The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

ALGEBRA I (Common Core)

Wednesday, August 17, 2016 — 8:30 to 11:30 a.m.

MODEL RESPONSE SET

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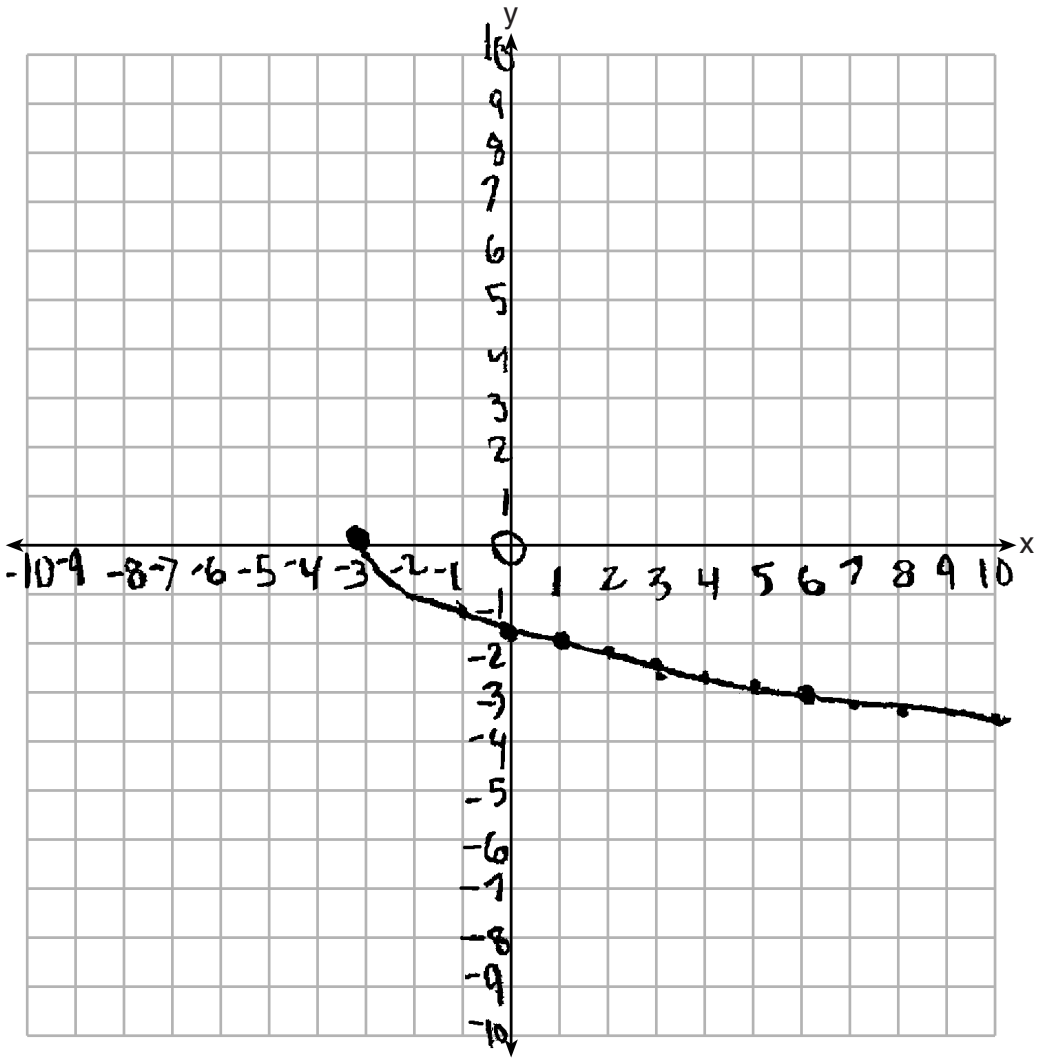
Question 25

25 Graph the function $y = -\sqrt{x+3}$ on the set of axes below.

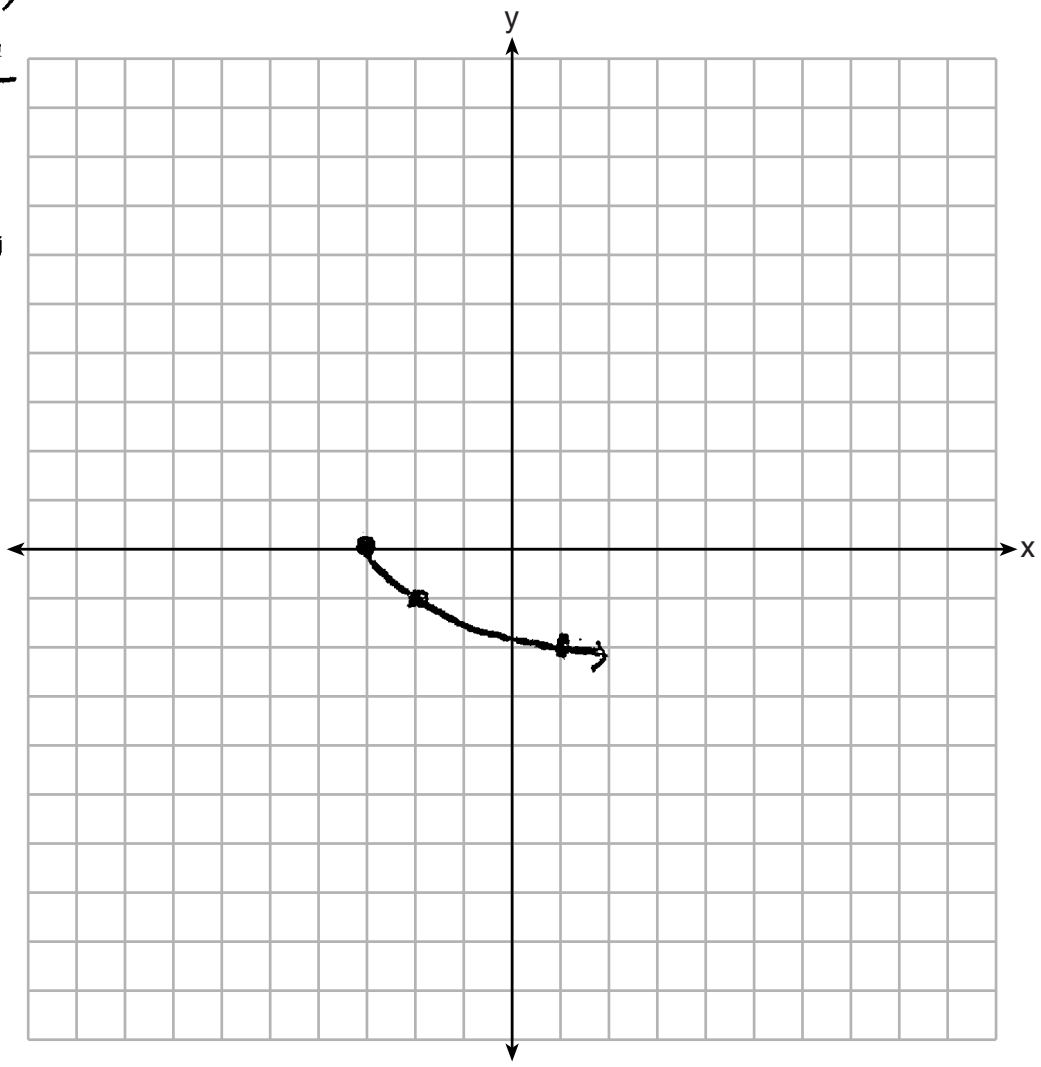


Score 2: The student gave a complete and correct response.

Question 25

25 Graph the function $y = -\sqrt{x+3}$ on the set of axes below.

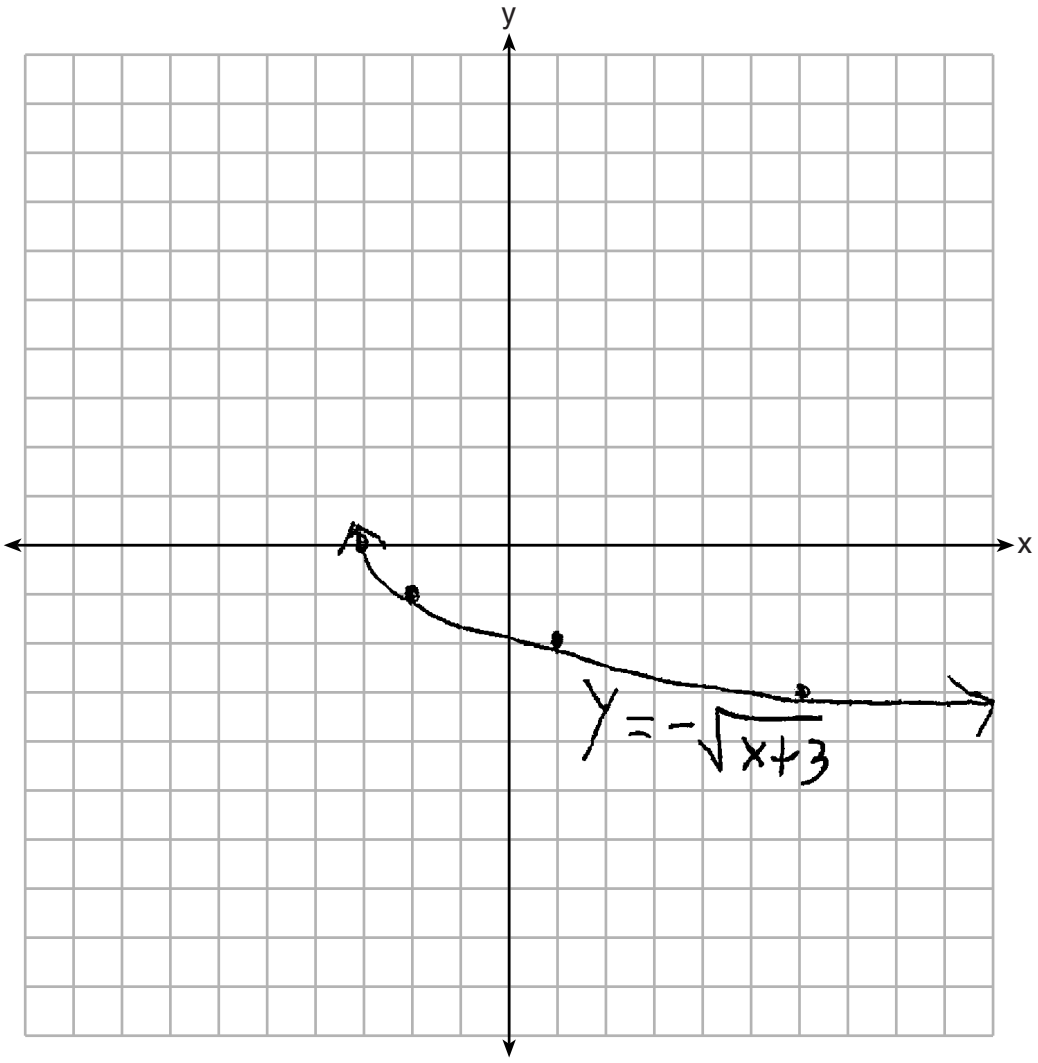
x	$-\sqrt{x+3}$
6	-3
1	-2
-2	-1
-3	0



Score 2: The student gave a complete and correct response.

Question 25

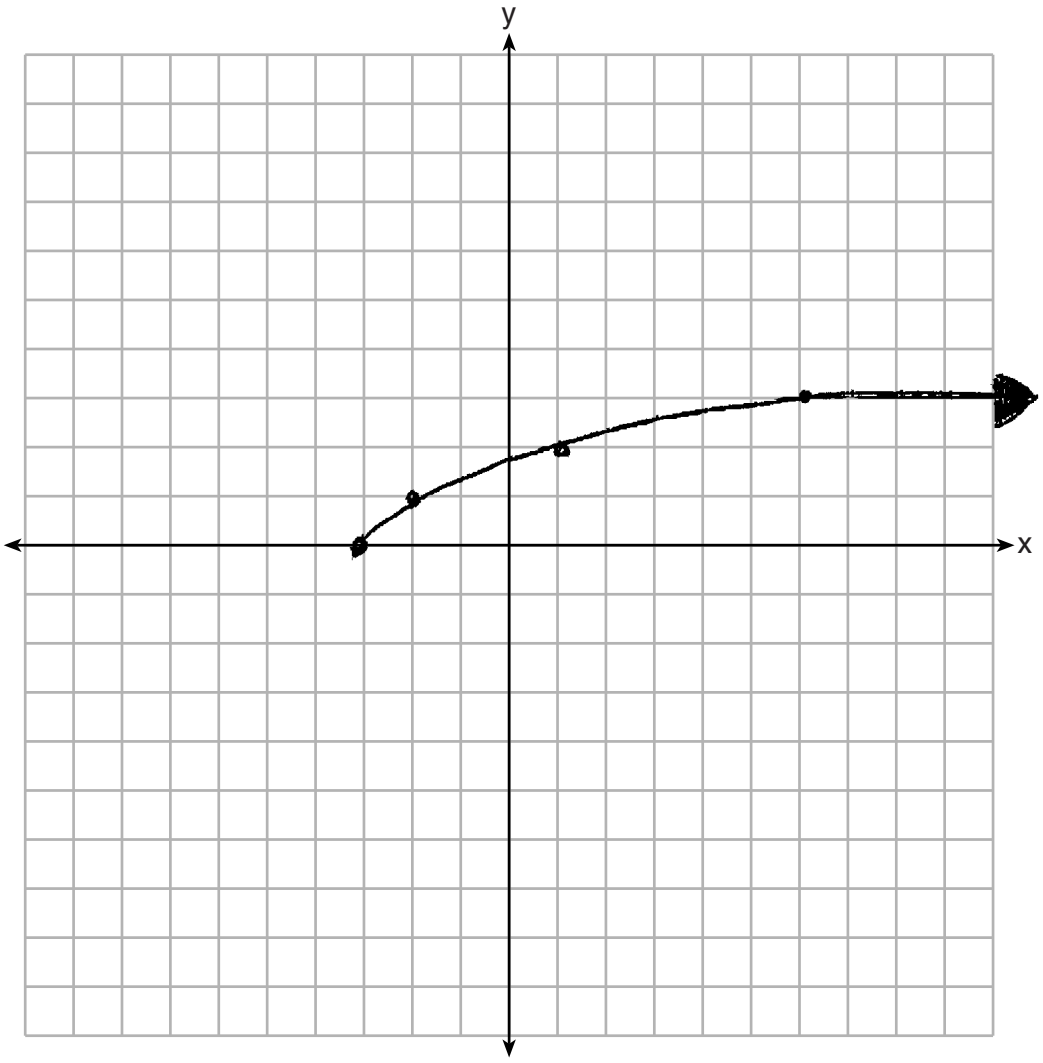
25 Graph the function $y = -\sqrt{x+3}$ on the set of axes below.



Score 1: The student made an error by putting an arrow at $(-3,0)$.

Question 25

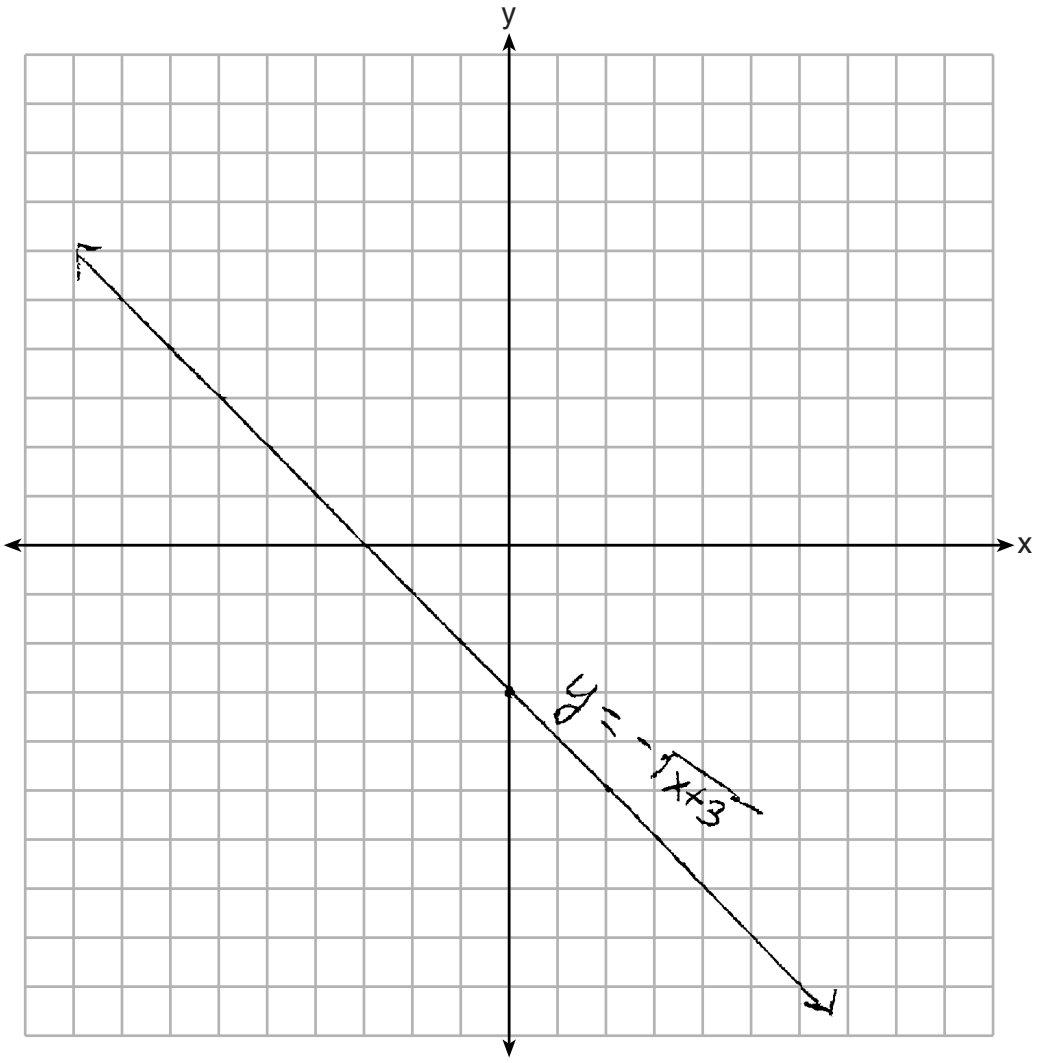
25 Graph the function $y = -\sqrt{x+3}$ on the set of axes below.



Score 1: The student graphed $y = \sqrt{x+3}$.

Question 25

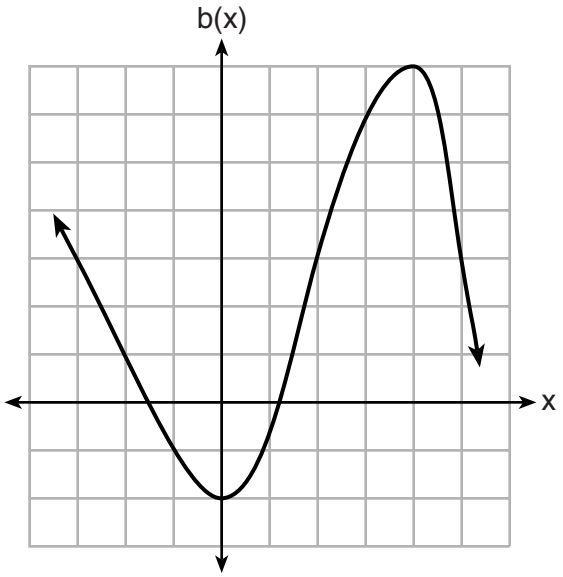
25 Graph the function $y = -\sqrt{x+3}$ on the set of axes below.



Score 0: The student gave a completely incorrect response.

Question 26

26 Richard is asked to transform the graph of $b(x)$ below.



The graph of $b(x)$ is transformed using the equation $h(x) = b(x - 2) - 3$. Describe how the graph of $b(x)$ changed to form the graph of $h(x)$.

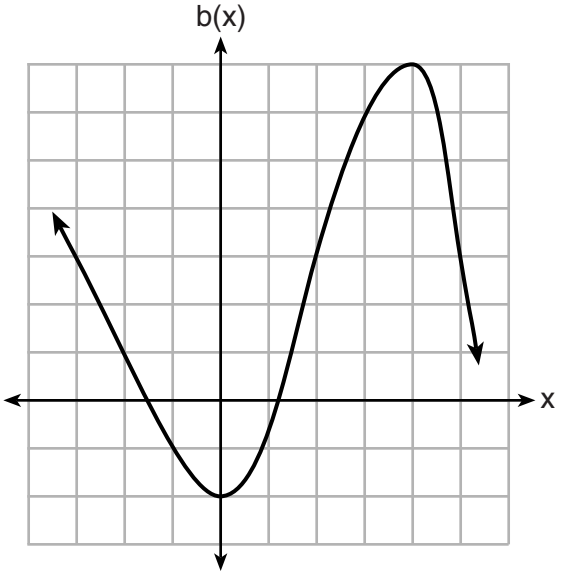
2 units right

3 units down

Score 2: The student gave a complete and correct response.

Question 26

26 Richard is asked to transform the graph of $b(x)$ below.



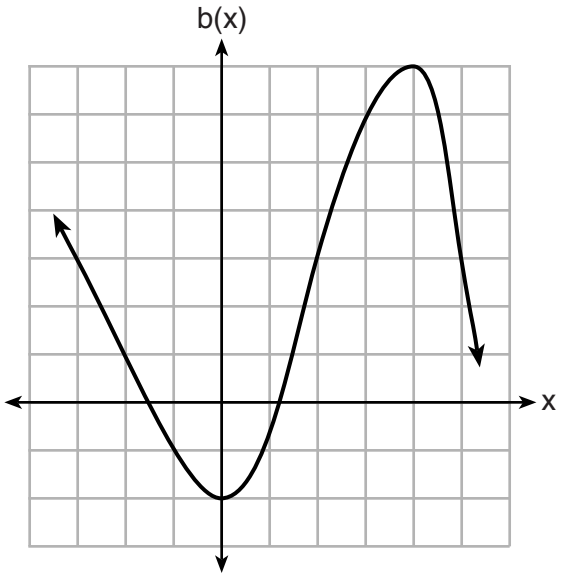
The graph of $b(x)$ is transformed using the equation $h(x) = b(x - 2) - 3$. Describe how the graph of $b(x)$ changed to form the graph of $h(x)$.

Right 3
Down 2

Score 1: The student confused the horizontal and vertical shifts.

Question 26

26 Richard is asked to transform the graph of $b(x)$ below.



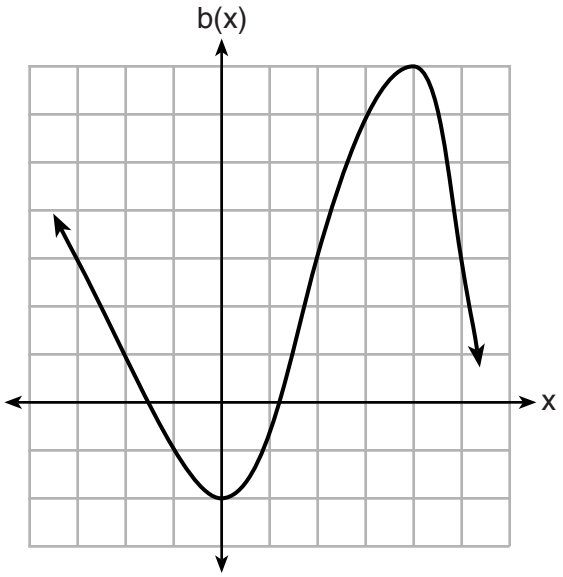
The graph of $b(x)$ is transformed using the equation $h(x) = b(x - 2) - 3$. Describe how the graph of $b(x)$ changed to form the graph of $h(x)$.

The b(x) change 2 units left and 3 units down

Score 1: The student stated an incorrect direction for the horizontal shift.

Question 26

26 Richard is asked to transform the graph of $b(x)$ below.



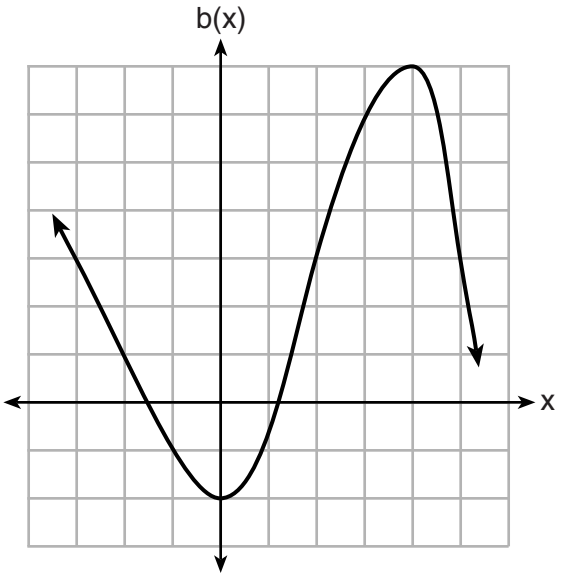
The graph of $b(x)$ is transformed using the equation $h(x) = b(x - 2) - 3$. Describe how the graph of $b(x)$ changed to form the graph of $h(x)$.

It moved down 2 units and to the left 3 units.

Score 0: The student confused the horizontal and vertical shifts and stated an incorrect direction for the horizontal shift.

Question 26

26 Richard is asked to transform the graph of $b(x)$ below.



The graph of $b(x)$ is transformed using the equation $h(x) = b(x - 2) - 3$. Describe how the graph of $b(x)$ changed to form the graph of $h(x)$.

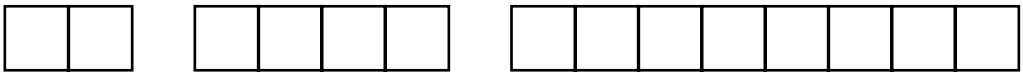
(left side stupid)

The graph will flip to its reflection and move 3 units. It will also move down 2 units.

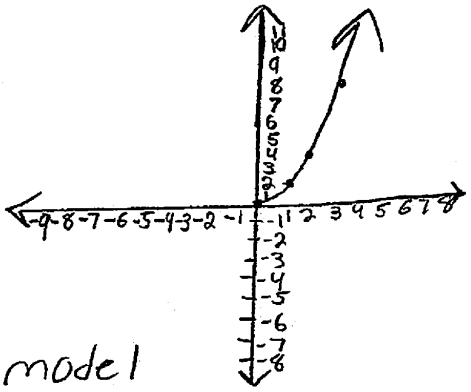
Score 0: The student wrote a completely incorrect response.

Question 27

27 Consider the pattern of squares shown below:



Which type of model, linear or exponential, should be used to determine how many squares are in the *n*th pattern? Explain your answer.

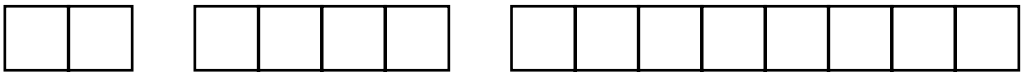


An exponential model should be used to represent the n^{th} pattern because if you look at the pattern of squares above, they are not growing constantly. The squares are growing exponentially. They are growing expunentially because the pattern they are growing at is 2, 4, 8. A constant pattern would be 2, 4, 6.

Score 2: The student gave a complete and correct response.

Question 27

27 Consider the pattern of squares shown below:



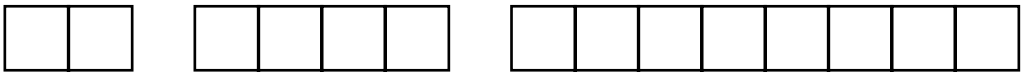
Which type of model, linear or exponential, should be used to determine how many squares are in the *n*th pattern? Explain your answer.

Exponential should be used because the pattern does not increase at a constant rate.

Score 2: The student gave a complete and correct response.

Question 27

27 Consider the pattern of squares shown below:



Which type of model, linear or exponential, should be used to determine how many squares are in the *n*th pattern? Explain your answer.

exponential

$f(n) = 2^n$ because 2^n fits the pattern

example, $f(1)=2^1 \rightarrow f(1)=2$

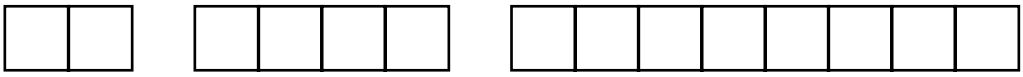
$f(2)=2^2 \rightarrow f(2)=4$

$f(3)=2^3 \rightarrow f(3)=8$

Score 2: The student gave a complete and correct response.

Question 27

27 Consider the pattern of squares shown below:



Which type of model, linear or exponential, should be used to determine how many squares are in the nth pattern? Explain your answer.

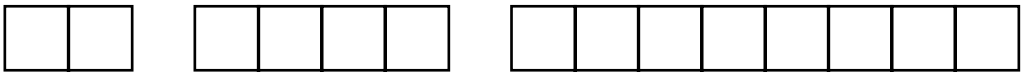
2, 4, 8, 16, 32, 64, 128, 256, 512

9th term = 512 squares.

Score 1: The student wrote a justification instead of an explanation.

Question 27

27 Consider the pattern of squares shown below:



Which type of model, linear or exponential, should be used to determine how many squares are in the *n*th pattern? Explain your answer.

Exponential because they are not is some form of pattern

Score 0: The student wrote an incorrect explanation.

Question 28

28 When multiplying polynomials for a math assignment, Pat found the product to be $-4x + 8x^2 - 2x^3 + 5$. He then had to state the leading coefficient of this polynomial. Pat wrote down -4. Do you agree with Pat's answer? Explain your reasoning.

No because it is not in the correct order. $-2x^3+8x^2-4x+5$ is the correct order, so -2 is the leading coefficient.

Score 2: The student gave a complete and correct response.

Question 28

28 When multiplying polynomials for a math assignment, Pat found the product to be $-4x + 8x^2 - 2x^3 + 5$. He then had to state the leading coefficient of this polynomial. Pat wrote down -4. Do you agree with Pat's answer? Explain your reasoning.

No, because Pat had forgotten to put the polynomial in standard form, with the exponents in decreasing order. The leading coefficient would be the number connected to the exponent of the greatest value. Had pat put the polynomial in standard form he would've gotten $8x^2 - 2x^3 - 4x + 5$.

Score 1: The student made an error in the last sentence of the explanation.

Question 28

28 When multiplying polynomials for a math assignment, Pat found the product to be $-4x + 8x^2 - 2x^3 + 5$. He then had to state the leading coefficient of this polynomial. Pat wrote down -4. Do you agree with Pat's answer? Explain your reasoning.

because the leading coefficient is always the first number

I agree with Pat's answer

Score 1: The student did not realize that the polynomial needs to be in standard form for their statement to be true.

Question 28

28 When multiplying polynomials for a math assignment, Pat found the product to be $-4x + 8x^2 - 2x^3 + 5$. He then had to state the leading coefficient of this polynomial. Pat wrote down -4. Do you agree with Pat's answer? Explain your reasoning.

Yes, because the leading coefficient is always the smallest exponential power in this case -4x.

Score 0: The student wrote a completely incorrect response.

Question 29

29 Is the sum of $3\sqrt{2}$ and $4\sqrt{2}$ rational or irrational? Explain your answer.

$3\sqrt{2} = 4.24... + 4\sqrt{2}$ Irrational, because the sum cannot be represented as a fraction.

$9.89949...$

Score 2: The student gave a complete and correct response.

Question 29

29 Is the sum of $3\sqrt{2}$ and $4\sqrt{2}$ rational or irrational? Explain your answer.

$3\sqrt{2}+4\sqrt{2}$

$7\sqrt{4}$

$7\cdot(2)$

$7\cdot2$

(14)

The sum of $3\sqrt{2}$ and $4\sqrt{2}$ is rational because it equals a whole number.

Score 1: The student made an error when adding $3\sqrt{2}$ and $4\sqrt{2}$.

Question 29

29 Is the sum of $3\sqrt{2}$ and $4\sqrt{2}$ rational or irrational? Explain your answer.

$7\sqrt{2}$

The answer can't be written as a fraction.

Score 1: The student did not state that the answer was irrational.

Question 29

29 Is the sum of $3\sqrt{2}$ and $4\sqrt{2}$ rational or irrational? Explain your answer.

$3\sqrt{2}$ $4\sqrt{2}$

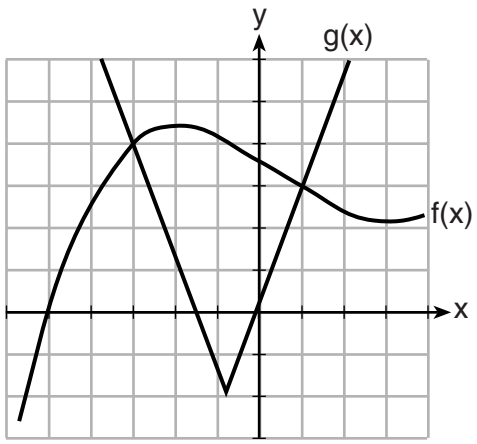
4.242640687 5.656854249

The sums of $3\sqrt{2}$ and $4\sqrt{2}$ are irrational because the sums have decimals in their answer. To be rational it has to be a whole number, without decimals.

Score 0: The student wrote an incorrect explanation.

Question 30

30 The graph below shows two functions, $f(x)$ and $g(x)$. State all the values of x for which $f(x) = g(x)$.

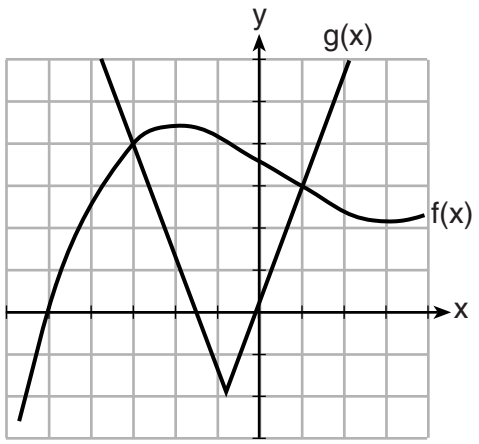


f(1) = g(1)
f(-3) = g(-3)

Score 2: The student gave a complete and correct response.

Question 30

30 The graph below shows two functions, $f(x)$ and $g(x)$. State all the values of x for which $f(x) = g(x)$.

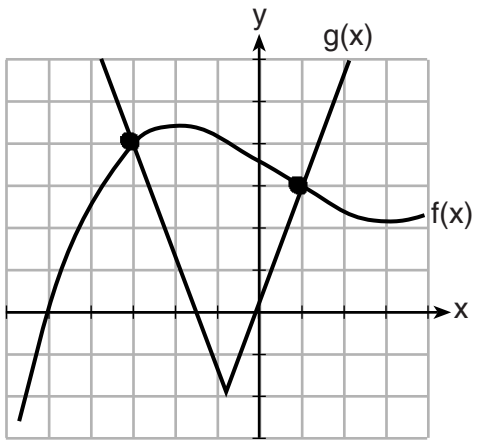


when $f(x)=g(x)$ is 3 and 1.

Score 1: The student wrote one correct value for x.

Question 30

30 The graph below shows two functions, $f(x)$ and $g(x)$. State all the values of x for which $f(x) = g(x)$.



Score 0: The student did not state the values of x.

Question 31

31 Find the zeros of $f(x) = (x - 3)^2 - 49$, algebraically.

$f(x) = (x-3)(x-3) - 49$

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

$f(x) = x^2 - 6x - 40$

$f(x) = (x-10)(x+4)$

$(x-10)(x+4) = 0$

$x = 10 \quad x = -4$

Score 2: The student gave a complete and correct response.

Question 31

31 Find the zeros of $f(x) = (x - 3)^2 - 49$, algebraically.

$0 = (x-3)^2 - 49$

$\sqrt{49} = \sqrt{(x-3)^2}$

$\pm 7 = x - 3$

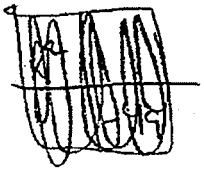
$x = 3 \pm 7$

Score 2: The student gave a complete and correct response.

Question 31

31 Find the zeros of $f(x) = (x - 3)^2 - 49$, algebraically.

$f(x) = (x-3)^2 - 49$



$0 = (x-3)^2 - 49$

$+49 \qquad +49$

$49 = \sqrt{(x-3)^2}$

$\sqrt{49} = x-3$

$7 = x-3$

$+3 \qquad +3$

$10 = x$

$x = 10$

49

7 7

Score 1: The student did not write ±7 when taking the square root of 49.

Question 31

31 Find the zeros of $f(x) = (x - 3)^2 - 49$, algebraically.

$y=(x-3)^2-49$

$+49 \quad +49$

$49=(x-3)^2$

$49=(x-3)(x-3)$

$x=3 \quad x=3$

Score 0: The student wrote a completely incorrect response.

Question 32

32 Solve the equation below for x in terms of a.

$$4(ax + 3) - 3ax = 25 + 3a$$

$4ax+12-3ax=25+3a$

$4ax-3ax-3a=25-12$

$x(4a-3a)-3a=25-12$

$x = \frac{25-12+3a}{4a-3a}$

$x = \frac{25-12+3a}{a(4-3)}$

$x = \frac{25-12+3a}{a}$

Score 2: The student gave a complete and correct response.

Question 32

32 Solve the equation below for x in terms of a.

$$4(ax + 3) - 3ax = 25 + 3a$$

$4ax + 12 - 3ax = 25 + 3a$

$ax = 13 + 3a$

$x = \frac{13}{a} + 3$

$x = 13a^{-1} + 3$

Score 2: The student gave a complete and correct response.

Question 32

32 Solve the equation below for x in terms of a.

$4(ax + 3) - 3ax = 25 + 3a$

$4ax + 12 - 3ax = 25 + 3a$

$ax + 12 = 25 + 3a$

$-12 \quad -12$

$\frac{ax}{a} = \frac{13 + 3a}{a}$

$x = \frac{13}{a} + 2$

Score 1: The student made an error when writing the fraction as a mixed number.

Question 32

32 Solve the equation below for x in terms of a.

$$4(ax + 3) - 3ax = 25 + 3a$$

$4ax + 12 - 3ax = 25 + 3a$

$ax - 3a = 13$

$a(x-3) = 13$

$a = \frac{13}{x-3}$

Score 1: The student solved the equation correctly for a.

Question 32

32 Solve the equation below for x in terms of a.

$$4(ax + 3) - 3ax = 25 + 3a$$

$4ax + 12 - 3ax = 25 + 3a$

$1ax + 12 = 25 + 3a$

$-12 \quad -12$

$\frac{1ax}{a} = \frac{13 + 3a}{a}$

$1x = 13 + 3a$

$x = 13 + 3a$

Score 0: The student did not divide both terms on the right side by a and simplified $\frac{3a}{a}$ incorrectly.

Question 33

33 The data table below shows the median diameter of grains of sand and the slope of the beach for 9 naturally occurring ocean beaches.

Median Diameter of Grains of Sand, in Millimeters (x)	0.17	0.19	0.22	0.235	0.235	0.3	0.35	0.42	0.85
Slope of Beach, in Degrees (y)	0.63	0.7	0.82	0.88	1.15	1.5	4.4	7.3	11.3

Write the linear regression equation for this set of data, rounding all values to the *nearest thousandth*.

$y = mx + b$

$\boxed{y = 17.159x - 2.476}$

Using this equation, predict the slope of a beach, to the *nearest tenth of a degree*, on a beach with grains of sand having a median diameter of 0.65 mm.

$y = 17.159(.65) - 2.476$

$y = 8.6135$

$\boxed{y = 8.7}$

Score 4: The student gave a complete and correct response.

Question 33

33 The data table below shows the median diameter of grains of sand and the slope of the beach for 9 naturally occurring ocean beaches.

Median Diameter of Grains of Sand, in Millimeters (x)	0.17	0.19	0.22	0.235	0.235	0.3	0.35	0.42	0.85
Slope of Beach, in Degrees (y)	0.63	0.7	0.82	0.88	1.15	1.5	4.4	7.3	11.3

Write the linear regression equation for this set of data, rounding all values to the *nearest thousandth*.

$y = ax + b$
$a = 17.159$
$b = -2.476$

Using this equation, predict the slope of a beach, to the *nearest tenth of a degree*, on a beach with grains of sand having a median diameter of 0.65 mm.

$y = 17.159(.65) - 2.476$

$y = 8.7$

Score 4: The student gave a complete and correct response.

Question 33

33 The data table below shows the median diameter of grains of sand and the slope of the beach for 9 naturally occurring ocean beaches.

Median Diameter of Grains of Sand, in Millimeters (x)	0.17	0.19	0.22	0.235	0.235	0.3	0.35	0.42	0.85
Slope of Beach, in Degrees (y)	0.63	0.7	0.82	0.88	1.15	1.5	4.4	7.3	11.3

Write the linear regression equation for this set of data, rounding all values to the *nearest thousandth*.

$y = 17.159x + 2.476$

I used the graphing calculator to determine it. I went to stat, edit, inputted all the values and went to calc, LinReg (ax+b) and then I plugged in the values given.

Using this equation, predict the slope of a beach, to the *nearest tenth of a degree*, on a beach with grains of sand having a median diameter of 0.65 mm.

$y = 17.159(.65) + 2.476$

$y = 11.15335 + 2.476$

$y = 13.62935$

$y = 13.6$ degrees.

Score 3: The student wrote an incorrect regression equation, but solved it appropriately.

Question 33

33 The data table below shows the median diameter of grains of sand and the slope of the beach for 9 naturally occurring ocean beaches.

Median Diameter of Grains of Sand, in Millimeters (x)	0.17	0.19	0.22	0.235	0.235	0.3	0.35	0.42	0.85
Slope of Beach, in Degrees (y)	0.63	0.7	0.82	0.88	1.15	1.5	4.4	7.3	11.3

Write the linear regression equation for this set of data, rounding all values to the *nearest thousandth*.

$y = ax + b$

$y = 17.244x - 2.615$

Using this equation, predict the slope of a beach, to the *nearest tenth of a degree,* on a beach with grains of sand having a median diameter of 0.65 mm.

$Y = 17.244x - 2.615$

$Y = 17.244(0.65) - 2.615$

$Y = 11.2086 - 2.615$

$Y = 8.6$ mm

Score 2: The student wrote an incorrect equation and solved it appropriately, but labeled the solution in mm.

Question 33

33 The data table below shows the median diameter of grains of sand and the slope of the beach for 9 naturally occurring ocean beaches.

Median Diameter of Grains of Sand, in Millimeters (x)	0.17	0.19	0.22	0.235	0.235	0.3	0.35	0.42	0.85
Slope of Beach, in Degrees (y)	0.63	0.7	0.82	0.88	1.15	1.5	4.4	7.3	11.3

Write the linear regression equation for this set of data, rounding all values to the *nearest thousandth*.

$y = .407(90.949)^{x}$

Using this equation, predict the slope of a beach, to the *nearest tenth of a degree*, on a beach with grains of sand having a median diameter of 0.65 mm.

$y = .407(90.949)^{.65}$

7.6

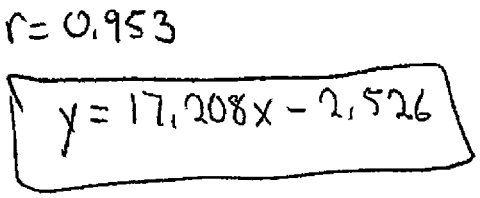
Score 2: The student wrote an exponential regression equation, but solved it appropriately.

Question 33

33 The data table below shows the median diameter of grains of sand and the slope of the beach for 9 naturally occurring ocean beaches.

Median Diameter of Grains of Sand, in Millimeters (x)	0.17	0.19	0.22	0.235	0.235	0.3	0.35	0.42	0.85
Slope of Beach, in Degrees (y)	0.63	0.7	0.82	0.88	1.15	1.5	4.4	7.3	11.3

Write the linear regression equation for this set of data, rounding all values to the *nearest thousandth*.



Using this equation, predict the slope of a beach, to the *nearest tenth of a degree*, on a beach with grains of sand having a median diameter of 0.65 mm.

Score 1: The student wrote an incorrect linear regression equation.

Question 33

33 The data table below shows the median diameter of grains of sand and the slope of the beach for 9 naturally occurring ocean beaches.

Median Diameter of Grains of Sand, in Millimeters (x)	0.17	0.19	0.22	0.235	0.235	0.3	0.35	0.42	0.85
Slope of Beach, in Degrees (y)	0.63	0.7	0.82	0.88	1.15	1.5	4.4	7.3	11.3

Write the linear regression equation for this set of data, rounding all values to the *nearest thousandth*.

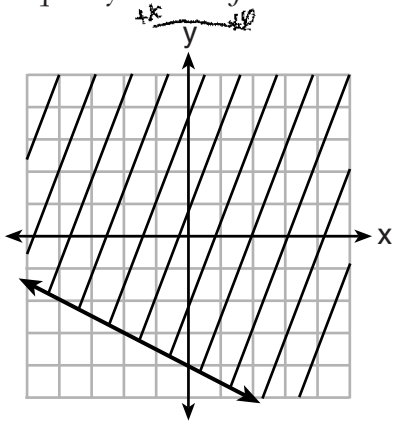
$y = 17x + -2.5$

Using this equation, predict the slope of a beach, to the *nearest tenth of a degree*, on a beach with grains of sand having a median diameter of 0.65 mm.

Score 0: The student made two different rounding errors when writing the linear regression and did not make a prediction.

Question 34

34 Shawn incorrectly graphed the inequality $-x - 2y \geq 8$ as shown below.



$-2y \geq 8 + x$

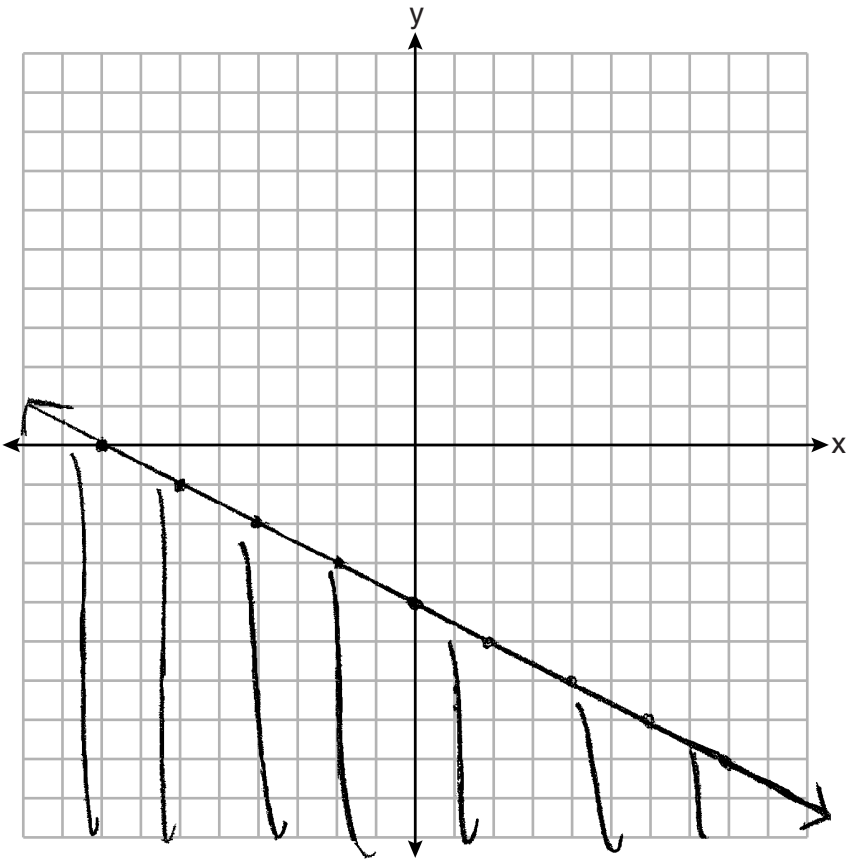
$\frac{-2y}{-2} \geq \frac{8}{-2} + \frac{x}{-2}$

$y \leq -4 + \frac{1}{2}x$

Explain Shawn's mistake.

The solution should be below the line, not above.

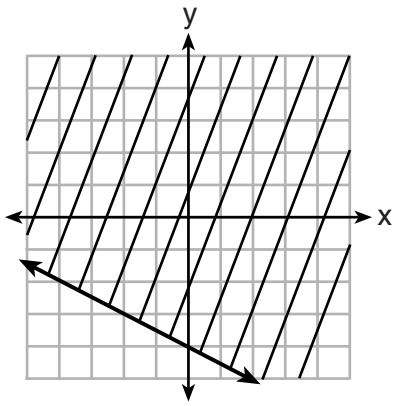
Graph the inequality correctly on the set of axes below.



Score 4: The student gave a complete and correct response.

Question 34

34 Shawn incorrectly graphed the inequality $-x - 2y \geq 8$ as shown below.



$-x - 2y \geq 8 + x$

$+x \quad +x$

$\frac{-2y}{-2} \geq \frac{x+8}{-2}$

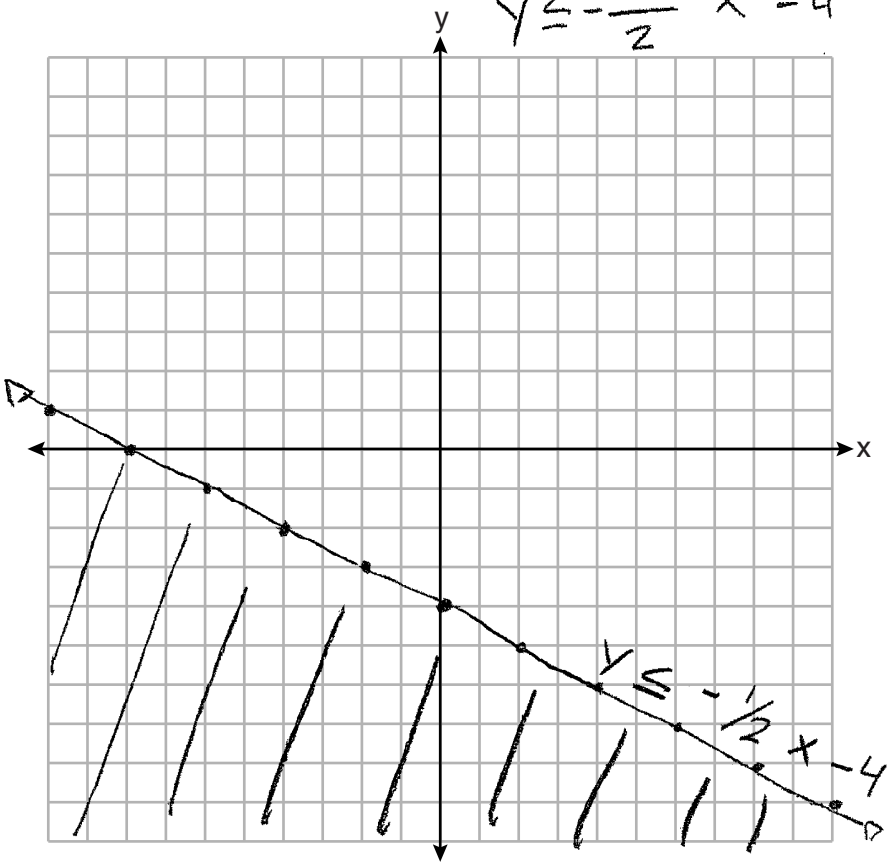
$y \leq -\frac{1}{2}x - 4$

Explain Shawn's mistake.

He got the points right, but the shading is wrong because when you divide by a negative the signs $\geq, \leq$ or $>, <$ switch to the opposite of what it is and the correct sign for this one is $\leq$ and you shade down.

Graph the inequality correctly on the set of axes below.

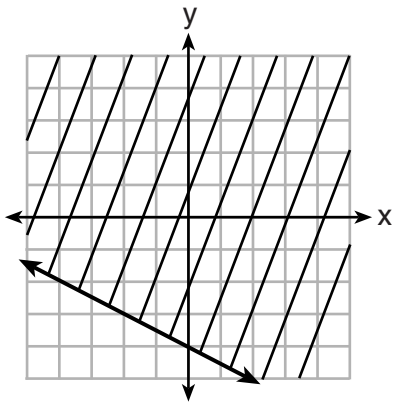
$y \leq -\frac{1}{2}x - 4$



Score 4: The student gave a complete and correct response.

Question 34

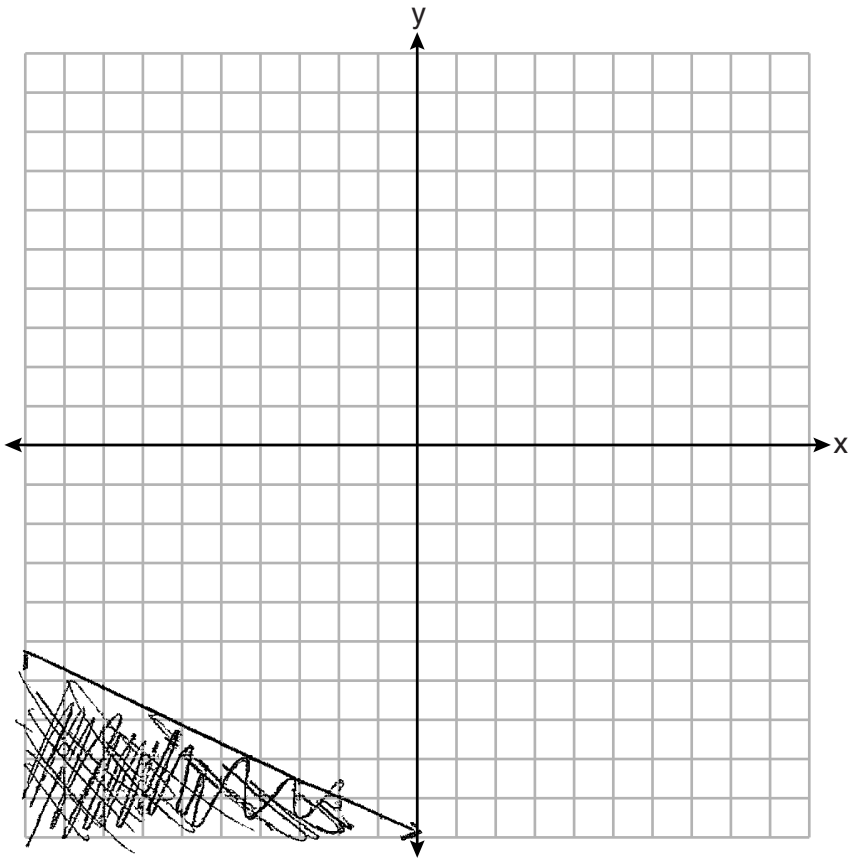
34 Shawn incorrectly graphed the inequality $-x - 2y \geq 8$ as shown below.



Explain Shawn's mistake.

he shaded it wrong

Graph the inequality correctly on the set of axes below.



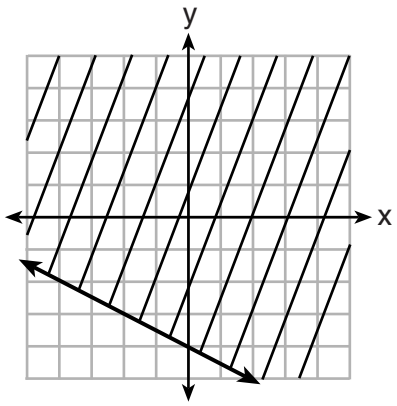
Score 3: The student graphed the line incorrectly.

Question 34

34 Shawn incorrectly graphed the inequality $-x - 2y \geq 8$ as shown below.

$+x$

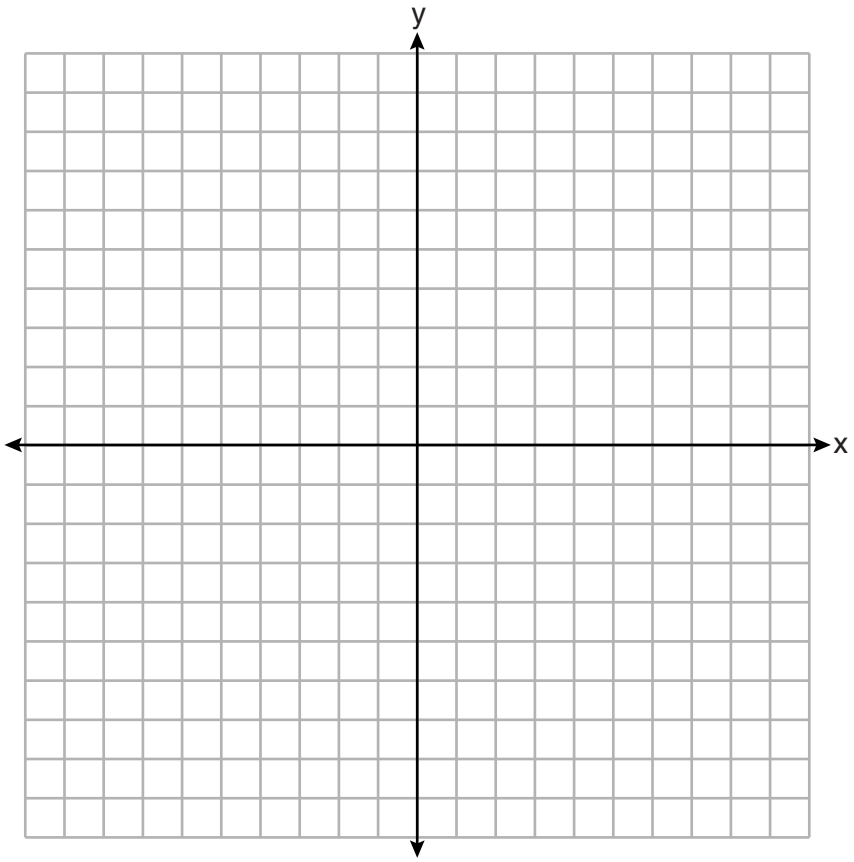
$-2y \geq 8 + x$



Explain Shawn's mistake.

He didnt switch the inequality sign when he divided by a negative.

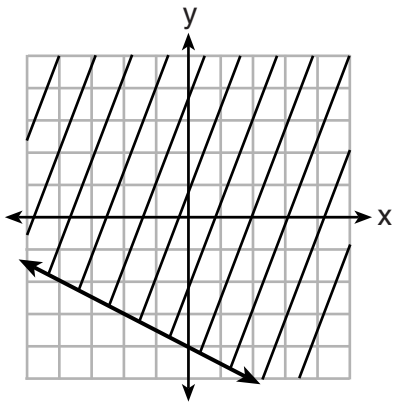
Graph the inequality correctly on the set of axes below.



Score 2: The student wrote a correct explanation.

Question 34

34 Shawn incorrectly graphed the inequality $-x - 2y \geq 8$ as shown below.



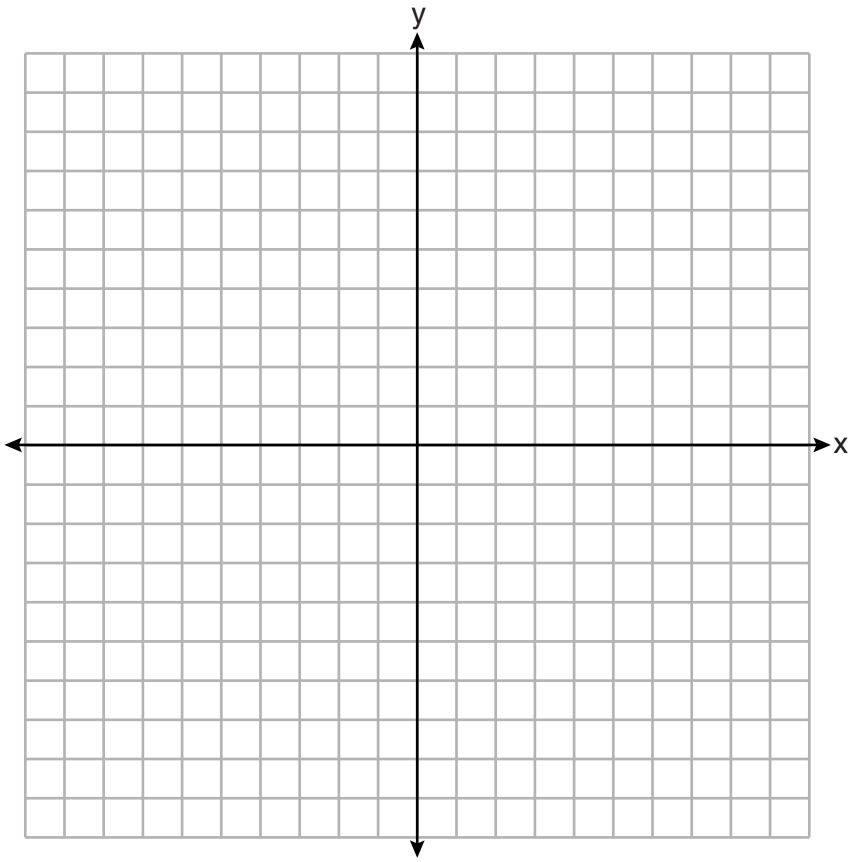
Explain Shawn's mistake.

$-x-2y \geq 8$

$\frac{-2y}{-2} \geq \frac{x+8}{-2}$ The Sign

$y \leq -\frac{1}{2}x - 4$

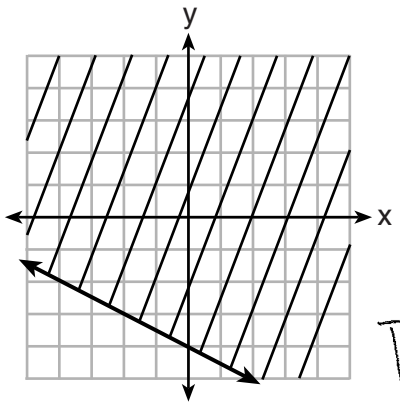
Graph the inequality correctly on the set of axes below.



Score 1: The student wrote a justification, but not an explanation.

Question 34

34 Shawn incorrectly graphed the inequality $-x - 2y \geq 8$ as shown below.

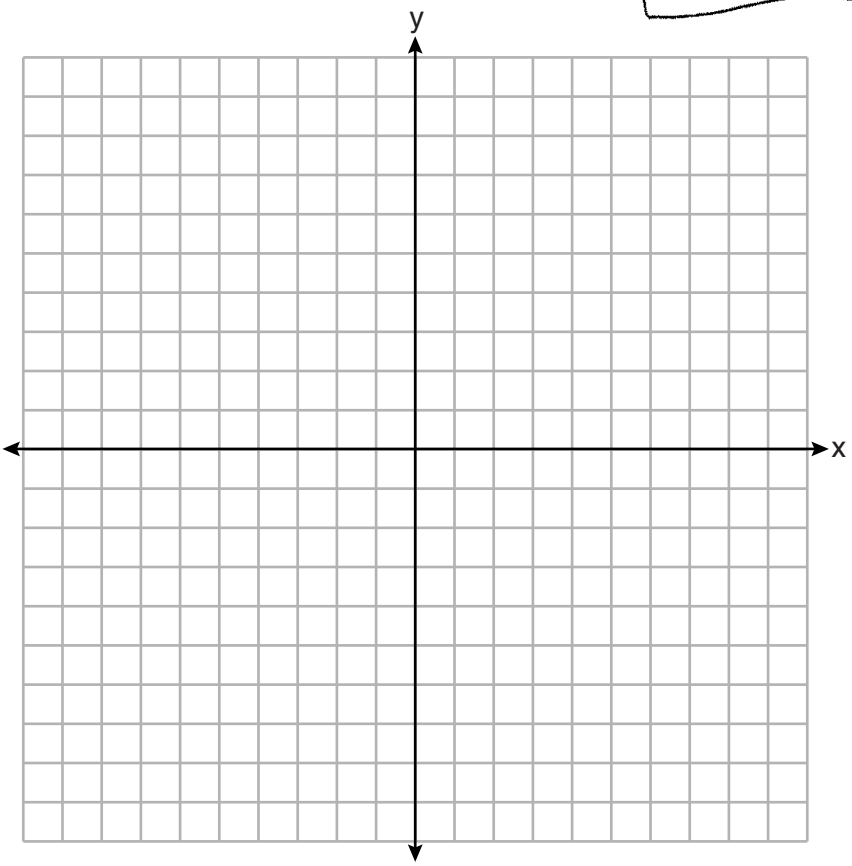


$-x-2y \geq 8$
$+x \quad +x$
$-2y \geq x+8$
$\frac{-2y}{-2} \geq \frac{x+8}{-2}$
$y \leq -2x-4$

Explain Shawn's mistake.

Shawn had to go down two to the right

Graph the inequality correctly on the set of axes below.



Score 0: The student wrote a completely incorrect response.

Question 35

35 A drama club is selling tickets to the spring musical. The auditorium holds 200 people. Tickets cost $12 at the door and $8.50 if purchased in advance. The drama club has a goal of selling at least $1000 worth of tickets to Saturday's show.

Write a system of inequalities that can be used to model this scenario.

$x + y \leq 200$ and $12x + 8.50y \geq 1000$

If 50 tickets are sold in advance, what is the minimum number of tickets that must be sold at the door so that the club meets its goal? Justify your answer.

$x + y \leq 200$

$x + 50 \leq 200$

$-50 \quad -50$

$x \leq 150$

$12x + 8.50(50) \geq 1000$

$12x + 425 \geq 1000$

$-425 \quad -425$

$\frac{12x}{12} \geq \frac{575}{12}$

$x \geq 47.92$ (48)

$12(48) + 8.50(50) \geq 1000$

$576 + 425 \geq 1000$

$1001 \geq 1000$

Score 4: The student gave a complete and correct response.

Question 35

35 A drama club is selling tickets to the spring musical. The auditorium holds 200 people. Tickets cost \$12 at the door and \$8.50 if purchased in advance. The drama club has a goal of selling at least \$1000 worth of tickets to Saturday's show.

Write a system of inequalities that can be used to model this scenario.

$x + y = 200$
$12x + 8.5y \geq 1000$

If 50 tickets are sold in advance, what is the minimum number of tickets that must be sold at the door so that the club meets its goal? Justify your answer.

$12x + 8.5y \geq 1000$
$12x + (8.5 \times 50) \geq 1000$
$12x + 425 \geq 1000$
$-425 \quad -425$
$12x \geq 575$
$x \geq 48$

The minimum number of tickets that must be sold is 48 tickets at the door.

Score 3: The student wrote $x + y = 200$ instead of an inequality.

Question 35

35 A drama club is selling tickets to the spring musical. The auditorium holds 200 people. Tickets cost $12 at the door and $8.50 if purchased in advance. The drama club has a goal of selling at least $1000 worth of tickets to Saturday's show.

Write a system of inequalities that can be used to model this scenario.

$12d + 8.5a = 1000$ $\quad$ $d + a = 200$

If 50 tickets are sold in advance, what is the minimum number of tickets that must be sold at the door so that the club meets its goal? Justify your answer.

$12d + 8.5(50) = 1000$

$12d = 575$

$d = 47.91\overline{6}$

Score 2: The student wrote a system of equations instead of inequalities and did not round up to 48.

Question 35

35 A drama club is selling tickets to the spring musical. The auditorium holds 200 people. Tickets cost $12 at the door and $8.50 if purchased in advance. The drama club has a goal of selling at least $1000 worth of tickets to Saturday's show.

Write a system of inequalities that can be used to model this scenario.

$12x + 8.5y = 1000$

If 50 tickets are sold in advance, what is the minimum number of tickets that must be sold at the door so that the club meets its goal? Justify your answer.

$1000 - 8.5(50) = 12x$

$575/12 =$

47.92

Score 1: The student wrote an appropriate justification, but did not state 48.

Question 35

35 A drama club is selling tickets to the spring musical. The auditorium holds 200 people. Tickets cost $12 at the door and $8.50 if purchased in advance. The drama club has a goal of selling at least $1000 worth of tickets to Saturday's show.

Write a system of inequalities that can be used to model this scenario.

$12x + 8.50y = 1000$

If 50 tickets are sold in advance, what is the minimum number of tickets that must be sold at the door so that the club meets its goal? Justify your answer.

$12x + 8.50y = 1000$

$6x + 4.25y = 500$

$10.25y = 500$

$y = 48.78$

48

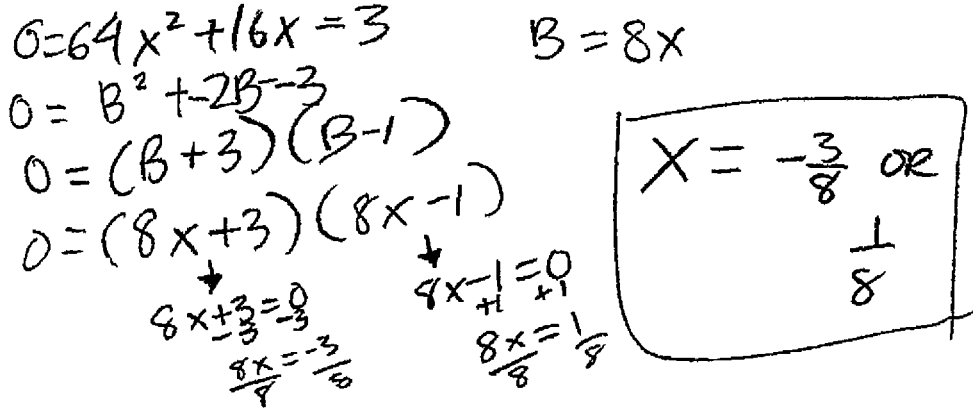
Score 0: The student obtained a correct response by an obviously incorrect procedure.

Question 36

36 Janice is asked to solve $0 = 64x^2 + 16x - 3$. She begins the problem by writing the following steps:

Line 1 $0 = 64x^2 + 16x - 3$
Line 2 $0 = B^2 + 2B - 3$
Line 3 $0 = (B + 3)(B - 1)$

Use Janice's procedure to solve the equation for x.



Explain the method Janice used to solve the quadratic equation.

Janice substituted 64x²&16x with B² & 2B, which was helpful b/c we were able to factor the equation & then we replaced B with 8x & got x which is -3/8 or 1/8

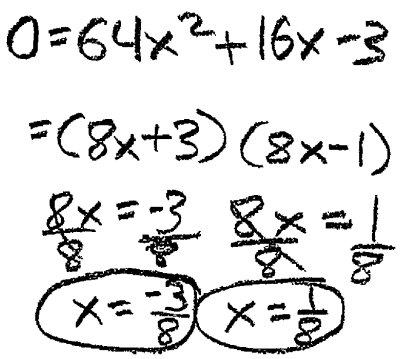
Score 4: The student gave a complete and correct response.

Question 36

36 Janice is asked to solve $0 = 64x^2 + 16x - 3$. She begins the problem by writing the following steps:

Line 1 $0 = 64x^2 + 16x - 3$
Line 2 $0 = B^2 + 2B - 3$
Line 3 $0 = (B + 3)(B - 1)$

Use Janice's procedure to solve the equation for x.



Explain the method Janice used to solve the quadratic equation.

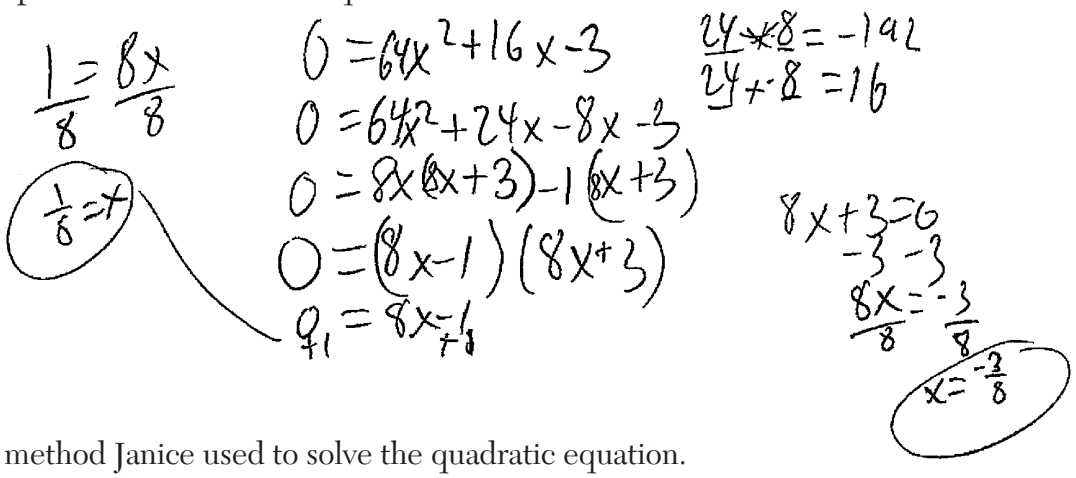
Score 3: The student did not write an explanation.

Question 36

36 Janice is asked to solve $0 = 64x^2 + 16x - 3$. She begins the problem by writing the following steps:

Line 1 $0 = 64x^2 + 16x - 3$
Line 2 $0 = B^2 + 2B - 3$
Line 3 $0 = (B + 3)(B - 1)$

Use Janice's procedure to solve the equation for x.



Explain the method Janice used to solve the quadratic equation.

Use the quadratic formula and plug in the numbers

Score 2: The student did not use Janice's procedure and wrote an incorrect explanation.

Question 36

36 Janice is asked to solve $0 = 64x^2 + 16x - 3$. She begins the problem by writing the following steps:

Line 1 $0 = 64x^2 + 16x - 3$
Line 2 $0 = B^2 + 2B - 3$
Line 3 $0 = (B + 3)(B - 1)$

Use Janice's procedure to solve the equation for x.

$B+3=0$ $\quad -3 \quad -3$

$B=-3$

$B-1=0$ $\quad +1 \quad +1$

$B=1$

Explain the method Janice used to solve the quadratic equation.

$$X = \frac{-16 \pm \sqrt{16^2 - 4(-192)}}{128}$$

Score 1: The student completed Janice's work, but did not solve for x.

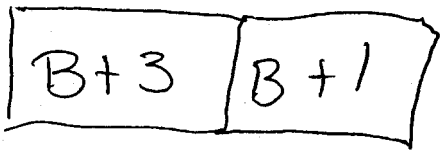
Question 36

36 Janice is asked to solve $0 = 64x^2 + 16x - 3$. She begins the problem by writing the following steps:

Line 1 $0 = 64x^2 + 16x - 3$
Line 2 $0 = B^2 + 2B - 3$
Line 3 $0 = (B + 3)(B - 1)$

Use Janice's procedure to solve the equation for x.

$0 = (B+3)(B-1)$



Explain the method Janice used to solve the quadratic equation.

Janice used substitution.

Score 0: The student wrote a completely incorrect response.

Question 37

37 For a class picnic, two teachers went to the same store to purchase drinks. One teacher purchased 18 juice boxes and 32 bottles of water, and spent \$19.92. The other teacher purchased 14 juice boxes and 26 bottles of water, and spent \$15.76.

Write a system of equations to represent the costs of a juice box, j, and a bottle of water, w.

$18j + 32w = 19.92$
$14j + 26w = 15.76$

Kara said that the juice boxes might have cost 52 cents each and that the bottles of water might have cost 33 cents each. Use your system of equations to justify that Kara's prices are *not* possible.

$14(.52) + 26(.33) = 15.76$
$7.28 + 8.58$
$15.86 \neq 15.76$

Question 37 is continued on the next page.

Question 37

Solve your system of equations to determine the actual cost, in dollars, of each juice box and each bottle of water.

$-7(18j + 32w = 19.92)$

$9(14j + 26w = 15.76)$

$-126j - 224w = -139.44$

$126j + 234w = 141.84$

$10w = 2.4$

$\frac{10w}{10} = \frac{2.4}{10}$

$w = .24$

$18j + 32(.24) = 19.92$

$18j + 7.68 = 19.92$

$-7.68 = -7.68$

$18j = 12.24$

$\frac{18j}{18} = \frac{12.24}{18}$

$j = .68$

Score 6: The student gave a complete and correct response.

Question 37

37 For a class picnic, two teachers went to the same store to purchase drinks. One teacher purchased 18 juice boxes and 32 bottles of water, and spent \$19.92. The other teacher purchased 14 juice boxes and 26 bottles of water, and spent \$15.76.

Write a system of equations to represent the costs of a juice box, j, and a bottle of water, w.

$18j + 32w = 19.92$
$14j + 26w = 15.76$

Kara said that the juice boxes might have cost 52 cents each and that the bottles of water might have cost 33 cents each. Use your system of equations to justify that Kara's prices are *not* possible.

$14(.52) + 26(.33) = 15.76$
$7.28 + 8.58 = 15.76$
$15.86 \neq 15.76$

Question 37 is continued on the next page.

Question 37

Solve your system of equations to determine the actual cost, in dollars, of each juice box and each bottle of water.

$14(18j + 32w = 19.92)$

$-18(14j + 26w = 15.76)$

$252j + 448w = 278.88$

$-252j - 468w = -283.68$

$-20w = -4.8$

$w = .24$

Score 5: The student did not find the cost of each juice box.

Question 37

37 For a class picnic, two teachers went to the same store to purchase drinks. One teacher purchased 18 juice boxes and 32 bottles of water, and spent \$19.92. The other teacher purchased 14 juice boxes and 26 bottles of water, and spent \$15.76.

Write a system of equations to represent the costs of a juice box, j, and a bottle of water, w.

$18x + 32y = 19.92$

$14x + 26y = 15.76$

Kara said that the juice boxes might have cost 52 cents each and that the bottles of water might have cost 33 cents each. Use your system of equations to justify that Kara's prices are *not* possible.

$14(.52) + 26(.33) = 15.86 \neq 15.76$

Question 37 is continued on the next page.

Question 37

Solve your system of equations to determine the actual cost, in dollars, of each juice box and each bottle of water.

$7(18x + 32y = 19.92)$

$-9(14x + 26y = 15.76)$

$126x + 224y = 139.44$

$-126x - 234y = -141.84$

$-10x = -2.40$

$x = .24$

Score 4: The student wrote an appropriate system of equations, but not in terms of j and w. The student only found the cost of one item.

Question 37

37 For a class picnic, two teachers went to the same store to purchase drinks. One teacher purchased 18 juice boxes and 32 bottles of water, and spent \$19.92. The other teacher purchased 14 juice boxes and 26 bottles of water, and spent \$15.76.

Write a system of equations to represent the costs of a juice box, j, and a bottle of water, w.

$18j + 32w = 19.92$

$14j + 26w = 15.76$

Kara said that the juice boxes might have cost 52 cents each and that the bottles of water might have cost 33 cents each. Use your system of equations to justify that Kara's prices are *not* possible.

$18(52) + 32w = 19.92$

$9.36 + 32w = 19.92$

$-9.36 \quad -9.36$

$\frac{32w}{32} = \frac{10.56}{32}$ $w = .33$

$14j + 26(.33) = 15.76$

$14j + 8.58 = 15.76$

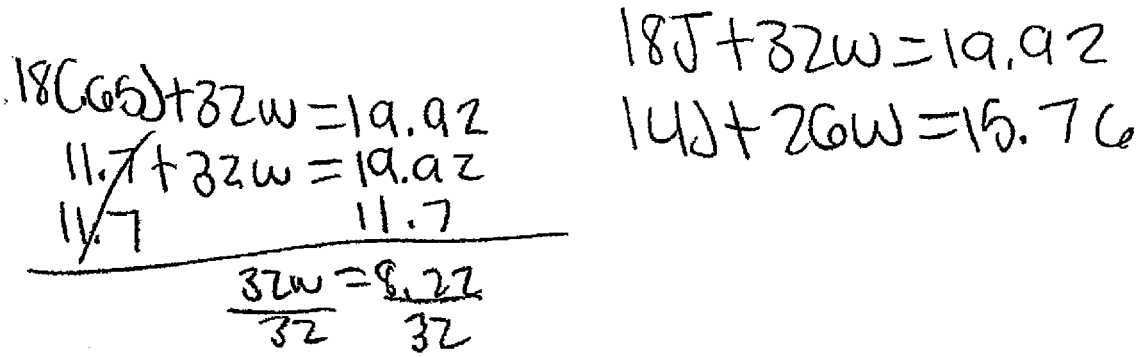
$-8.58 \quad -8.58$

$\frac{14j}{14} = \frac{7.18}{14}$ $j = .51$

Question 37 is continued on the next page.

Question 37

Solve your system of equations to determine the actual cost, in dollars, of each juice box and each bottle of water.



Score 3: The student wrote a correct system of equations and a correct justification.

Question 37

37 For a class picnic, two teachers went to the same store to purchase drinks. One teacher purchased 18 juice boxes and 32 bottles of water, and spent \$19.92. The other teacher purchased 14 juice boxes and 26 bottles of water, and spent \$15.76.

Write a system of equations to represent the costs of a juice box, j, and a bottle of water, w.

$18j + 32w = 19.92$
$14j + 26w = 15.76$

Kara said that the juice boxes might have cost 52 cents each and that the bottles of water might have cost 33 cents each. Use your system of equations to justify that Kara's prices are *not* possible.

Question 37 is continued on the next page.

Question 37

Solve your system of equations to determine the actual cost, in dollars, of each juice box and each bottle of water.

$18j + 32w = 19.92$

$14j + 26w = 15.76$

$32j + 58w = 35.68 - 32j$

$-32j$

$\frac{58w}{58} = \frac{35.68 - 32j}{58}$

Score 2: The student wrote a correct system of equations.

Question 37

37 For a class picnic, two teachers went to the same store to purchase drinks. One teacher purchased 18 juice boxes and 32 bottles of water, and spent \$19.92. The other teacher purchased 14 juice boxes and 26 bottles of water, and spent \$15.76.

Write a system of equations to represent the costs of a juice box, j, and a bottle of water, w.

x = $ for juice boxes
y = $ for water
18x + 32y = 19.92
14x + 26y = 15.76

Kara said that the juice boxes might have cost 52 cents each and that the bottles of water might have cost 33 cents each. Use your system of equations to justify that Kara's prices are *not* possible.

18(.52) + 32(.33) = 19.92
9.36 + 10.56 = 1992
19.92 = 1992

Question 37 is continued on the next page.

Question 37

Solve your system of equations to determine the actual cost, in dollars, of each juice box and each bottle of water.

Score 2: The student wrote an appropriate system of equations with redefined variables.

Question 37

37 For a class picnic, two teachers went to the same store to purchase drinks. One teacher purchased 18 juice boxes and 32 bottles of water, and spent $19.92. The other teacher purchased 14 juice boxes and 26 bottles of water, and spent $15.76.

Write a system of equations to represent the costs of a juice box, j, and a bottle of water, w.

$18j + 32 = 14j + 26$

Kara said that the juice boxes might have cost 52 cents each and that the bottles of water might have cost 33 cents each. Use your system of equations to justify that Kara's prices are *not* possible.

14 x 52 = 728

26 x 33 = 858

18 x 52 = 9.36

32 x 33 = 1056

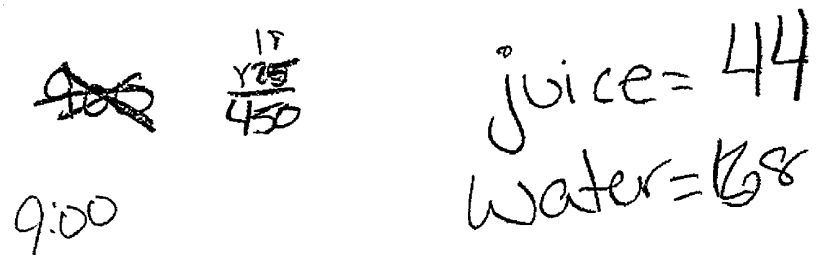
1056 + 9.36 = 19.92

Because 14 x 52 = 728 and 26 x 33 = 9.57 and add to get at 15.96 ~~less~~ more than she spent

Question 37 is continued on the next page.

Question 37

Solve your system of equations to determine the actual cost, in dollars, of each juice box and each bottle of water.



Score 1: The student wrote a correct justification.

Question 37

37 For a class picnic, two teachers went to the same store to purchase drinks. One teacher purchased 18 juice boxes and 32 bottles of water, and spent $19.92. The other teacher purchased 14 juice boxes and 26 bottles of water, and spent $15.76.

Write a system of equations to represent the costs of a juice box, j, and a bottle of water, w.

$y = 18j + 32w$

Kara said that the juice boxes might have cost 52 cents each and that the bottles of water might have cost 33 cents each. Use your system of equations to justify that Kara's prices are *not* possible.

19 Juice boxes 32 wa sp ent

3

Question 37 is continued on the next page.

Question 37

Solve your system of equations to determine the actual cost, in dollars, of each juice box and each bottle of water.

Score 0: The student wrote a completely incorrect response.