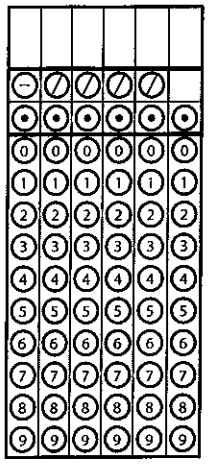
Coach Jumpstart, North Carolina
READY EOC Edition, Algebra I/Integrated I

Practice Test 1

Name: _____

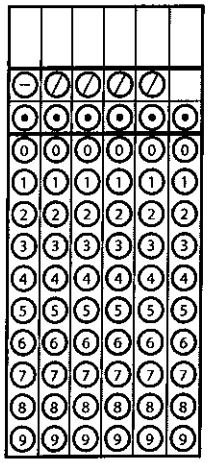
Sample Questions

S1 How many feet is three inches?



S2 Complete the table.

$f(s) = \lvert s \rvert - 7$	
s	$f(s)$
-10	3
-5	-2
0	
5	-2



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S3 Add.

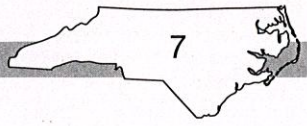
$$(v^2 + 5v + 2) + (v + 7)$$

A $8v + 9$

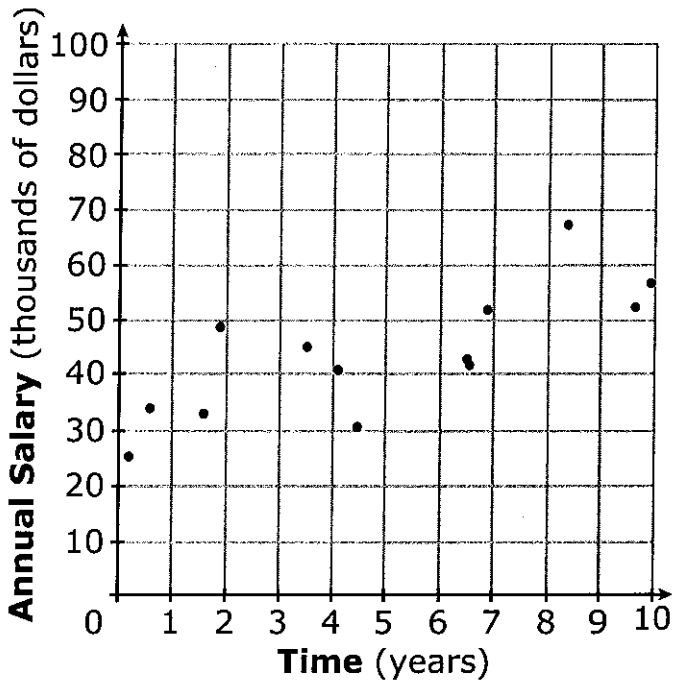
B $v^2 + 6v + 9$

C $6v^2 + 9$

D $v^3 + 7v^2 + 5v + 2$



1 The scatterplot below shows the annual salaries of 13 graphic designers and the amount of time they worked at their current job.



Which statement is true?

A There is no relationship between the annual salary earned and the number of years the designers worked in their current job.

B There is a negative relationship between the amount of time the designers worked in their current job and the annual salary they earned.

C There is a positive relationship between the amount of time the designers worked in their current job and the annual salary they earned.

D There is a positive relationship between the annual salary earned and the number of years the designers spent in school.

Go to the next page

2 The table below shows the number of girls in school-sponsored sports from the years 1975–2010.

Year	1975	1980	1985	1990	1995	2000	2005	2010
Number of Girls	183	198	186	210	224	235	250	262

Which type of graph would be best to represent this information?

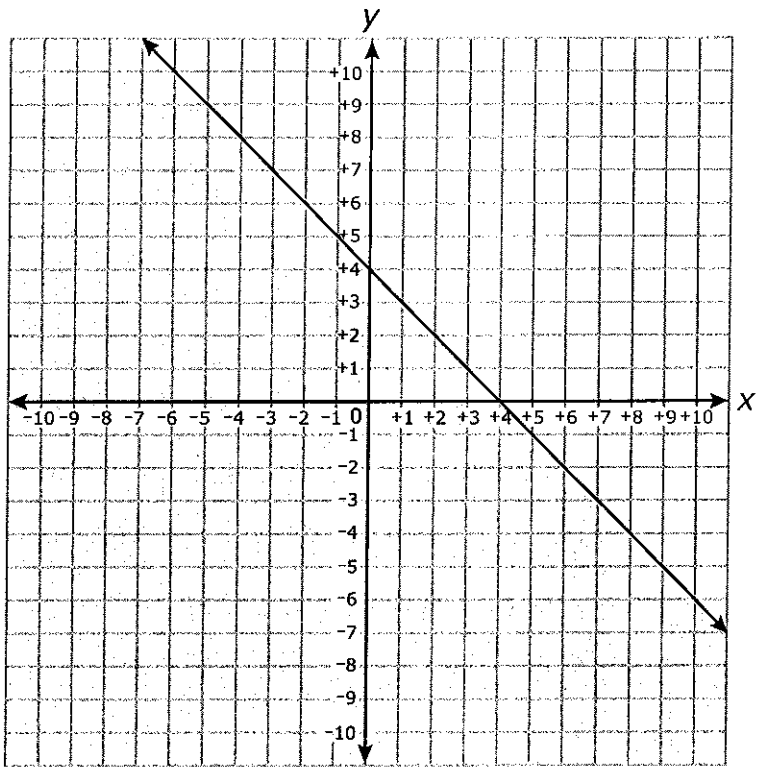
A circle graph

B dot plot

C box-and-whisker plot

D bar graph

3 Which inequality is modeled by the graph below?



A $x + y \leq 4$

B $x + y < 4$

C $y \leq x + 4$

D $y < {}^{-}x + 4$

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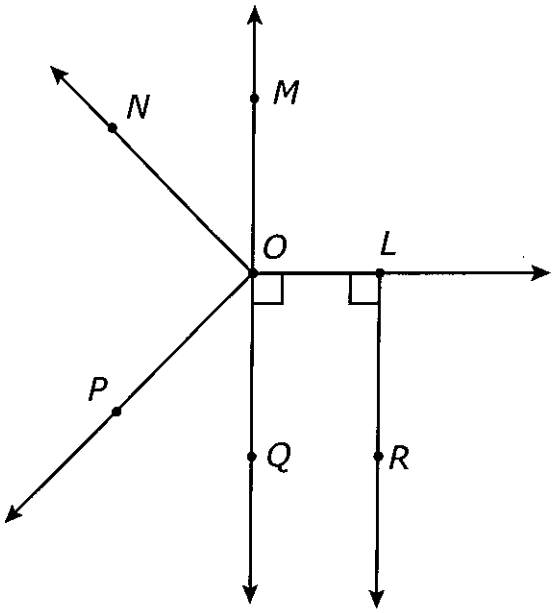
4 Which segment is perpendicular to $\overline{LR}$?



A $\overline{MQ}$

B $\overline{NO}$

C $\overline{NP}$

D $\overline{OL}$

5 Which situation describes a correlation that is not a causal relationship?

A The more novels a book club orders, the higher the bill will be.

B The more money Kioko earns, the more she spends.

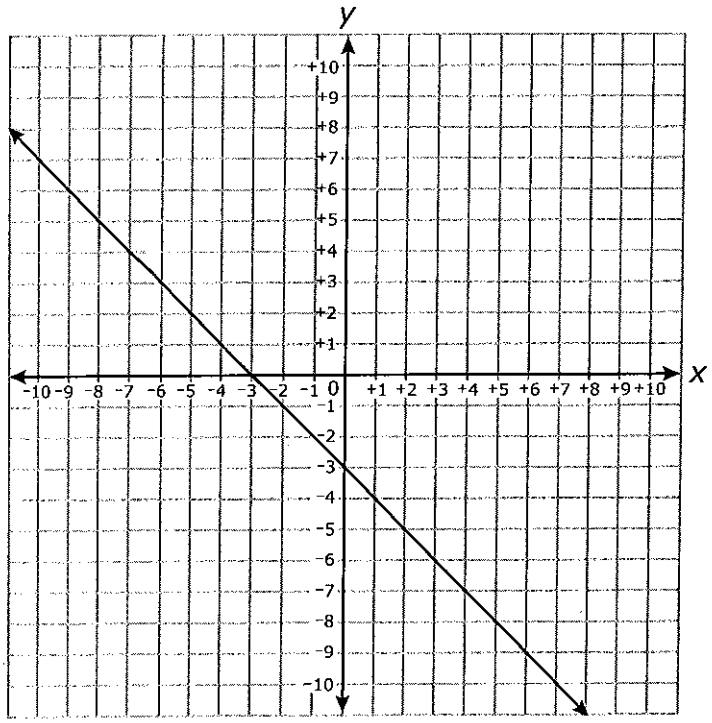
C The more Trevor pedals, the farther his bicycle travels.

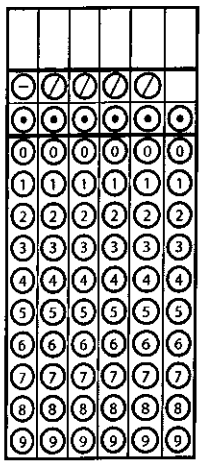
D The more Flavia lifts weights, the more muscle she builds.

Go to the next page.

Questions 6 through 15 require you to write your answers in the boxes provided. Write only one number or symbol in each box and fill in the circle in each column that matches what you have printed. Fill in only one circle in each column.

6 What is the slope of the line graphed below?





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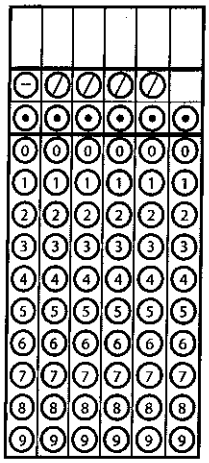
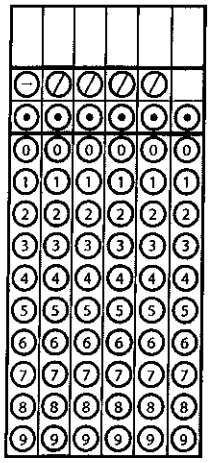
7 A firework is launched from a cliff overlooking the ocean. The elevation of the firework shell, in feet above sea level, t seconds after launch is given by the expression $-16t^2 + 157t + 63$. How high is the top of the cliff, in feet above sea level?



8 When a principal amount P is invested at an annual interest rate r and compounded n times per year, the amount accumulated in the account after t years can be found with the equation

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

Shirley invested \$550 in a savings account with a rate of 2.5% compounded semi-annually. After three years, she had \$592.56 in her account. In this situation, what is n?



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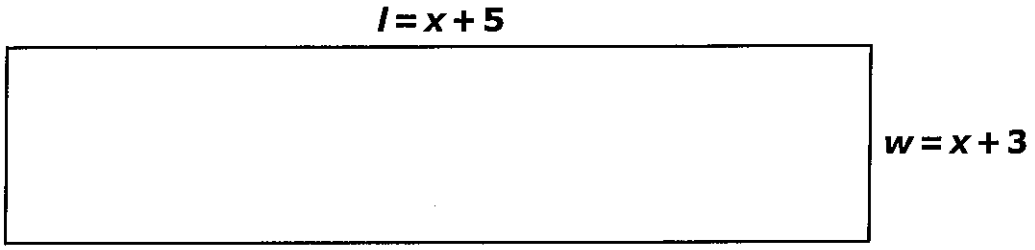
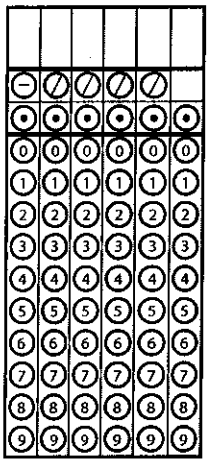
9 The area is found using the formula $A = lw$, where A is the area, l is the length, and w is the width. The rectangle below has an area of 63 square feet.



What is the width of the rectangle to the nearest foot?



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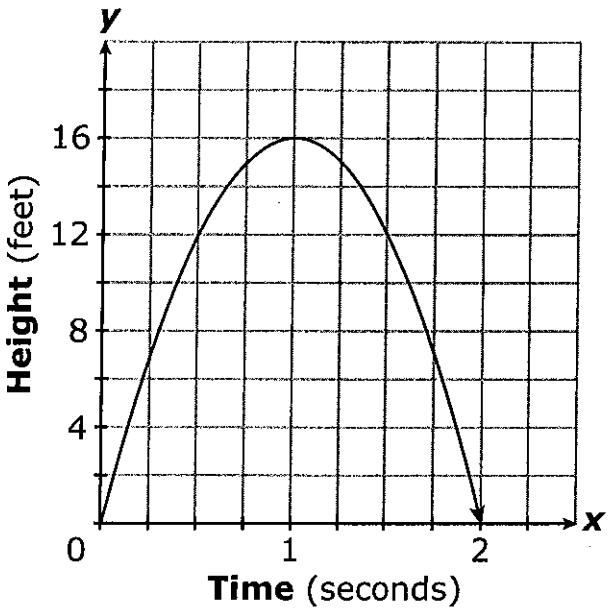
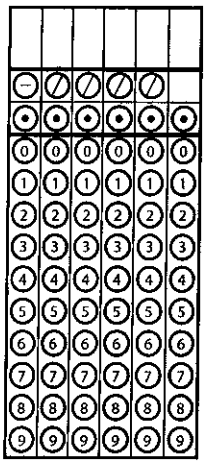
10 Sai is the goalie on the soccer team. A kick he made is modeled by the graph below. It shows the height of the ball over a period of two seconds.



What was the maximum height in feet that the ball reached?



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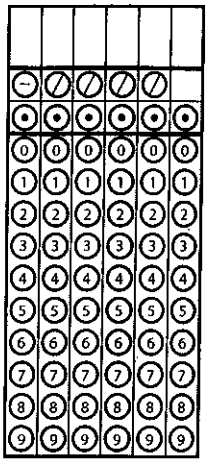
11 While standing on a cliff 24 feet above the lake, Serena threw a rock with an initial upward velocity of 20 feet per second. The equation $h = -16t^2 + 20t + 24$ gives the height h of the rock after t seconds. How many seconds does it take for the rock to hit the water?



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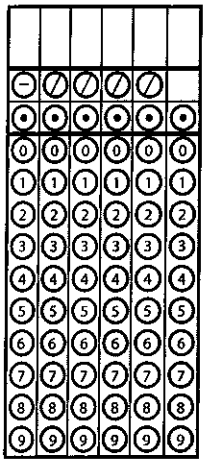
12 Suppose that the function $f(x) = 0.1x + 7$ represents the cost to download x songs a month from an internet music club. Arthur now has \$10. How many more dollars does Arthur need to buy 60 songs?



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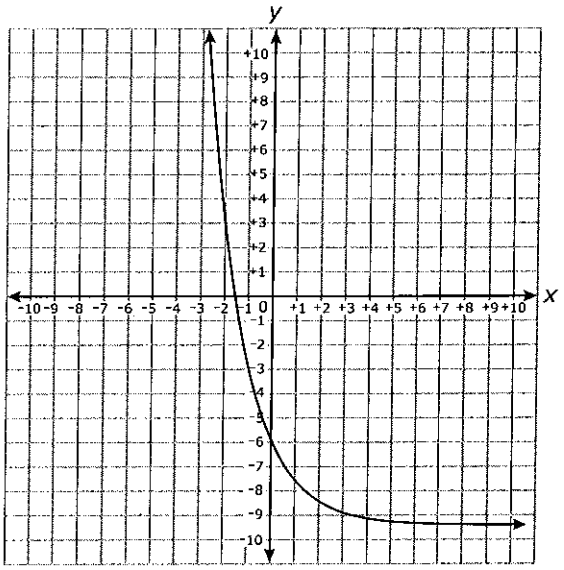
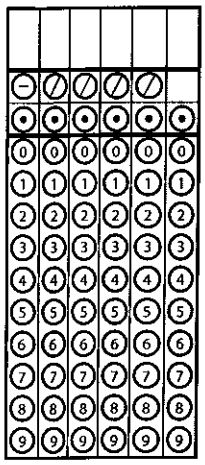
13 The function $f(x) = (3)\left(\frac{1}{2}\right)^x$ was replaced with $f(x) + k$ resulting in the function graphed below.



What is the value of k?



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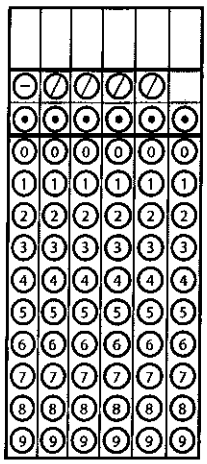
14 The function $f(t) = a(1 - b)^t$ represents the amount of a decaying radioactive element remaining at time t, where a is the original amount and b is the percent of decrease. If the decay factor, $1 - b$, is 80%, what is the percent decrease in decimal form?



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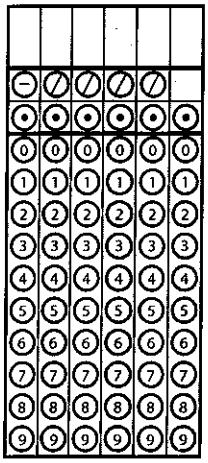
15 A theater has 39 seats in Row 1, 43 seats in Row 2, 47 seats in Row 3, and so on, up to Row 35. If this pattern continues, which row has 75 seats?



This is the end of the calculator inactive test questions.

Directions:

1 Look back over your answers for the calculator inactive questions. You will not be able to go back and work on these questions once you are given a calculator.

2 Raise your hand to let your teacher know you are ready to begin the calculator active test questions.

3 Do not begin work on the calculator active test questions until your teacher has given you a calculator.

16 Ji-min has two running routes. For strength training, she sprints up a hill. For endurance training, she runs on a flat track at a slower pace. She runs the same distance for each endurance run. By the end of the week, she had run her endurance route 6 times and her strength route once. She ran a total of 19 miles. Which of the following could be the distance of each route?

A strength route: 4 miles; endurance route: 1 mile

B strength route: 2 miles; endurance route: 3 miles

C strength route: 1.5 miles; endurance route: 2 miles

D strength route: 1 mile; endurance route: 3 miles

17 Which system of equations has the same solution as the system shown below?

$$\begin{cases} 4x + y = 7 \\ x - 2y = 5 \end{cases}$$

A $\begin{cases} 4x + y = 5 \\ x - 2y = 7 \end{cases}$

B $\begin{cases} 5x - y = 2 \\ x - 2y = 5 \end{cases}$

C $\begin{cases} 3x + 3y = 7 \\ x - 2y = 5 \end{cases}$

D $\begin{cases} 3x + 3y = 2 \\ x - 2y = 5 \end{cases}$

Go to the next page.

18 Compare the function $f(x) = -2x^2 + 6x + 7$ to the graph of the quadratic function that includes the points in the table below.

x	-3	-2	-1	0	1	2	3
$g(x)$	-38	-17	-2	7	10	7	-2

Which statement is true?

A $f(x)$ has a greater maximum.

B $g(x)$ has a greater maximum.

C $g(x)$ has the smaller minimum.

D $f(x)$ does not have a maximum value.

19 The table below shows the average price of a convertible sports car over several years.

Year	Price
2007	$44,500
2008	$52,000
2009	$61,500
2010	$71,000
2011	$81,500

What is the average rate of change in price of the sports car from 2007 to 2011?

A $7,500.00

B $8,833.33

C $9,250.00

D $9,833.33

Go to the next page.

20 The line $\overline{LN}$ has endpoints $L(-8, -2)$ and $N(4, 2)$ and midpoint M. What is the equation of the line perpendicular to $\overline{LN}$ and passing through M?

A $y = -3x - 6$

B $y = -\frac{1}{3}x - \frac{2}{3}$

C $y = \frac{1}{3}x - \frac{2}{3}$

D $y = 3x + 6$

21 A rectangle has vertices at $(-5, 3)$, $(-5, 8)$, $(3, 8)$, and $(3, 3)$. What is the perimeter of the rectangle?

A 13 units

B 26 units

C 32 units

D 40 units

22 Power Pro Gym charges a \$149.99 initiation fee plus \$20 per month, t, for membership. Cardio Fitness charges \$39.99 per month with no initiation fee. Which function represents the difference in cost between a Power Pro membership and a Cardio Fitness membership?

A $f(t) = -19.99t - 149.99$

B $f(t) = -19.99t + 149.99$

C $f(t) = 149.99t - 19.99$

D $f(t) = 149.99t + 19.99$

Go to the next page.

23 Alejandro invested $150 in two accounts for six years. The ending balances for each year are shown in the table.

Time (years)	**Investment A** (dollars)	**Investment B** (dollars)
0	150.00	150.00
1	152.00	151.95
2	154.00	153.93
3	156.00	155.93
4	158.00	157.95
5	160.00	160.01
6	162.00	162.09

Which statement ***best*** explains why Investment B had a larger balance than Investment A after six years?

A The balance for Investment B grew at a greater constant rate than the balance for Investment A.

B The balance for Investment B grew at a greater exponential rate than the balance for Investment A.

C The balance for Investment A grew at a constant rate, while the balance for Investment B grew at an exponential rate.

D The balance for Investment A grew at an exponential rate, while the balance for Investment B grew at a constant rate.

Go to the next page.

24 Sam owns a clothing manufacturing business. The function $C(x) = 15x + 122$ describes the amount it costs to employ a seamstress for x number of hours per week. What would a reasonable domain be for this function?

A $^{-}40 \leq x \leq 40$

B $0 < x \leq 40$

C $0 \leq x \leq 1{,}000$

D all real numbers

25 Which expression is equivalent to $\sqrt[3]{125r^2s^3t^4}$?

A $5r^{\frac{3}{2}}st^{\frac{3}{4}}$

B $5r^{\frac{2}{3}}st^{\frac{4}{3}}$

C $\frac{25t}{r}$

D $\frac{25r}{t}$

26 Which expression is equivalent to $\left(x^{\frac{1}{2}}\right)^{-4}$?

A $\sqrt{x}$

B x^2

C $\frac{1}{x^2}$

D $\frac{1}{x^8}$

Go to the next page.

27 Aliyah and Hannah are training for a half-marathon. The table below shows their running times in minutes per mile for six weeks of training.

	Aliyah	Hannah
Week 1	9.5	9
Week 2	9.1	8.7
Week 3	8.5	8.6
Week 4	8.1	8.4
Week 5	7.6	7.8
Week 6	7.3	7.6

Which is true of the data sets?

A Hannah's data shows the greatest range.

B Aliyah's data has the smallest interquartile range.

C The mean times for Aliyah and Hannah are the same.

D Hannah's mean time is less than Aliyah's.

Go to the next page.

28 The marketing firm for a new sports channel surveyed 1,500 men and women to see which extreme-sport activity they preferred to watch on TV. The results of the survey are shown in the relative frequency table below.

	Men	Women
Surfing	0.11	0.11
Snowboarding	0.15	0.16
Parcour	0.07	0.11
Motocross	0.16	0.13

Which statement is true?

A 135 more men would rather watch motocross than parcour.

B 450 women prefer either surfing or snowboarding.

C 11.7% of the people surveyed like to watch parcour the most.

D More men than women preferred to watch surfing.

29 Factor completely.

$$9s^4 - 729t^4$$

A $9(s^2 + 9t^2)(s + 3t)(s - 3t)$

B $9(s^2 + t^2)(s^2 - 9t^2)$

C $(9s^2 + 9t^2)(s^2 - 81t^2)$

D $3(s + 3t)^2(s - 3t)^2$

Go to the next page.

30 What are the zeros of the function $f(x) = x^2 - 6x - 27$?

A $x = -9$ and $x = -3$

B $x = -9$ and $x = 3$

C $x = 9$ and $x = -3$

D $x = 9$ and $x = 3$

31 Sylvia wants to borrow money to buy a car. Her options are:

- Loan A: Sylvia can borrow $4,500 from her mother. Her mom charges 5% interest a year, but she does not compound the interest.
- Loan B: Sylvia can borrow $4,500 from the bank. The bank charges 4% interest compounded annually.

What can you conclude about the types of growth each type of interest has?

A The growth of Loan A is linear, and Loan B grows exponentially.

B The growth of Loan A is exponential, and Loan B grows linearly.

C Both loans grow by equal differences over equal intervals.

D Both loans grow by equal factors over equal intervals.

Go to the next page.

32 Keisha gets a 20 dollar bill each time she babysits and a 5 dollar bill each time she mows the lawn. She wants to know what combinations of these bills could add up to $85 for a new bicycle.

- Let x equal the number of five dollar bills.
- Let y equal the number of twenty dollar bills.

What is the domain where y is a function of x and the total value is $85?

A {1, 3, 5, 7, 9, 11, 13, 15, 17}

B {0, 1, 5, 9, 13, 17}

C {1, 5, 9, 13, 17}

D {0, 1, 2, 3, 4}

33 The tables below show values for two functions.

x	$f(x)$
-2	1.50
-1	1.75
0	2.00
1	2.25
2	2.50

x	$g(x)$
15	5.75
16	6.00
17	6.25
18	6.50
19	6.75

Which statement about the functions is true?

A The rate of change is the same for both functions.

B $f(x)$ grows exponentially, and $g(x)$ is constant.

C $f(x) = g(x) + 0.25$

D Both functions grow exponentially.

Go to the next page.

34 A quadrilateral has vertices at $A(0, -5)$, $B(2, 1)$, $C(9, 1)$, and $D(13, -5)$. What kind of quadrilateral is $ABCD$?

A rectangle that is not a square

B rhombus that is not a square

C square

D trapezoid

35 The point $M\left(\frac{5}{2}, -1\right)$ is the midpoint of $\overline{AB}$. What are the coordinates of point A if the coordinates of B are $(7, -6)$?

A $\left(-\frac{7}{2}, 3\right)$

B $(-2, 4)$

C $(2, -4)$

D $\left(5, -\frac{1}{2}\right)$

36 A cylindrical glass has a diameter of 12 inches and a height of 8 inches. A cone-shaped glass has a base radius of 6 inches and a height of 24 inches. Which statement is true about the two glasses? (Volume of a cylinder = $\pi r^2 h$; Volume of a cone = $\frac{1}{3}\pi r^2 h$)

A It would take three full cone-shaped glasses of water to fill the cylindrical glass.

B It would take one full cone-shaped glass of water to fill the cylindrical glass.

C It would take three full cylindrical glasses of water to fill the cone-shaped glass.

D The volume of the cone glass is less than the volume of the cylindrical glass.

Go to the next page.

37 The table below shows the number of hours Andre practices playing his guitar on various weeks.

Week	1	6	11	16	21	26
Number of Hours	1	3.5	6	8.5	11	13.5

What is the meaning of the slope of the linear model for the data?

A Every week, Andre increased his practice time by 2.5 hours.

B Every 2.5 weeks, Andre's practice time increased by 5 hours.

C Every week, Andre's practice time increased by half an hour.

D Every 5 weeks, Andre increased his practice time by half an hour.

38 The table below shows the relationship between two variables.

x	1	2	3	4	5	6	7	8
y	4	5	5	8	10	11	13	12

Which answer choice gives and correctly interprets the correlation coefficient for the line of best fit?

A $r \approx -0.965$; there is a strong negative relationship between the variables.

B $r = 0$; there is no linear relationship between the variables.

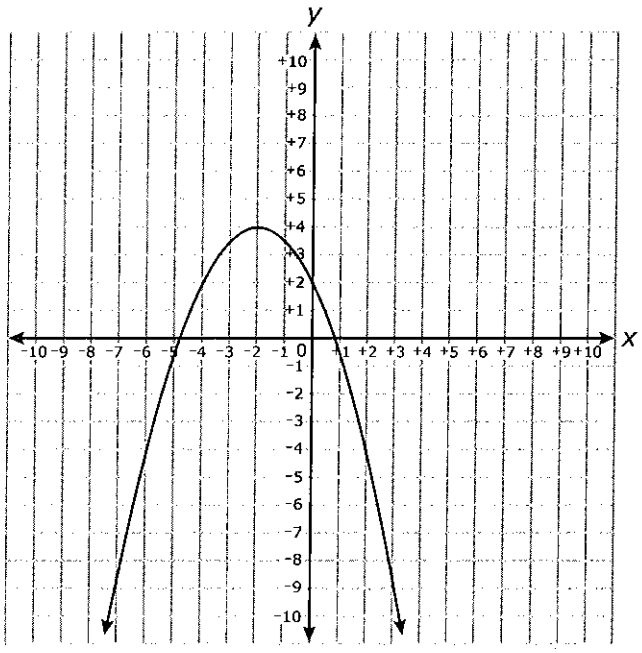
C $r \approx 0.0165$; there is a weak positive relationship between the variables.

D $r \approx 0.965$; there is a strong positive relationship between the variables.

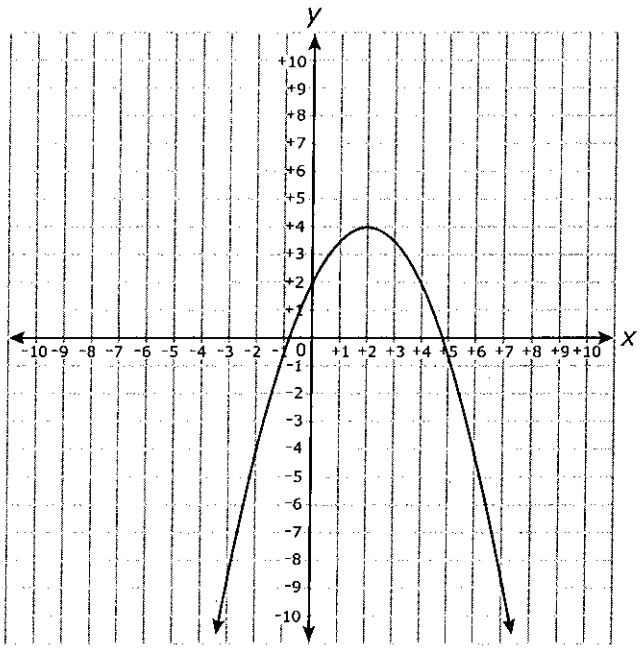
Go to the next page.

39 Which is the graph of the function $f(x) = -\frac{1}{2}(x + 2)^2 + 4$?

A



B



Answer choices C and D are on page 32.

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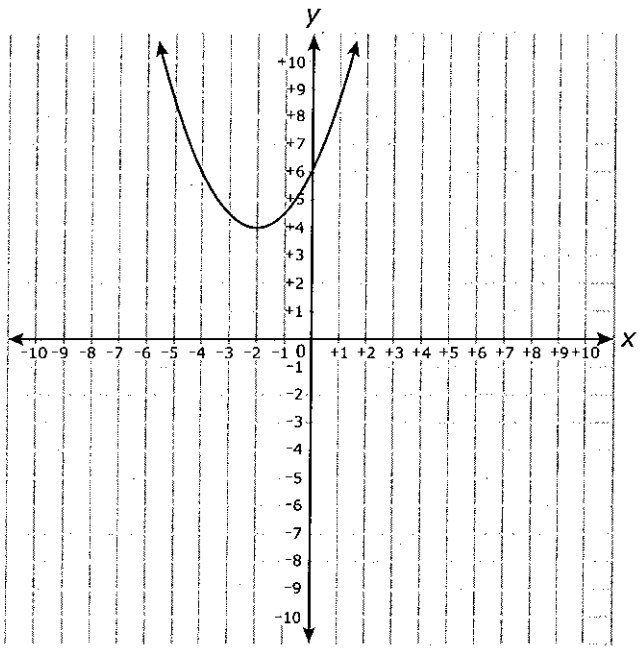
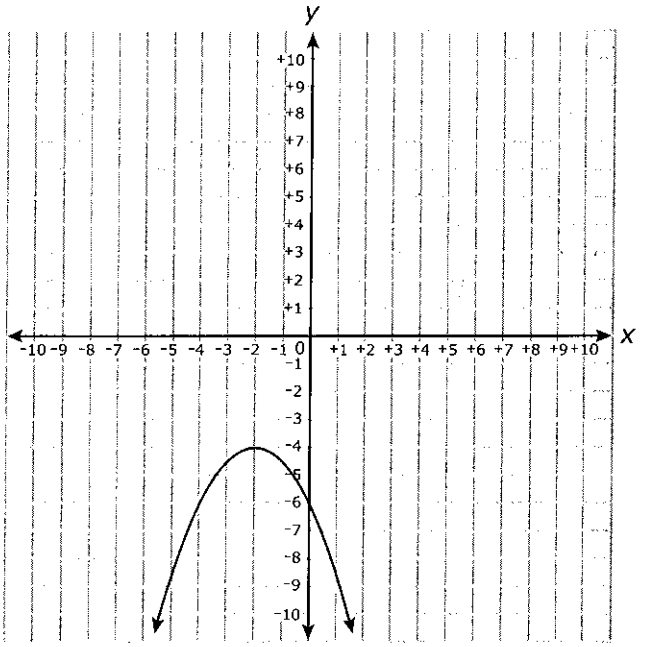
C



D



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40 The function $g(x)$ increases on the interval $\left(-\infty, \frac{5}{2}\right)$ and has x-intercepts (0, 0) and (5, 0). Which function does this describe?

A $g(x) = 2x - 10$

B $g(x) = 2^x - 32$

C $g(x) = -x^2 + 5x$

D $g(x) = x(x - 5)$

41 A rubber ball is dropped from 200 inches off the ground. The sequence below shows the rebound heights to the nearest inch for the first four bounces:

100, 50, 25, 12.5,...

Which formula could be used to determine the height of the ball on the next bounce, NEXT, if the height of the ball, NOW, is known?

A NEXT = 0.5 • NOW

B NEXT = $\frac{1}{2}$ + NOW

C NEXT = NOW − 2 • NOW

D NEXT = 5 • NOW

42 Ian has a yardstick with marks for every tenth of an inch. Which could be the ***most*** accurate measurement of his height using the yardstick?

A 70 inches

B 67 inches

C 67.1 inches

D 67.12 inches

Go to the next page.

43 Shawna's quiz scores for the first ten quizzes in her math class are shown below.

87, 77, 100, 73, 83, 89, 90, 92, 98, 96

What would happen to the data distribution if she scored 62, 65, 68, 50, and 65 on her next five quizzes?

A The data distribution would become less peaked and more widely spread.

B The data distribution would become more peaked and more widely spread.

C The data distribution would become more peaked and less widely spread.

D The data distribution would become less peaked and less widely spread.

44 The table below shows the results of a study done to see whether there is a relationship between the number of hours a student watches television each week and the student's grade point average.

Hours (x)	3	5	6	6	8	10	12	15
GPA (y)	3.8	3.7	3.7	3.6	3.2	2.4	2.3	1.6

Approximately what percentage of the GPAs are more than 0.2 points different from the GPAs predicted by the line of best fit for the data?

A 50%

B 38%

C 62%

D 17%

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45 Karl walked a total of $2\frac{1}{2}$ miles on a treadmill. He walked 2 miles per hour for $\frac{1}{3}$ of the time and 4 miles per hour for $\frac{2}{3}$ of the time. What amount of time, in hours, did Karl walk on the treadmill?

A $\frac{1}{2}$

B $\frac{3}{4}$

C $\frac{4}{5}$

D $\frac{5}{4}$

46 Which statement below correctly justifies whether or not the table represents a function?

Input	$^{-}5$	5	0	1	$^{-}3$	4	0	8
Output	$^{-}7$	$^{-}5$	$^{-}3$	0	1	1	3	5

A Yes, because each input is matched to exactly one output.

B Yes, because each ordered pair occurs exactly once.

C No, because one input is matched to more than one output.

D No, because one output is matched to more than one input.

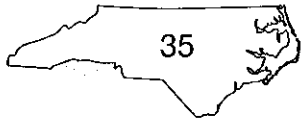
47 Jonesville has a current population of 6,000. Town officials predict that the population will grow by 250 people per year. Which of the following is an explicit model describing the population growth in n years?

A $a_0 = 6{,}000,\ a_{n+1} = a_n + 250$

B $a_0 = 6{,}250,\ a_{n+1} = a_n + 250$

C $a_n = 6{,}000 + 250n$

D $a_n = 6{,}250 + 250n$



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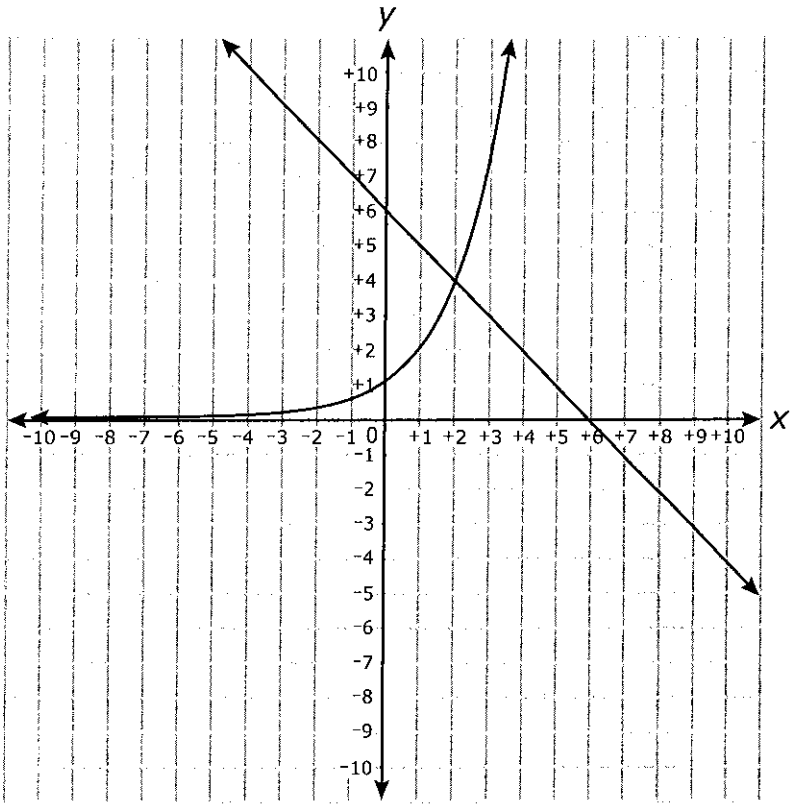
48 The functions $f(x) = 2^x$ and $g(x) = -x + 6$ are graphed below. What is the solution to the equation $2^x = -x + 6$?



A $x = -2$

B $x = 1$

C $x = 2$

D $x = 4$

Go to the next page.

49 Compound interest is interest paid on both the principal amount of an investment and the interest the account has earned. The formula used to calculate compound interest is

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

where A is the final amount earned, P is the principal investment, r is the annual interest rate, n is the number of times the interest is to be compounded, and t is the number of years invested. Which of the following shows the equation solved for the principal P?

A $P = A\left(1 + \frac{r}{n}\right)^{nt}$

B $P = \frac{A}{\left(1 + \frac{r}{n}\right)^{nt}}$

C $P = \frac{A\left(1 + \frac{r}{n}\right)}{nt}$

D $P = A^{nt}\left(1 + \frac{r}{n}\right)^{-1}$

Go to the next page.

50 Jason and Kendra are skiing together. After a long day on the slopes, Kendra decides to take a ski-lift down to the lodge. Right as she boards a ski-lift going down at a speed of 190 meters per minute, Jason boards another ski-lift going up at a speed of 69 meters per minute. ***Approximately*** how long will it be before Jason and Kendra are 71 meters apart?

A 0.27 second

B 3.65 seconds

C 16.45 seconds

D 3.65 minutes