	82e272c4	38	H	D	d2f63b67	39	H	598.1, 598.2	1f049bef
40	H	D	9a539a47	41	H	D	b2eac426	42	H	B	0ca5a331
43	H	C	b0fcabd0								

Geometry & Trig · Answer key

1	E	20	1c0bc3fc	2	E	D	331270b2	3	E	97	c8c88888
4	E	A	de5f51e9	5	E	C	b21ff6c5	6	E	D	cba197c9
7	E	72	cc54131c	8	E	C	cce343bd	9	E	A	940de228
10	M	85	0565e4b1	11	M	C	0cfa8528	12	M	C	c0950aad
13	M	A	aedb3374	14	M	B	8c3a3a4b	15	M	C	6b838d7d
16	M	B	f6c32d0e	17	H	56	dae3c46a	18	H	A	ab03cab6
19	H	B	903546ff								