The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

ALGEBRA I

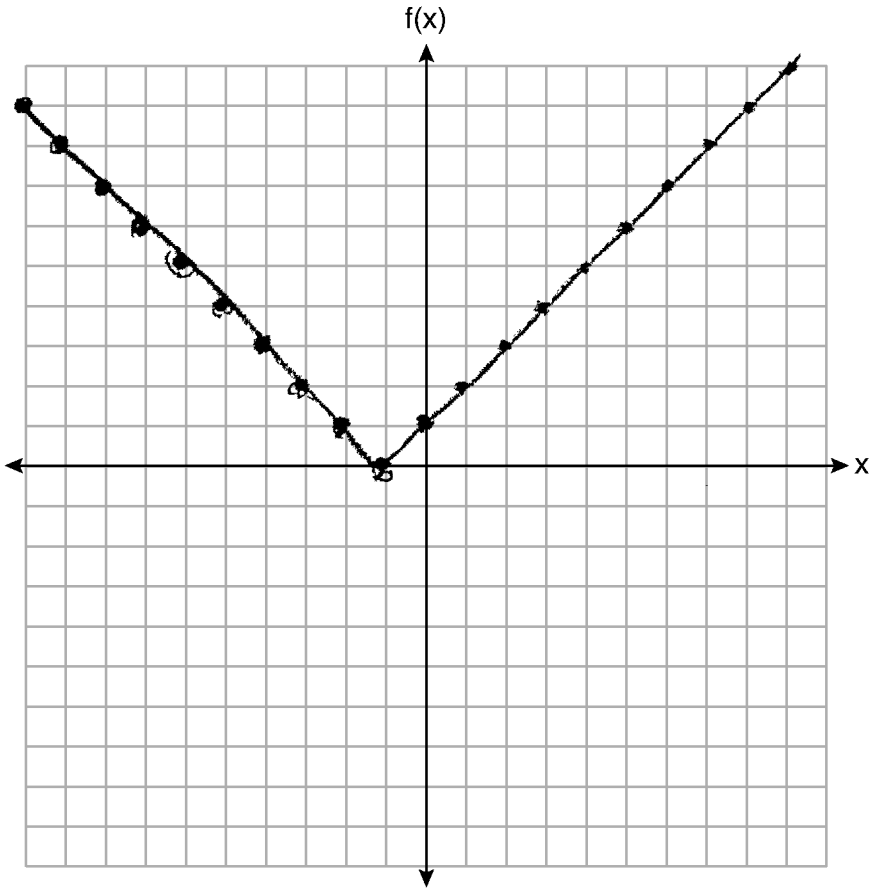
Tuesday, August 16, 2022 — 8:30 to 11:30 a.m.

MODEL RESPONSE SET

Table of Contents

Question 25

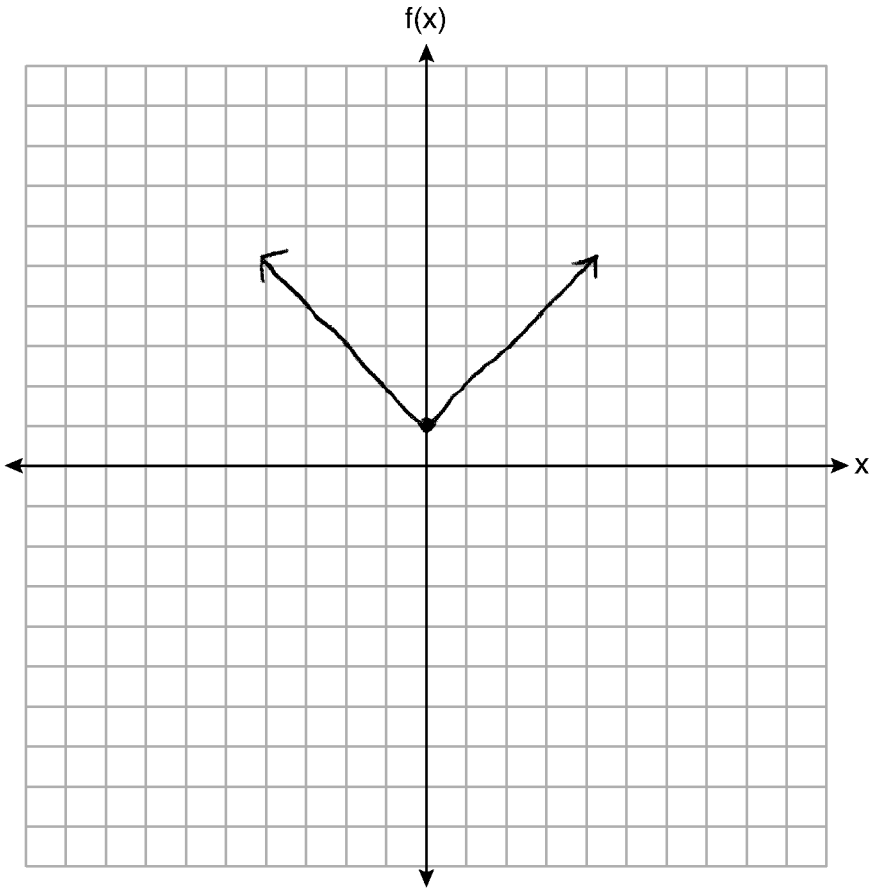
25 Graph $f(x) = |x + 1|$ on the set of axes below.



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

Question 25

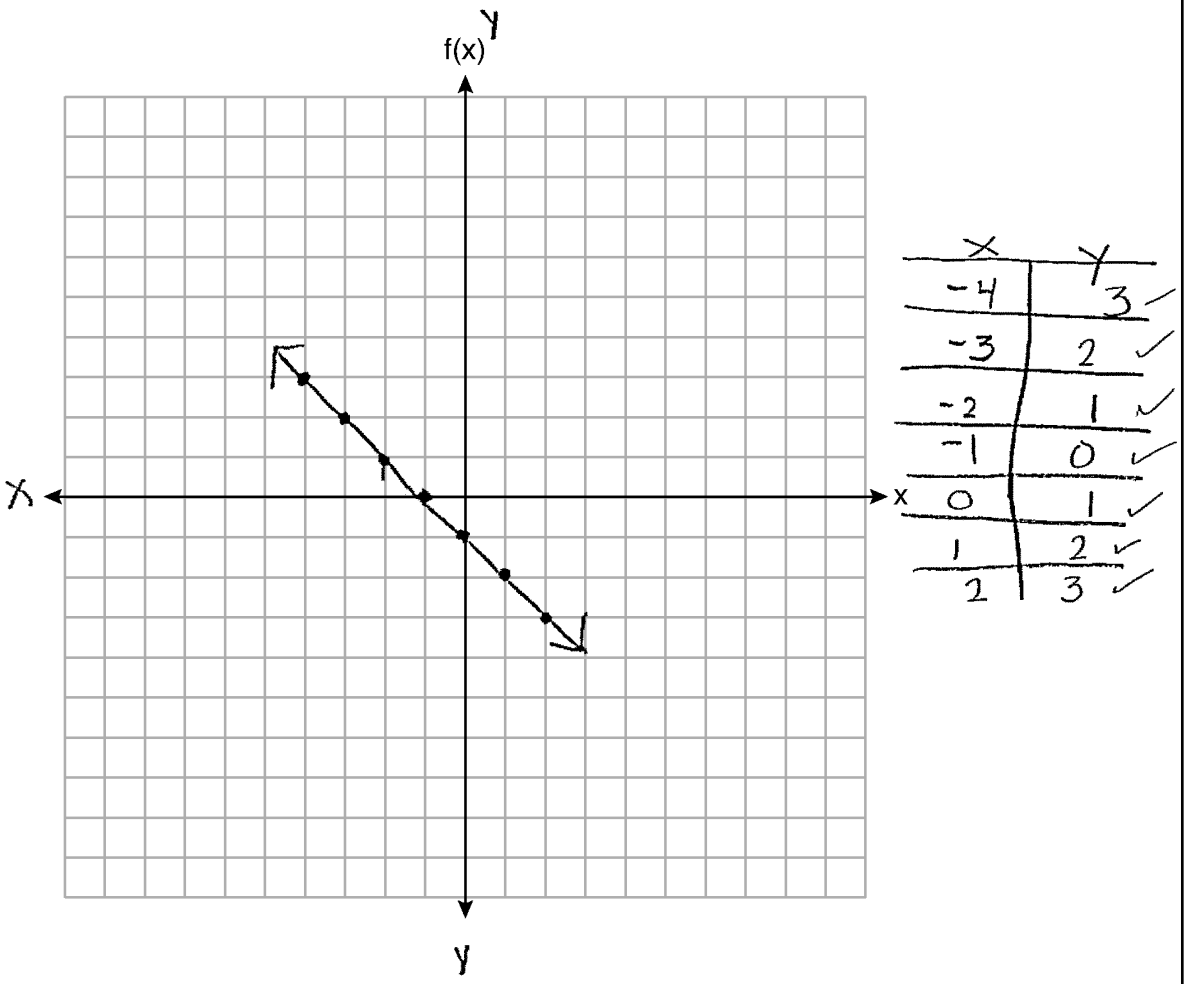
25 Graph $f(x) = |x + 1|$ on the set of axes below.



Score 1: The student graphed $f(x) = |x| + 1$ correctly.

Question 25

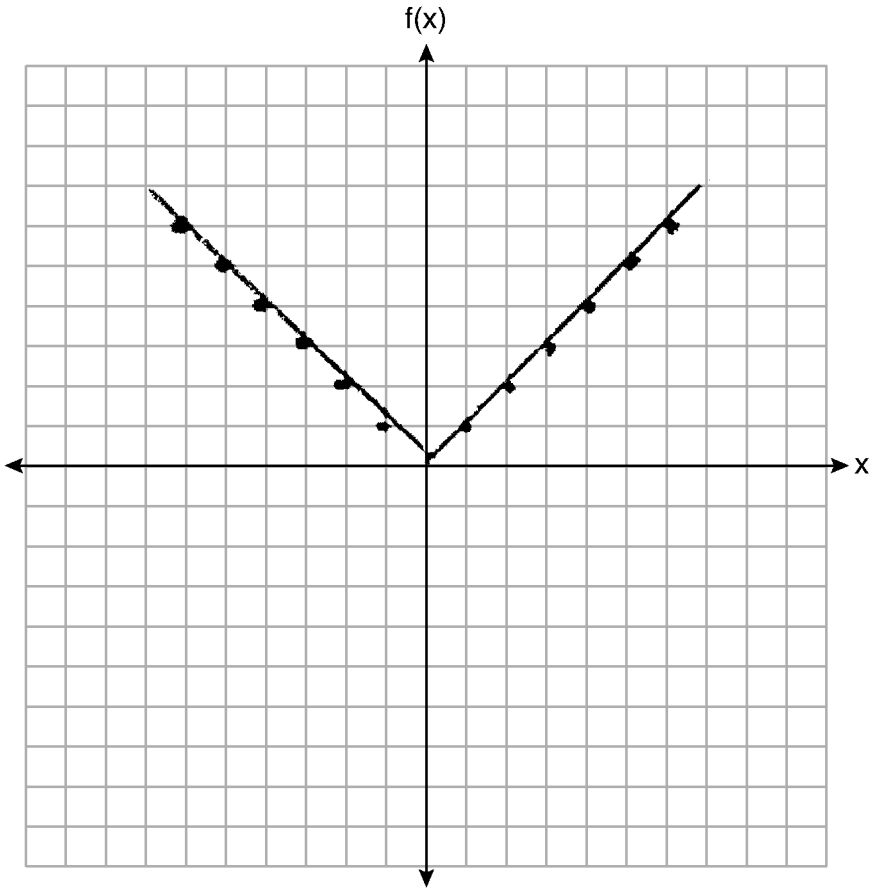
25 Graph $f(x) = |x + 1|$ on the set of axes below.



Score 1: The student wrote the correct table of values, but did not graph them correctly.

Question 25

25 Graph $f(x) = |x + 1|$ on the set of axes below.

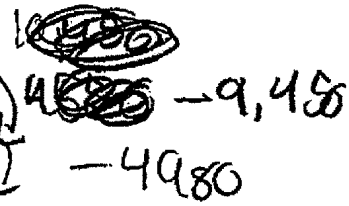


Score 0: The student graphed $f(x) = |x|$ and did not use the full extent of the graph.

Question 26

26 The table below shows the value of a particular car over time.

Time (years)	**Value** (dollars)
0	20,000
5	10,550
10	5570
15	2940
20	1550



Determine whether a linear or exponential function is more appropriate for modeling this data. Explain your choice.

An exponential function would be more appropriate because there is no constant rate of change.

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

Question 26

26 The table below shows the value of a particular car over time.

Time (years)	**Value** (dollars)
0	20,000
5	10,550
10	5570
15	2940
20	1550

Determine whether a linear or exponential function is more appropriate for modeling this data. Explain your choice.

Exponential because there isn't a constant rate of change.

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

Question 26

26 The table below shows the value of a particular car over time.

Time (years)	**Value** (dollars)
0	20,000
5	10,550
10	5570
15	2940
20	1550

-9450
-4980
-2630
-1390

Determine whether a linear or exponential function is more appropriate for modeling this data. Explain your choice.

Linear function because there isn't a constant rate of change.

Score 1: The student confused linear and exponential function.

Question 26

26 The table below shows the value of a particular car over time.

Time (years)	**Value** (dollars)
0	20,000
5	10,550
10	5570
15	2940
20	1550

Determine whether a linear or exponential function is more appropriate for modeling this data. Explain your choice.

$y = ax + b$

$a = -890.2$

$b = 17024$

$r \approx -0.94$

The function is linear because the r value is close to -1.

Score 1: The student assumed the function was linear and performed a correct regression.

Question 26

26 The table below shows the value of a particular car over time.

Time (years)	**Value** (dollars)
0	20,000
5	10,550
10	5570
15	2940
20	1550

Determine whether a linear or exponential function is more appropriate for modeling this data. Explain your choice.

linear because there is a constant decay

Score 0: The student did not show enough correct work to receive any credit.

Question 27

27 Is the product of $\sqrt{8}$ and $\sqrt{98}$ rational or irrational? Justify your answer.

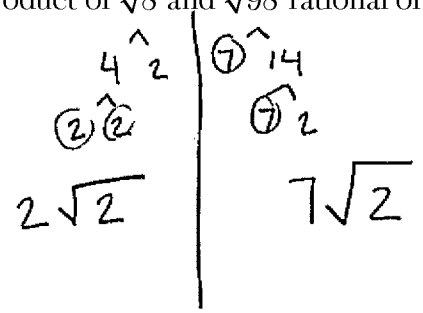
$\sqrt{784}$

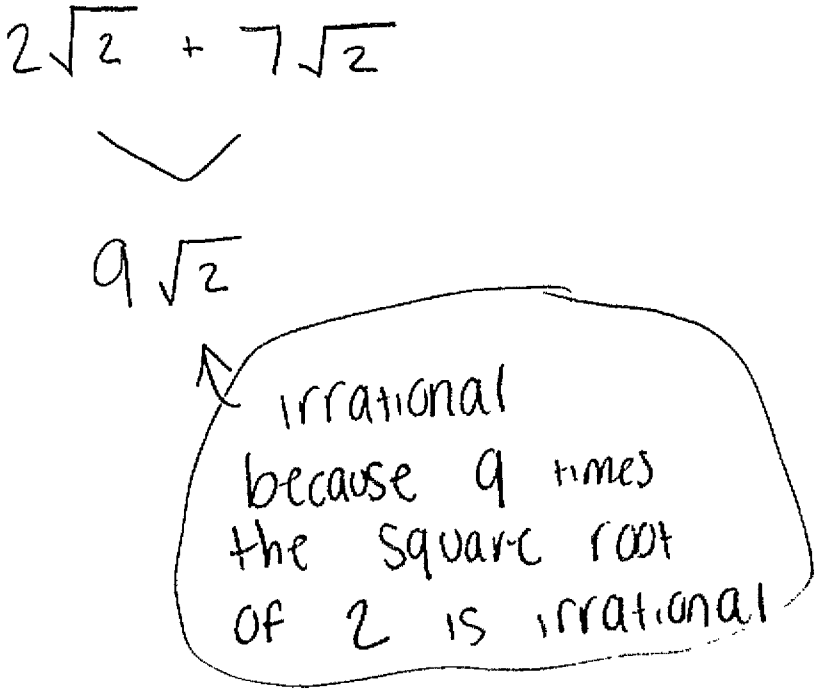
28

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

Question 27

27 Is the product of $\sqrt{8}$ and $\sqrt{98}$ rational or irrational? Justify your answer.





Score 1: The student correctly justified that the sum of $\sqrt{8}$ and $\sqrt{98}$ was irrational.

Question 27

27 Is the product of $\sqrt{8}$ and $\sqrt{98}$ rational or irrational? Justify your answer.

$2\sqrt{2} + 7\sqrt{2}$

$9\sqrt{2}\sqrt{2}$.

$9(4) = 36$

Score 0: The student made multiple errors.

Question 27

27 Is the product of $\sqrt{8}$ and $\sqrt{98}$ rational or irrational? Justify your answer.

$\sqrt{8}$ $\sqrt{98}$

$2\sqrt{4}$ $\sqrt{49}\sqrt{2}$

$2\sqrt{2}$ $7\sqrt{2}$

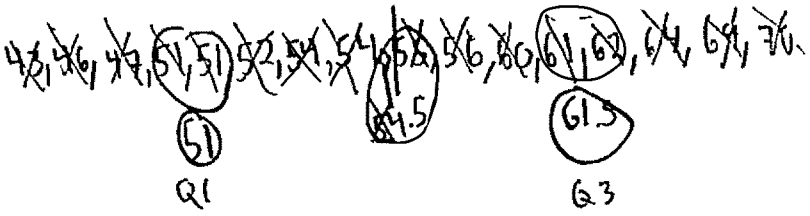
Score 0: The student did not show enough correct work to receive any credit.

Question 28

28 The ages of the last 16 United States presidents on their first inauguration day are shown in the table below.

51	54	51	60
62	43	55	56
61	52	69	64
46	54	47	70

Determine the interquartile range for this set of data.



min: 43
max: 70
med: 54.5
Q1: 51
Q3: 61.5
IQR: 10.5

IQR: 10.5

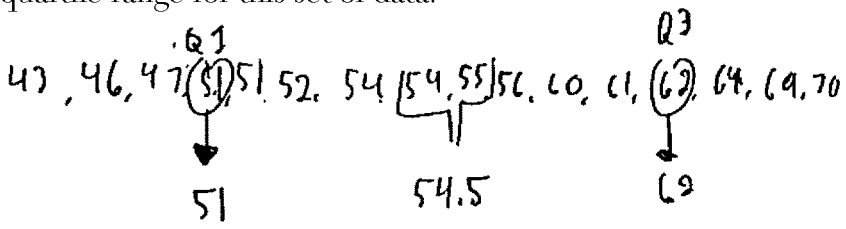
Score 2: The student gave a complete and correct response.

Question 28

28 The ages of the last 16 United States presidents on their first inauguration day are shown in the table below.

51	54	51	60
62	43	55	56
61	52	69	64
46	54	47	70

Determine the interquartile range for this set of data.



62
−51
11

Score 1: The student made the same error in finding Q1 and Q3.

Question 28

28 The ages of the last 16 United States presidents on their first inauguration day are shown in the table below.

51	54	51	60
62	43	55	56
61	52	69	64
46	54	47	70

max=70
Q1=51
Med=54.5
Q3=61.5
Min=43

Determine the interquartile range for this set of data.

Score 1: The student stated the correct five-number summary, but did not calculate the IQR.

Question 28

28 The ages of the last 16 United States presidents on their first inauguration day are shown in the table below.

51	54	51	60
62	43	55	56
61	52	69	64
46	54	47	70

Determine the interquartile range for this set of data.

43 to 70

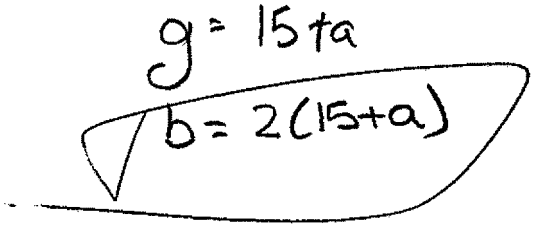
Score 0: The student did not show enough work to receive any credit.

Question 29

29 The cost of one pound of grapes, g, is 15 cents more than one pound of apples, a.

The cost of one pound of bananas, b, is twice as much as one pound of grapes.

Write an equation that represents the cost of one pound of bananas in terms of the cost of one pound of apples.



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

Question 29

29 The cost of one pound of grapes, g, is 15 cents more than one pound of apples, a.

The cost of one pound of bananas, b, is twice as much as one pound of grapes.

Write an equation that represents the cost of one pound of bananas in terms of the cost of one pound of apples.

$g + 15 = a$

$2b = g$

$2b = a - 15$

$b = \frac{a - 15}{2}$

Score 1: The student made the same error in writing both equations, but solved it appropriately.

Question 29

29 The cost of one pound of grapes, g, is 15 cents more than one pound of apples, a.

The cost of one pound of bananas, b, is twice as much as one pound of grapes.

Write an equation that represents the cost of one pound of bananas in terms of the cost of one pound of apples.

$b = 2g$

Score 0: The student wrote $b = 2g$ correctly, but no further correct work was shown.

Question 30

30 A student is given the functions $f(x) = (x + 1)^2$ and $g(x) = (x + 3)^2$.

Describe the transformation that maps $f(x)$ onto $g(x)$.

You would move horizontally to the left 2 units to bring you g(x).

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

Question 30

30 A student is given the functions $f(x) = (x + 1)^2$ and $g(x) = (x + 3)^2$.

Describe the transformation that maps $f(x)$ onto $g(x)$.

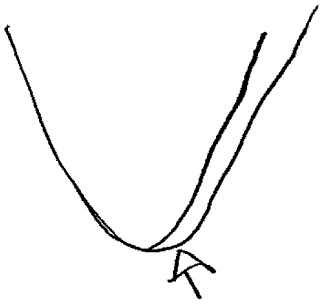
SHIFTS UP 2

Score 1: The student made an error in describing the transformation.

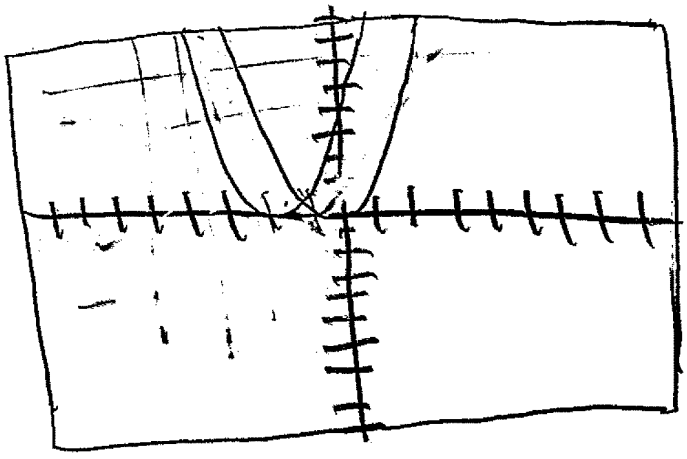
Question 30

30 A student is given the functions $f(x) = (x + 1)^2$ and $g(x) = (x + 3)^2$.

Describe the transformation that maps $f(x)$ onto $g(x)$.



The transformation that maps f(x) onto g(x) is that f(x) is more pushed over, more wider than g(x) it shows up like this in the graph



Score 0: The student did not show enough correct work to receive any credit.

Question 31

31 Solve $3x^2 - 5x - 7 = 0$ algebraically for all values of x, rounding to the *nearest tenth*.

$3x^2 - 5x - 7 = 0$

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$x = \frac{5 \pm \sqrt{25 - 4(3)(-7)}}{2(3)}$

$x = 2.6$

$x = -.9$

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

Question 31

31 Solve $3x^2 - 5x - 7 = 0$ algebraically for all values of x, rounding to the *nearest tenth*.

$3x^2 - 5x - 7 = 0$ $\quad a=3 \quad b=-5 \quad c=-7$

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$x = \frac{5 \pm \sqrt{109}}{6}$

b^2-4ac

$(-5)^2 - 4(3)(-7)$

$=109$

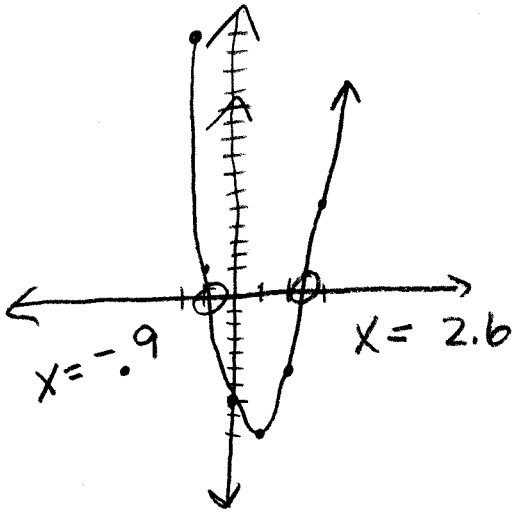
$\frac{5+\sqrt{109}}{6} = 0$ $\quad x = 2.57$

$\frac{5-\sqrt{109}}{6} = 0$ $\quad x = -.91$

Score 1: The student rounded the solutions to the wrong decimal place.

Question 31

31 Solve $3x^2 - 5x - 7 = 0$ algebraically for all values of x, rounding to the *nearest tenth*.



x	y
-2	15
-1	1
0	-7
1	-9
2	-5
3	5

Score 1: The student found the correct values by a method other than algebraic.

Question 31

31 Solve $3x^2 - 5x - 7 = 0$ algebraically for all values of x, rounding to the *nearest tenth*.

$3x^2 - 5x - 7 = 0$

$\cup$

$(-1, 2.5)$

Score 0: The student did not show enough correct work to receive any credit.

Question 32

32 Factor completely: $3y^2 - 12y - 288$

$3(y^2 - 4y - 96)$

$3(y + 8)(y - 12)$

$3(y + 8)(y - 12)$

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

Question 32

32 Factor completely: $3y^2 - 12y - 288$

$3|3y^2-12y-288$

$y^2-4y-96$

$y^2-12y+8y-96$

$y(y-12)+8(y-12)$

$3(y+8)(y-12)$

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

Question 32

32 Factor completely: $3y^2 - 12y - 288$

$3y^2-12y-288$

$y^2-4y-96$

$\boxed{(y-12)(y+8)}$

Score 1: The student divided each term by 3 instead of factoring the 3 out as a GCF.

Question 32

32 Factor completely: $3y^2 - 12y - 288$

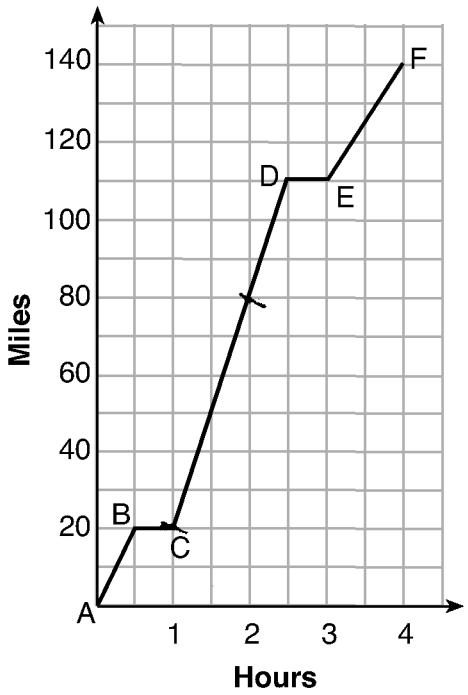
$3y^2 - 12y = 288$

$(3y - 24)(y + 12)$

Score 0: The student made two factoring errors.

Question 33

33 Thomas took a 140-mile bus trip to visit his grandparents. His trip is outlined on the graph below.



Explain what might have happened in the interval between *D* and *E*.

He stopped for 30min so probably got something to eat.

State the interval in which the bus traveled the fastest.

Between C and D

State how many miles per hour the bus was traveling during this interval.

60mph

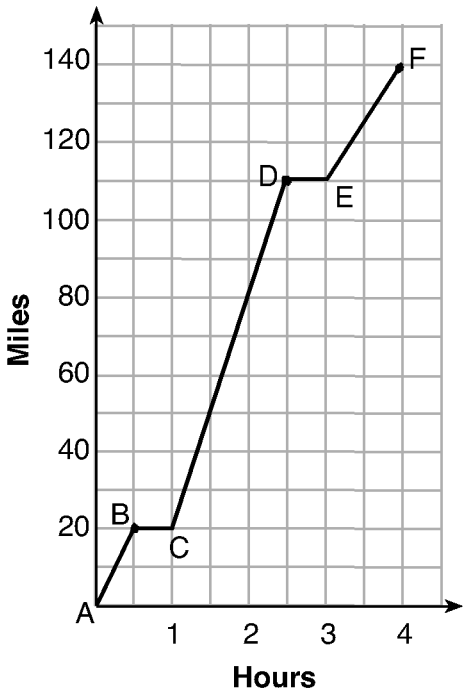
What was the average rate of speed, in miles per hour, for Thomas's entire bus trip?

35mph

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

Question 33

33 Thomas took a 140-mile bus trip to visit his grandparents. His trip is outlined on the graph below.



C to D

$\frac{110-20}{2.5-1.5} = \frac{90}{1.5} = 60$

E to F:

$\frac{140-110}{4-3} = \frac{30}{1} = 30$

Explain what might have happened in the interval between D and E.

The bus stopped at a rest stop.

State the interval in which the bus traveled the fastest. C to D

State how many miles per hour the bus was traveling during this interval.

60.

What was the average rate of speed, in miles per hour, for Thomas's entire bus trip?

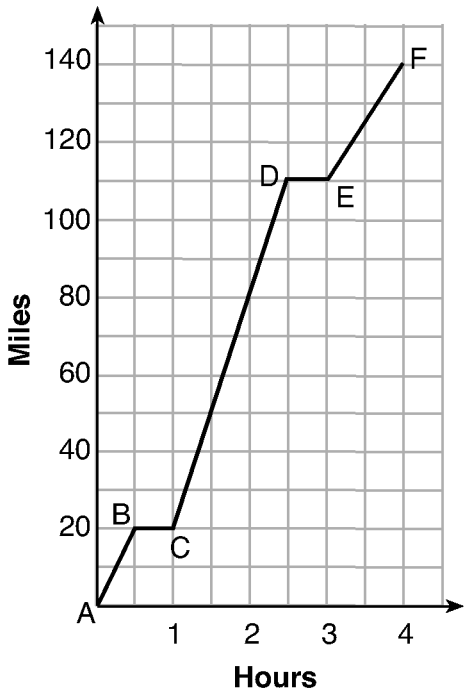
67.5 mph

$\frac{270}{4}$

Score 3: The student made an error in calculating the average rate of change for the entire trip.

Question 33

33 Thomas took a 140-mile bus trip to visit his grandparents. His trip is outlined on the graph below.



Explain what might have happened in the interval between *D* and *E*.

The bus stop in a gas station.

State the interval in which the bus traveled the fastest. 1 to 2:30 hour was the fastes

State how many miles per hour the bus was traveling during this interval.

20 miles per hour

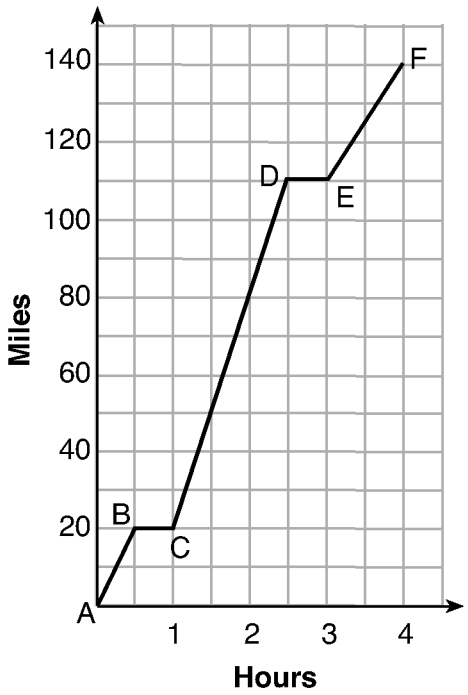
What was the average rate of speed, in miles per hour, for Thomas's entire bus trip?

Thomas' average of speed is 0.0.

Score 2: The student wrote two incorrect rates.

Question 33

33 Thomas took a 140-mile bus trip to visit his grandparents. His trip is outlined on the graph below.



Explain what might have happened in the interval between *D* and *E*.

The bus may have took a stop.

State the interval in which the bus traveled the fastest. F

State how many miles per hour the bus was traveling during this interval.

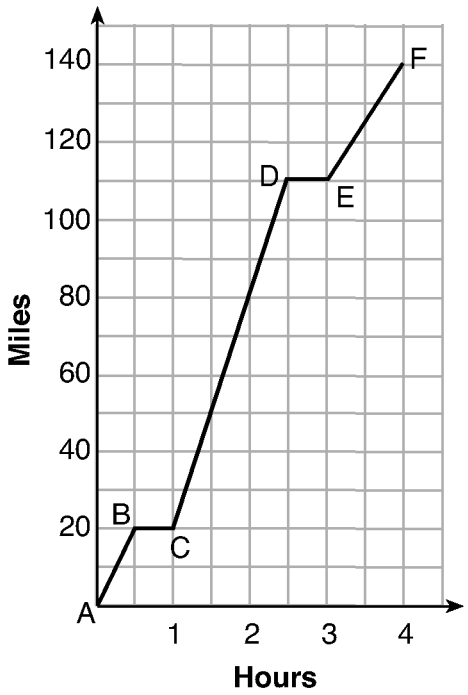
140 miles per hour.

What was the average rate of speed, in miles per hour, for Thomas's entire bus trip?

Score 1: The student wrote a correct explanation only.

Question 33

33 Thomas took a 140-mile bus trip to visit his grandparents. His trip is outlined on the graph below.



Explain what might have happened in the interval between D and E.

The bus was at a red light.

State the interval in which the bus traveled the fastest.

hours 1+2

State how many miles per hour the bus was traveling during this interval.

$\frac{110-20}{2-1}$ $\frac{90}{1}=90$ 90mph

What was the average rate of speed, in miles per hour, for Thomas's entire bus trip?

$\frac{140}{20}=7$ 7mph

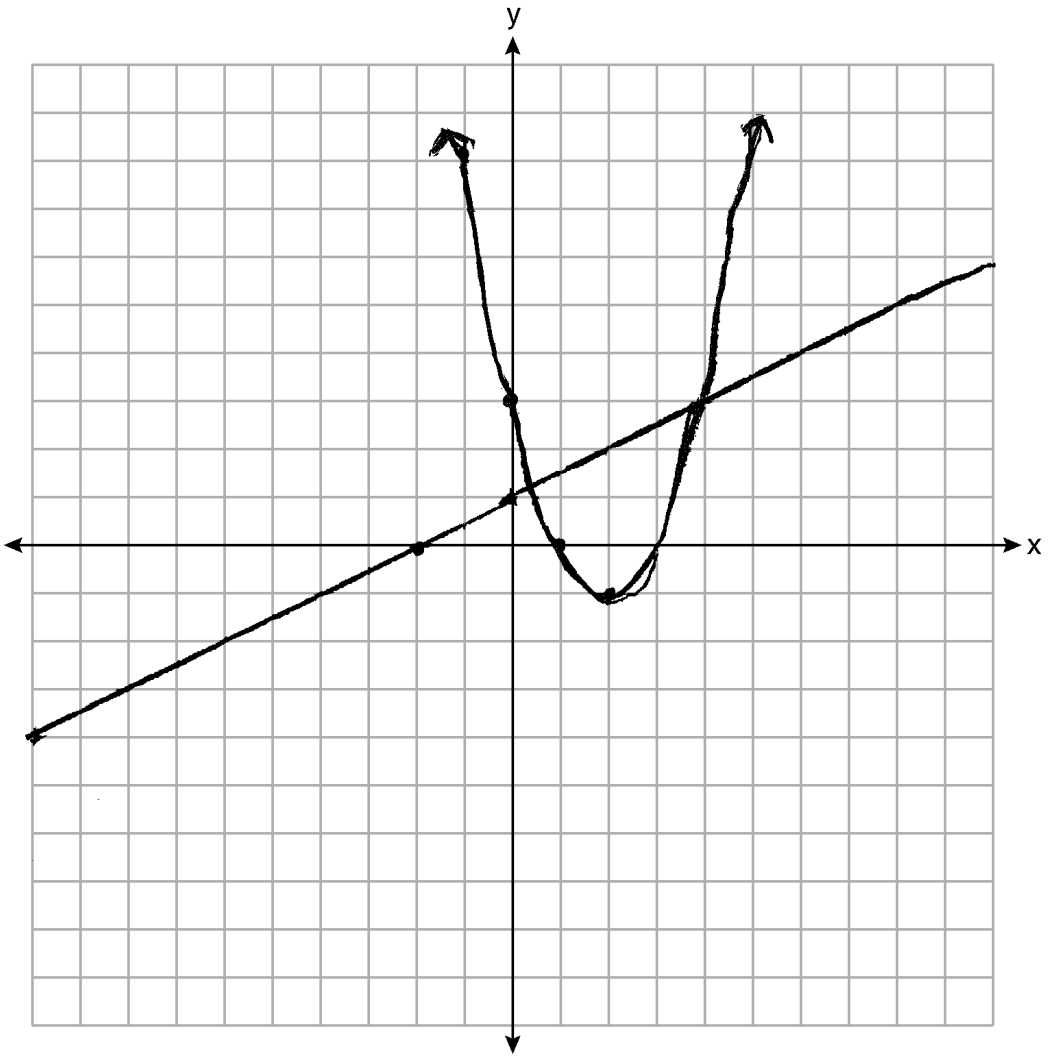
Score 0: The student did not show enough correct work to receive any credit.

Question 34

34 Graph $f(x)$ and $g(x)$ on the set of axes below.

$$f(x) = x^2 - 4x + 3$$

$$g(x) = \frac{1}{2}x + 1$$



Based on your graph, state *one* value of x that satisfies $f(x) = g(x)$. Explain your reasoning.

x=0.5 This is a solution because at this x coordinate the two graphs cross each other.

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

Question 34

34 Graph $f(x)$ and $g(x)$ on the set of axes below.

$(-3)^2-4(-3)+3$
$9+12+3$
24

$f(x) = x^2 - 4x + 3$

$g(x) = \frac{1}{2}x + 1$

g(x)	
x	y
-3	-0.5
-2	0
-1	0.5
0	1
1	1.5
2	2
3	2.5

f(x)	
x	y
-3	24
-2	15
-1	8
0	3
1	0
2	-1
3	0
4	3
5	8

$(-2)^2-4(-2)+3$
$4+8+3$
15

$(-1)^2-4(-1)+3$
$1+4+3$
8

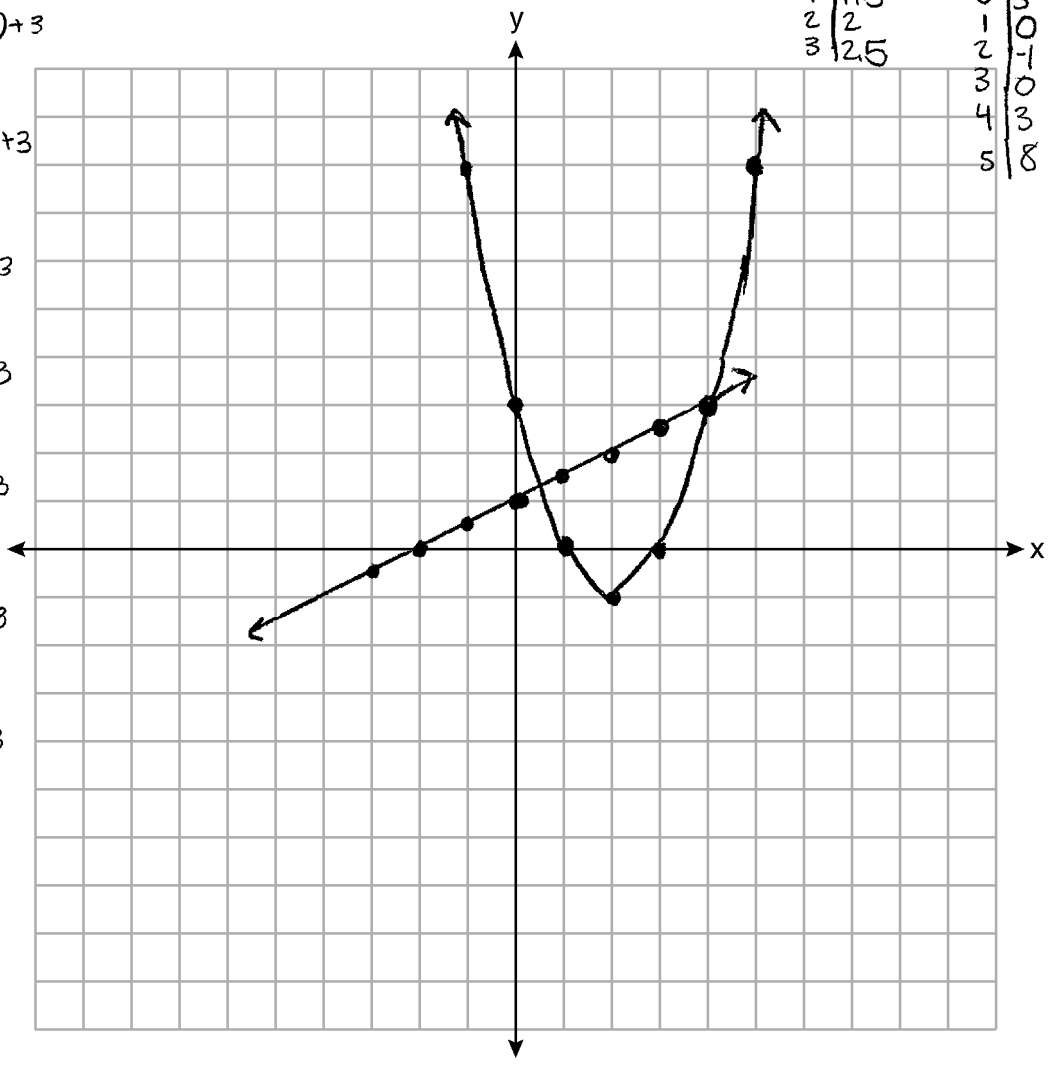
$0^2-4(0)+3$
3

$1^2-4(1)+3$
$1-4+3$
0

$2^2-4(2)+3$
$4-8+3$
-1

$3^2-4(3)+3$
$9-12+3$
0

$4^2-4(4)+3$
$16-16+3$



Based on your graph, state *one* value of x that satisfies $f(x) = g(x)$. Explain your reasoning.

one solution is (4,3) because both f(x) and g(x) graph at that point and therefore intersect; any intersection is a solution to a system of equations.

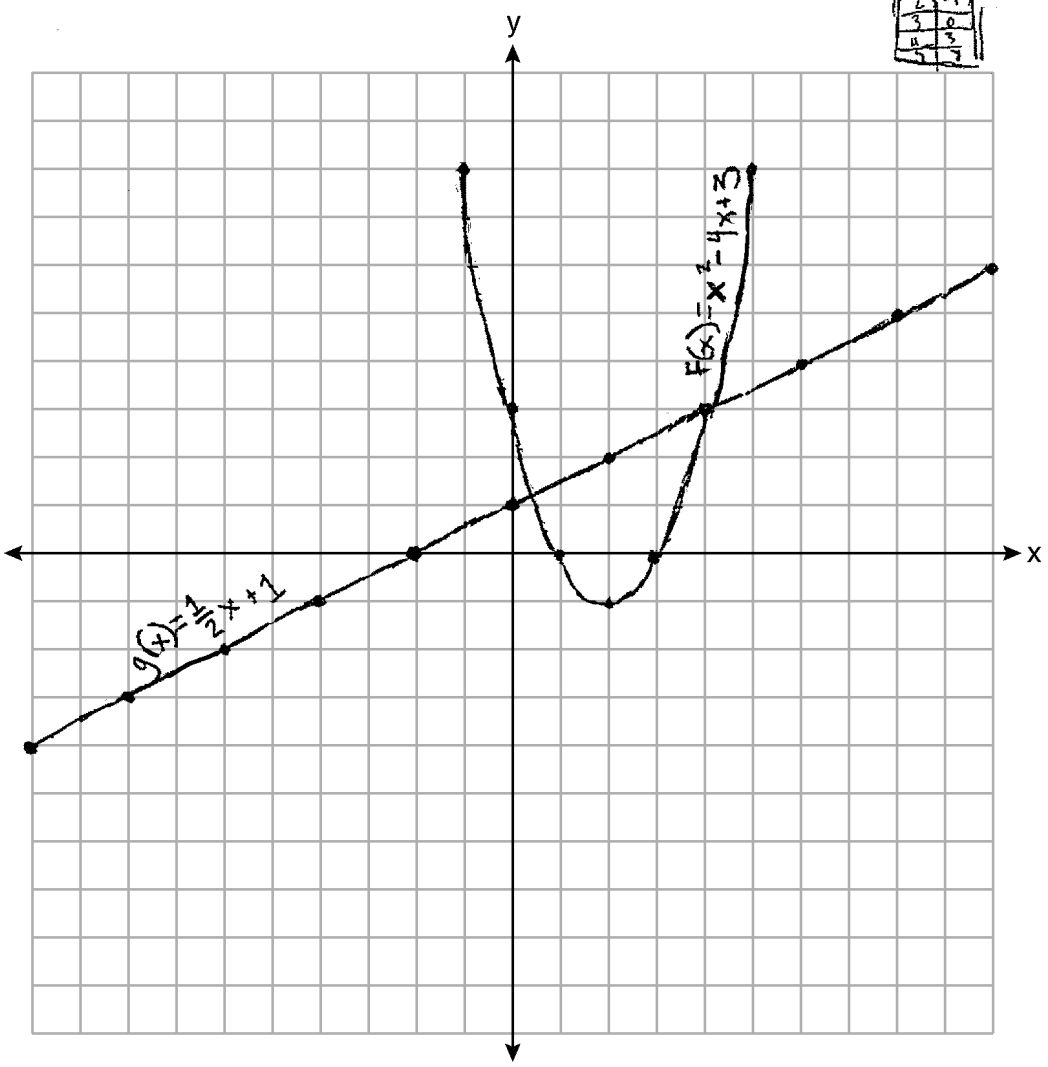
Score 3: The student stated the coordinates of a point of intersection.

Question 34

34 Graph $f(x)$ and $g(x)$ on the set of axes below.

$f(x) = x^2 - 4x + 3$

$g(x) = \frac{1}{2}x + 1$



Based on your graph, state *one* value of x that satisfies $f(x) = g(x)$. Explain your reasoning.

(4,3) is a solution for F(x) = g(x) because that is the point where f(x) and g(x) meet on the co-ordinate plane

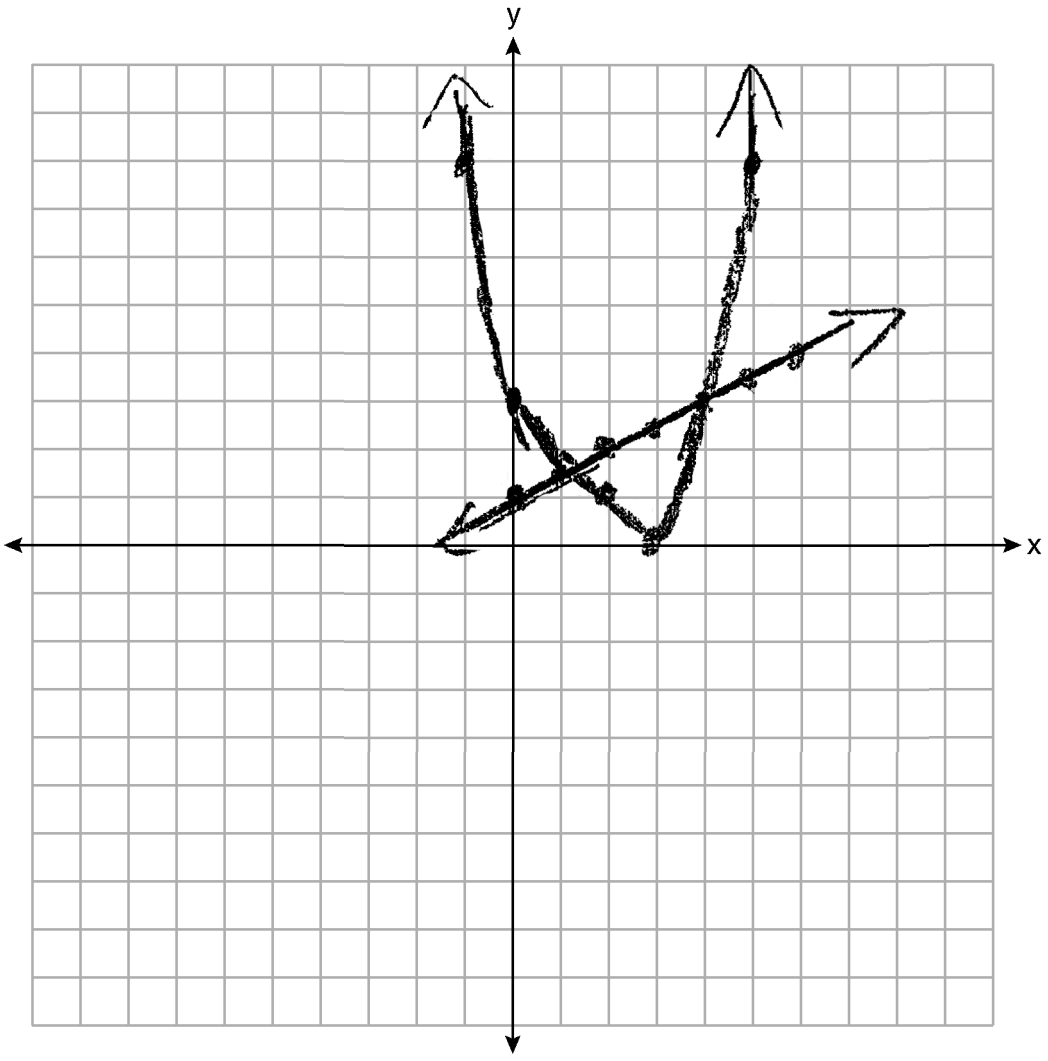
Score 2: The student did not complete the graph of $f(x)$ and stated the coordinates of a point of intersection.

Question 34

34 Graph $f(x)$ and $g(x)$ on the set of axes below.

$$f(x) = x^2 - 4x + 3$$

$$g(x) = \frac{1}{2}x + 1$$



Based on your graph, state *one* value of x that satisfies $f(x) = g(x)$. Explain your reasoning.

(4, 3)

Score 1: The student graphed $g(x)$ correctly, but no further correct work was shown.

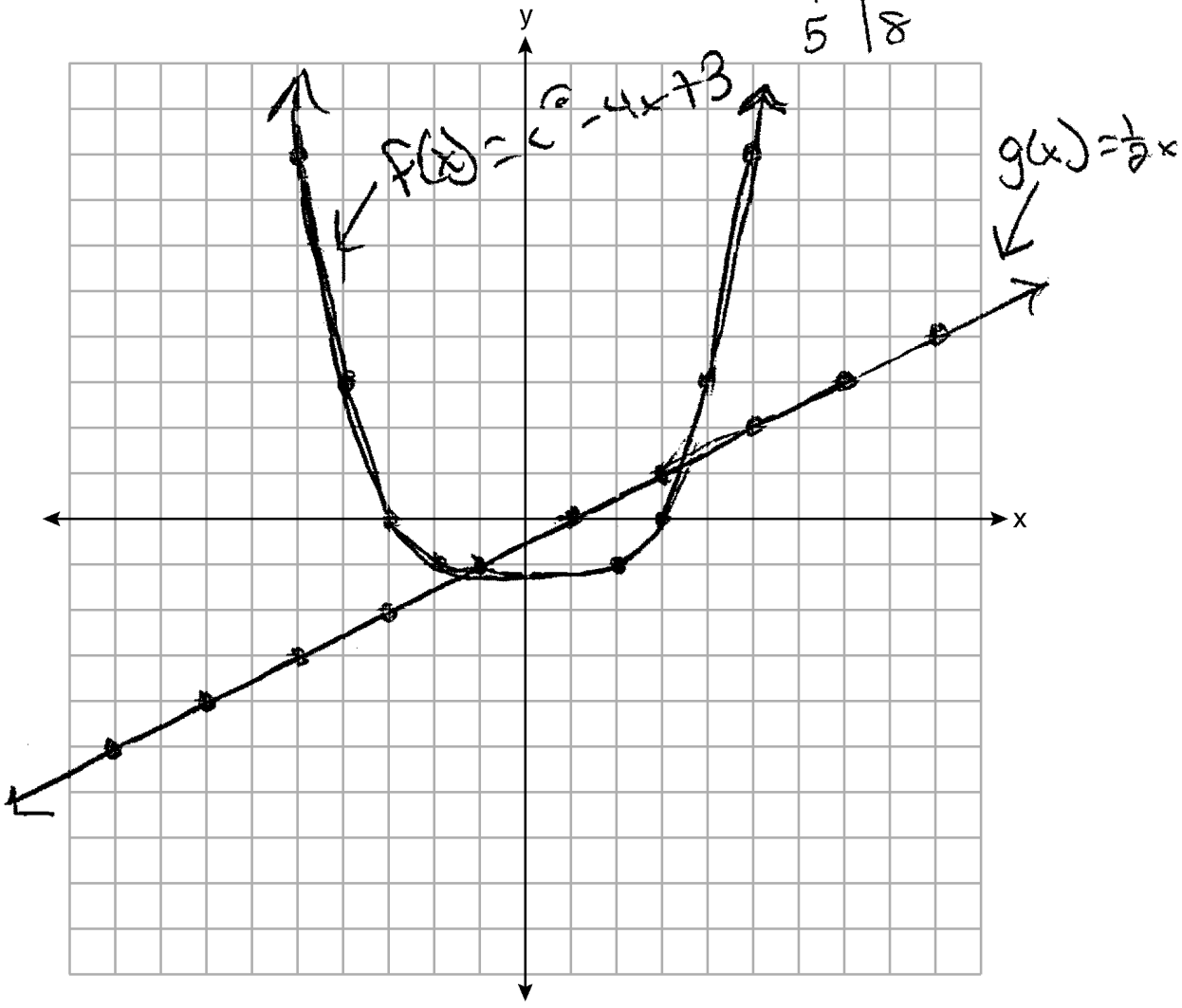
Question 34

34 Graph $f(x)$ and $g(x)$ on the set of axes below.

$$f(x) = x^2 - 4x + 3$$

$$g(x) = \frac{1}{2}x + 1$$

x	y
2	-1
3	0
4	3
5	8



Based on your graph, state *one* value of x that satisfies $f(x) = g(x)$. Explain your reasoning.

One solution for f(x)=g(x) is that the graphs cross. But they are not the same g(x) is a line and f(x) is a parabola

Score 0: The student did not show enough correct work to receive any credit.

Question 35

35 A store sells grapes for \$1.99 per pound, strawberries for \$2.50 per pound, and pineapples for \$2.99 each. Jonathan has \$25 to buy fruit.

He plans to buy 2 more pounds of strawberries than grapes. He also plans to buy 2 pineapples.

If x represents the number of pounds of grapes, write an inequality in one variable that models this scenario.

$1.99x + 2.50(x+2) + 2.99(2) \leq 25$

S = Strawberries

$1.99x + 2.50S + 2.99(2) \leq 25$

$S = x+2$

Determine algebraically the maximum number of whole pounds of grapes he can buy.

$1.99x + 2.50(x+2) + 2.99(2) \leq 25$

$1.99x + 2.50x + 5 + 5.98 \leq 25$

$4.49x + 10.98 \leq 25$

$-10.98 \quad -10.98$

$\frac{4.49}{4.49}x \leq \frac{14.02}{4.49}$

$3+2=5$

$x \leq 3.122449$

grapes = 3 pounds

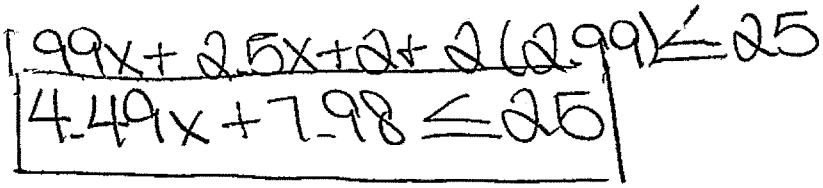
Score 4: The student gave a complete and correct response.

Question 35

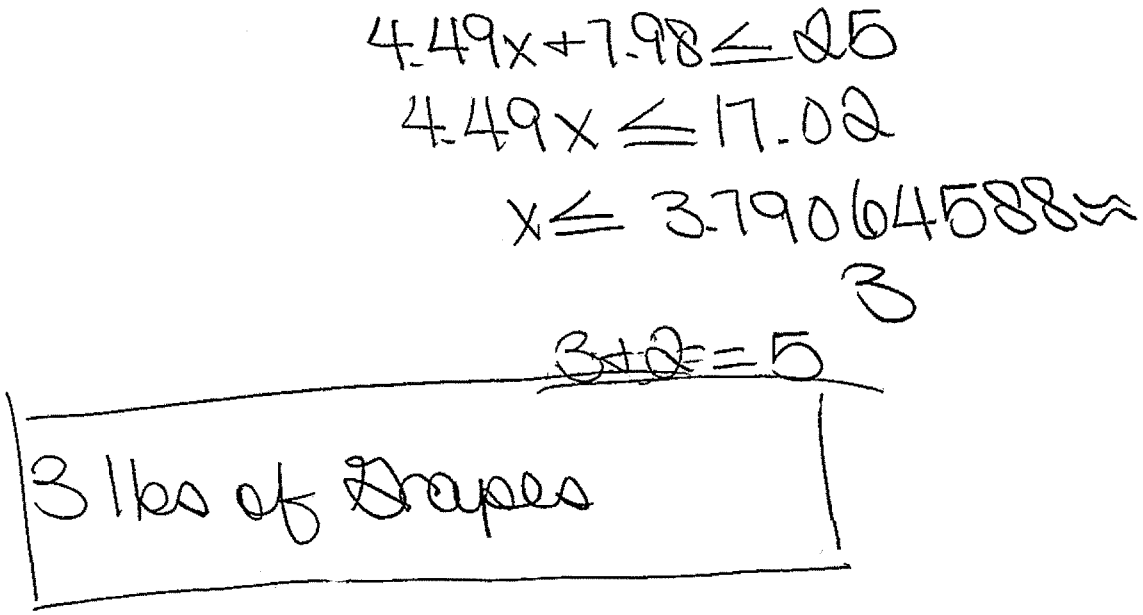
35 A store sells grapes for \$1.99 per pound, strawberries for \$2.50 per pound, and pineapples for \$2.99 each. Jonathan has \$25 to buy fruit.

He plans to buy 2 more pounds of strawberries than grapes. He also plans to buy 2 pineapples.

If x represents the number of pounds of grapes, write an inequality in one variable that models this scenario.



Determine algebraically the maximum number of whole pounds of grapes he can buy.



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

Question 35

35 A store sells grapes for \$1.99 per pound, strawberries for \$2.50 per pound, and pineapples for \$2.99 each. Jonathan has \$25 to buy fruit.

He plans to buy 2 more pounds of strawberries than grapes. He also plans to buy 2 pineapples.

If x represents the number of pounds of grapes, write an inequality in one variable that models this scenario.

$25 \leq 5.98 + 1.99x + 2.50(x+2)$

Determine algebraically the maximum number of whole pounds of grapes he can buy.

$25 \leq 5.98 + 1.99x + 2.50(x+2)$

$25 - 5.98 = 19.02$

$25 \leq 5.98 + 1.99(3) + 2.50(5)$

$25 \leq 24.45$

$19.02 \leq 1.99x + 2.50x$

$-5 \quad\quad -5$

$14.02 \leq 1.99x + 2.50x$

$14.02 \leq 4.49x$

$\frac{14.02}{4.49} \leq \frac{4.49x}{4.49}$

$3.12 \leq x$

Jonathan can buy 3 pounds of grapes.

Score 2: The student used the wrong inequality sign and did not find a number greater than 3.12.

Question 35

35 A store sells grapes for \$1.99 per pound, strawberries for \$2.50 per pound, and pineapples for \$2.99 each. Jonathan has \$25 to buy fruit.

He plans to buy 2 more pounds of strawberries than grapes. He also plans to buy 2 pineapples.

If x represents the number of pounds of grapes, write an inequality in one variable that models this scenario.

X = grapes
P = pineapples
S = strawberries

$2.99(2) + 2.50s + 1.99x \leq 25.00$

Determine algebraically the maximum number of whole pounds of grapes he can buy.

$2.99(2) + 2.50s + 1.99x \leq 25.00$

$5.98 + 2.50s + 1.99x \leq 25.00$

$-5.98 \quad -5.98$

$2.50s + 1.99x \leq 19.02$

$2.50(2) + 1.99x \leq 19.02$

$5.00 + 1.99x \leq 19.02$

$-5.00 \quad -5.00$

$1.99x \leq 14.02$

$1.99 \quad 1.99$

7.04 pounds of grapes

Score 1: The student wrote a correct inequality in more than one variable.

Question 35

35 A store sells grapes for \$1.99 per pound, strawberries for \$2.50 per pound, and pineapples for \$2.99 each. Jonathan has \$25 to buy fruit.

He plans to buy 2 more pounds of strawberries than grapes. He also plans to buy 2 pineapples.

If x represents the number of pounds of grapes, write an inequality in one variable that models this scenario.

$(x) + (x + 2) + 5.98 \leq 25$

Determine algebraically the maximum number of whole pounds of grapes he can buy.

Score 0: The student wrote an incorrect inequality, and no further correct work was shown.

Question 36

36 Solve the system of inequalities graphically on the set of axes below.

Label the solution set S.

$y + 3x < 5$ $y < -3x + 5$

$1 \geq 2x - y$

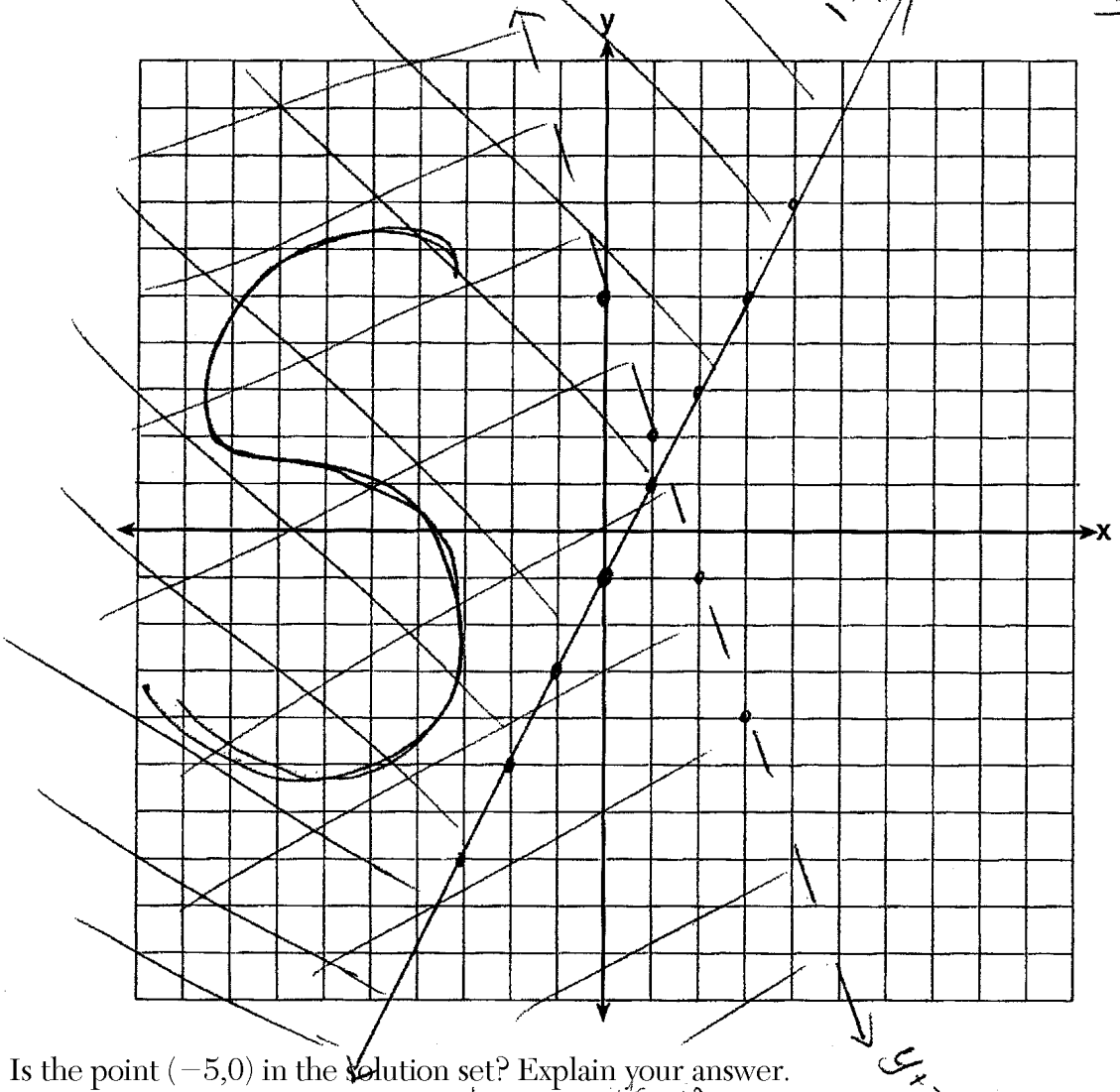
$1 \geq 2x - y$

$-2x \quad -2x$

$\frac{-2x + 1 \geq -y}{-1 \quad -1}$

$2x - 1 \leq y$

$y \geq 2x - 1$



$y + 3x < 5$

Is the point $(-5,0)$ in the solution set? Explain your answer.

yes it is because it's in the shaded area of both inequalities and in the solution set.

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

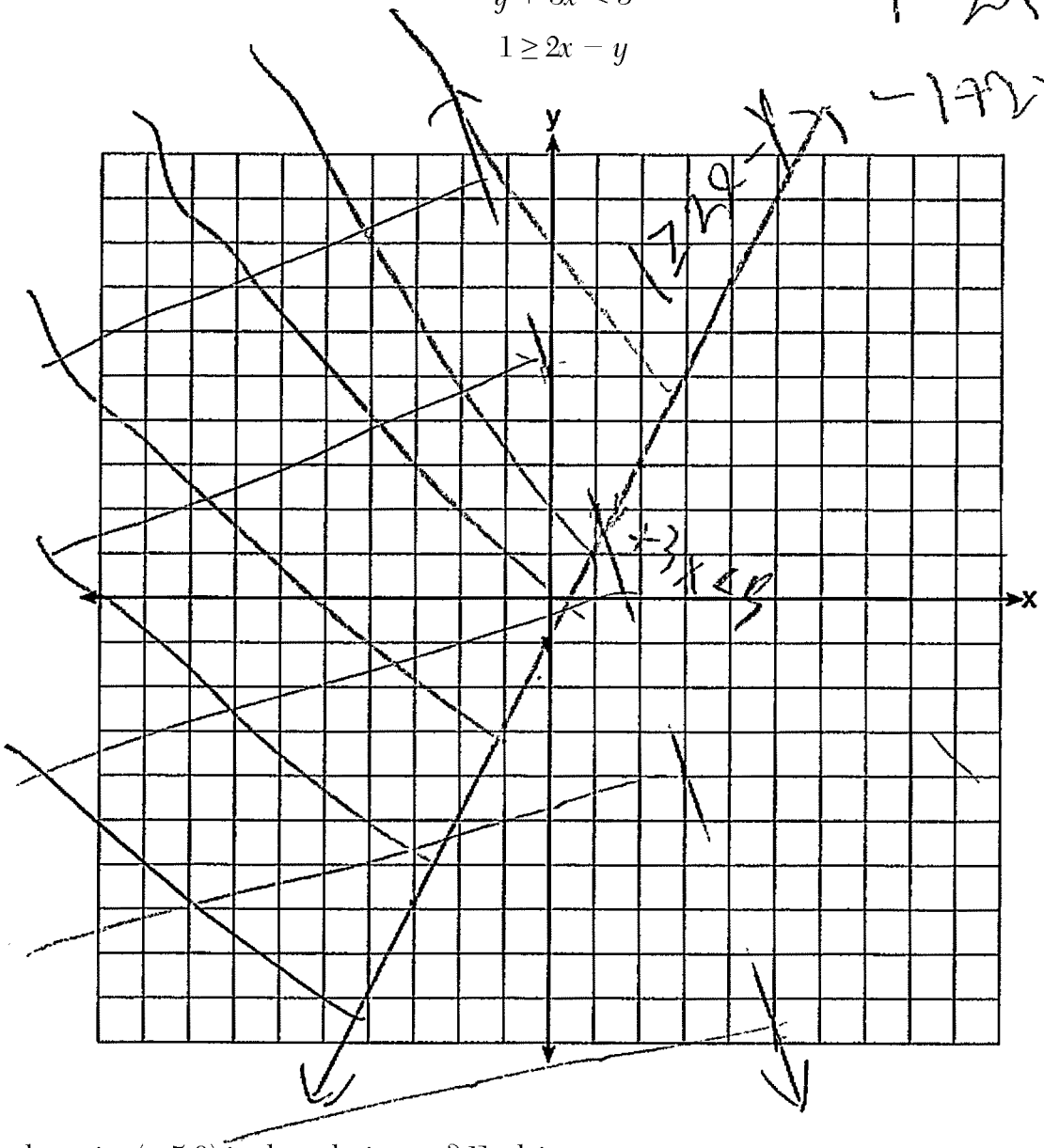
Question 36

36 Solve the system of inequalities graphically on the set of axes below.

Label the solution set S.

$y + 3x < 5$

$1 \geq 2x - y$



Is the point $(-5,0)$ in the solution set? Explain your answer.

Yes, it is in the crossed-scam

Score 3: The student did not label the solution set S.

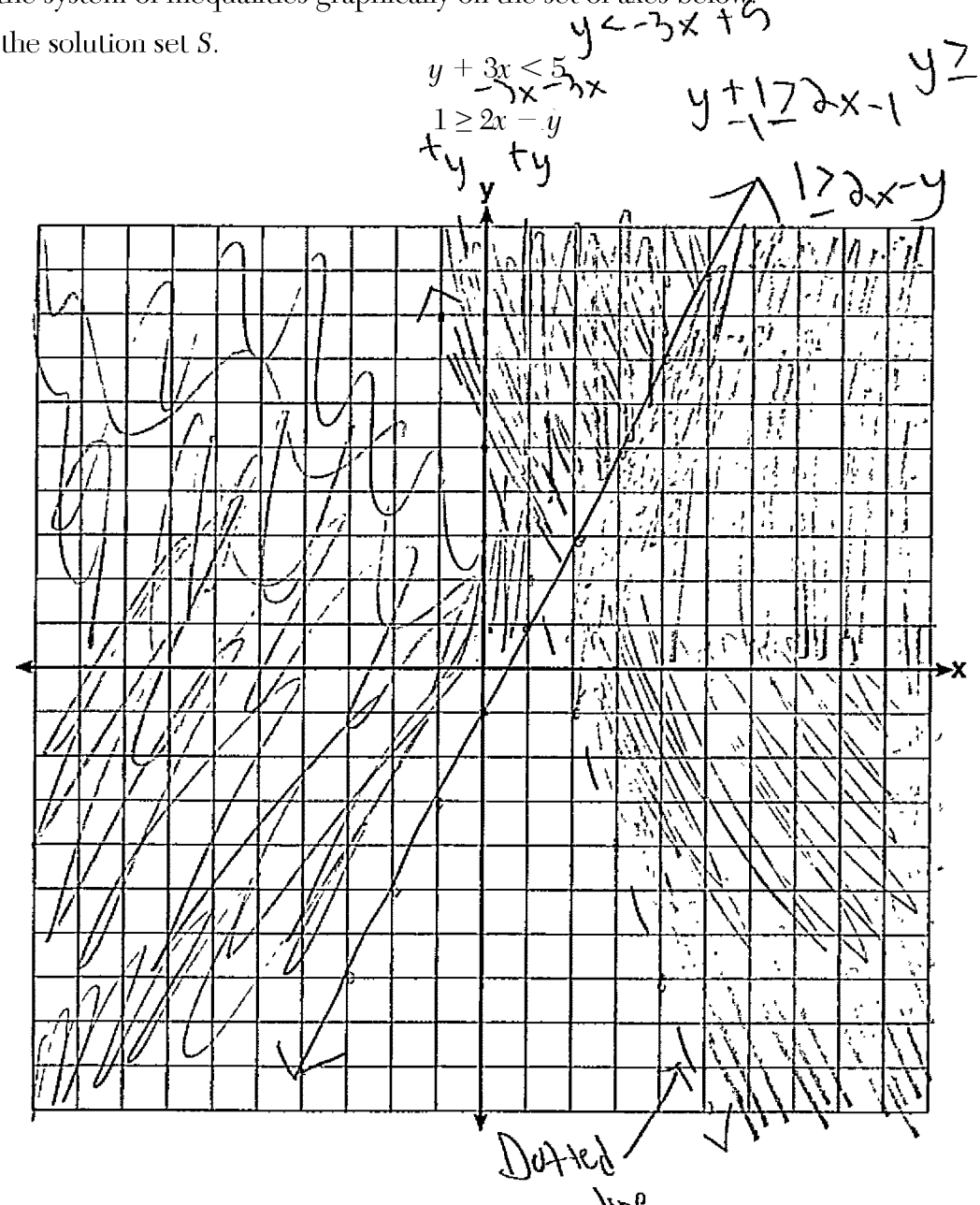
Question 36

36 Solve the system of inequalities graphically on the set of axes below.

Label the solution set S.

$y + 3x < 5$

$1 \geq 2x - y$



Is the point $(-5,0)$ in the solution set? Explain your answer.

No because (-5,0) is only a solution to $1 \geq 2x-y$ and not $y+3x<5$.

Score 2: The student shaded $y + 3x < 5$ incorrectly and did not label the solution set S.

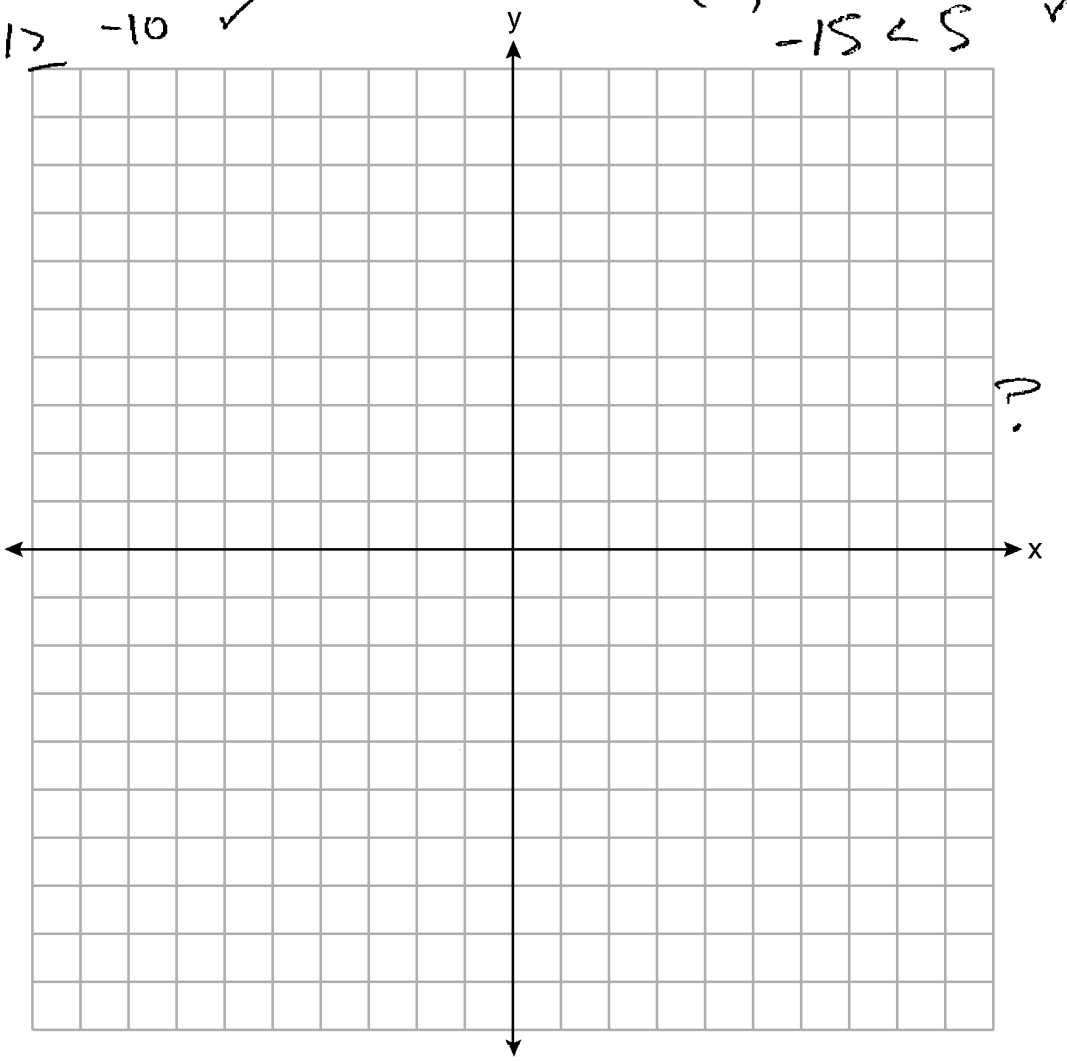
Question 36

36 Solve the system of inequalities graphically on the set of axes below.

Label the solution set S.

$y + 3x < 5$

$1 \geq 2x - y$



Is the point (5,0) in the solution set? Explain your answer.

(-5,0) is in the solution set because it makes both inequalities true.

Score 1: The student wrote a correct explanation for the point $(-5,0)$, but no further correct work was shown.

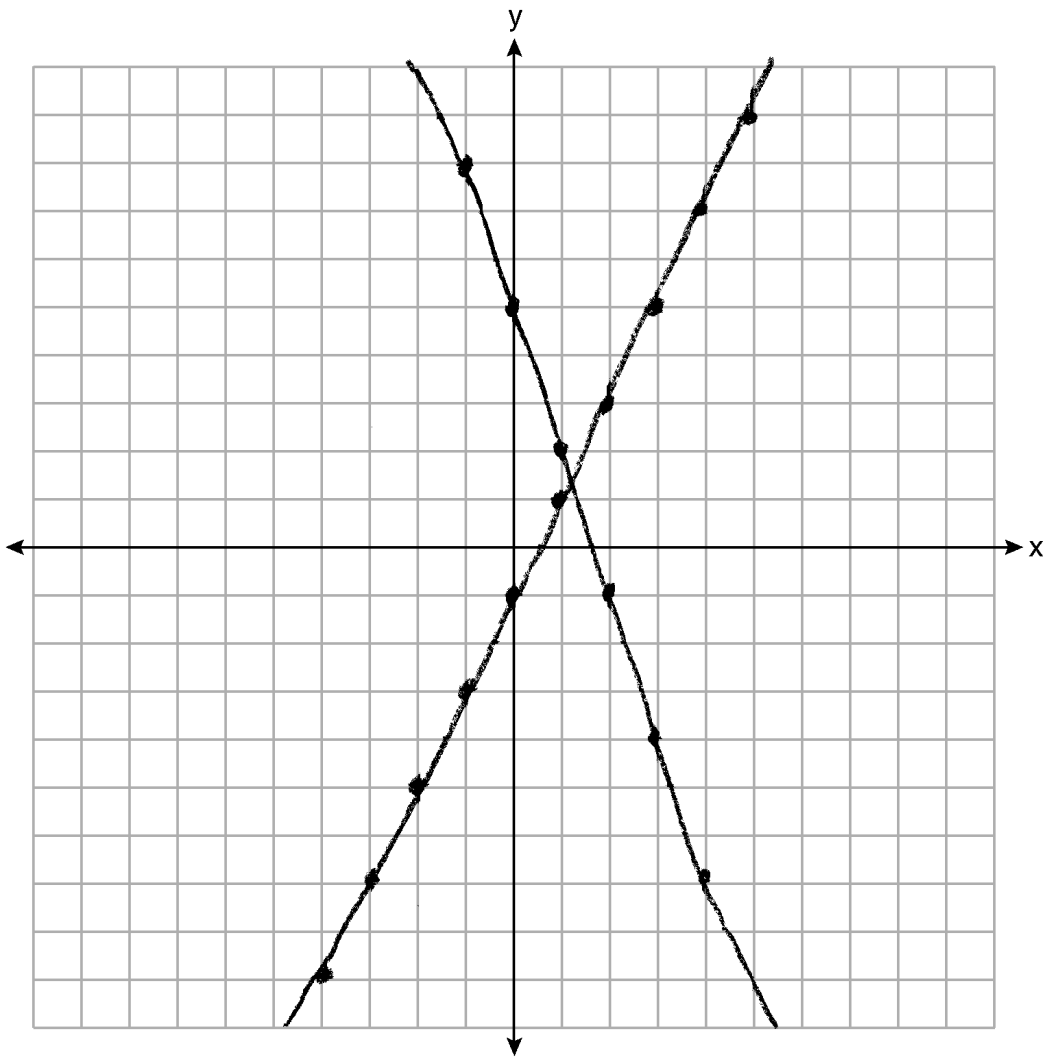
Question 36

36 Solve the system of inequalities graphically on the set of axes below.

Label the solution set S.

$$y + 3x < 5$$

$$1 \geq 2x - y$$



Is the point $(-5,0)$ in the solution set? Explain your answer.

Score 0: The student graphed $y + 3x = 5$ and $1 = 2x - y$ correctly, but neither line is labeled.

Question 37

37 An ice cream shop sells small and large sundaes. One day, 30 small sundaes and 50 large sundaes were sold for $420. Another day, 15 small sundaes and 35 large sundaes were sold for $270. Sales tax is included in all prices.

If x is the cost of a small sundae and y is the cost of a large sundae, write a system of equations to represent this situation.

$30x + 50y = 420$
$15x + 35y = 270$

Let x=small sundae
Let y= large sundae

Peyton thinks that small sundaes cost $2.75 and large sundaes cost $6.75. Is Peyton correct? Justify your answer.

Peyton is wrong because if you plug these numbers in the first equation it will work but if you do it for the second one it will be wrong. It will be a extra 7.50 dollars in cost.

Using your equations, determine algebraically the cost of one small sundae and the cost of one large sundae.

$30x + 50y = 420$
$(15x + 35y = 270) \cdot -2$

$30x + 50y = 420$
$-30x - 70y = -540$
$-20y = -120$
-20
$y = 6$

$30x + 50(6) = 420$
$30x + 300 = 420$
$-300 - 300$
$30x = 120$
$x = 4$

Small sundae = 4
Large sundae = 6

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

Question 37

37 An ice cream shop sells small and large sundaes. One day, 30 small sundaes and 50 large sundaes were sold for $420. Another day, 15 small sundaes and 35 large sundaes were sold for $270. Sales tax is included in all prices.

If x is the cost of a small sundae and y is the cost of a large sundae, write a system of equations to represent this situation.

let x = $ of small sundae
y = $ of large sundae

$30x + 50y = 420$

$15x + 35y = 270$

Peyton thinks that small sundaes cost $2.75 and large sundaes cost $6.75. Is Peyton correct? Justify your answer.

$30x+50y=420$
$30x+50(6)=420$
$30x+300=420$
$-300 \quad -300$
$\frac{30x}{30} = \frac{120}{30}$
$x=4$

$30x+50y=420$
$-50y \quad -50y$
$\frac{30x}{30} = \frac{420-50y}{30}$
$x = 14 - \frac{5}{3}y$

$15(14-\frac{5}{3}y)+35y=270$
$210-25y+35y=270$
$-210 \quad -210$
$\frac{10y}{10} = \frac{60}{10}$
$y=6$

Peyton is incorrect, because the small sundae is $4 and the large sundae is $6. If you plug in the #'s to the above system of equations you get what they equal.
Ex: $30(4)+50(6)=420$
$420=420$

Using your equations, determine algebraically the cost of one small sundae and the cost of one large sundae.

$x=4$

$y=6$

$15(4)+35(6)=270$
$270=270$

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

Question 37

37 An ice cream shop sells small and large sundaes. One day, 30 small sundaes and 50 large sundaes were sold for \$420. Another day, 15 small sundaes and 35 large sundaes were sold for \$270. Sales tax is included in all prices.

If x is the cost of a small sundae and y is the cost of a large sundae, write a system of equations to represent this situation.

$30x + 50y = 420$

$15x + 35y = 270$

Peyton thinks that small sundaes cost \$2.75 and large sundaes cost \$6.75. Is Peyton correct? Justify your answer.

$30(2.75) + 50(6.75) = 420$ yes

$15(2.75) + 35(6.75) \neq 270$

Peyton is not correct. The numbers don't work in the second equation

Using your equations, determine algebraically the cost of one small sundae and the cost of one large sundae.

X	y_1	y_2
3	6.6	6.4286
4	6	6
5	5.4	5.5714

$x = 4$

$y = 6$

Score 5: The student used a method other than algebraic to find $x = 4$ and $y = 6$.

Question 37

37 An ice cream shop sells small and large sundaes. One day, 30 small sundaes and 50 large sundaes were sold for $420. Another day, 15 small sundaes and 35 large sundaes were sold for $270. Sales tax is included in all prices.

If x is the cost of a small sundae and y is the cost of a large sundae, write a system of equations to represent this situation. let x = small sundaes
let y = large sundaes

$30x+50y=420$

$15x+35y=270$

Peyton thinks that small sundaes cost $2.75 and large sundaes cost $6.75. Is Peyton correct? Justify your answer. $30(2.75)+50(6.75)=420$ ✓
$15(2.75)+35(6.75)=270$ X
Peyton is not correct because although the prices worked for one day, it didn't for the other.

Using your equations, determine algebraically the cost of one small sundae and the cost of one large sundae.

$30x+50y=420$

$15x+35y=270$

Score 4: The student wrote a correct system of equations and provided a correct justification.

Question 37

37 An ice cream shop sells small and large sundaes. One day, 30 small sundaes and 50 large sundaes were sold for $420. Another day, 15 small sundaes and 35 large sundaes were sold for $270. Sales tax is included in all prices.

If x is the cost of a small sundae and y is the cost of a large sundae, write a system of equations to represent this situation.

$X(30) + Y(50) = 420$

$X(15) + Y(35) = 270$

Peyton thinks that small sundaes cost $2.75 and large sundaes cost $6.75. Is Peyton correct? Justify your answer.

$2.75(30) = 82.5$

$6.75(50) = +337.5$

420

$2.75(15) = 41.25$

$6.75(35) = +236.25$

277.5

Peyton is half correct

Using your equations, determine algebraically the cost of one small sundae and the cost of one large sundae.

2.75 small sundae cost

6.75 large sundae cost

Score 4: The student wrote a correct system of equations and provided a correct justification.

Question 37

37 An ice cream shop sells small and large sundaes. One day, 30 small sundaes and 50 large sundaes were sold for $420. Another day, 15 small sundaes and 35 large sundaes were sold for $270. Sales tax is included in all prices.

If x is the cost of a small sundae and y is the cost of a large sundae, write a system of equations to represent this situation.

$15(30s + 50L = 420)$ $4\ 450s + 750L = 6300$
$30(19s + 35L = 270)$ $4\ 5.0s + 105L = 8100$
$-300L - 1800$
$-300 - 300$
$30s + 50(6) = 420$
$30s + 300 = 420$
$-300 \quad -300$
$30s = 120$ $x = 4$ $y = 6$

Peyton thinks that small sundaes cost $2.75 and large sundaes cost $6.75. Is Peyton correct? Justify your answer.

$2.75 + 6.75 = 9.50$

Using your equations, determine algebraically the cost of one small sundae and the cost of one large sundae.

Score 3: The student wrote the system of equations in terms of S and L, but solved it appropriately for x and y.

Question 37

37 An ice cream shop sells small and large sundaes. One day, 30 small sundaes and 50 large sundaes were sold for $420. Another day, 15 small sundaes and 35 large sundaes were sold for $270. Sales tax is included in all prices.

If x is the cost of a small sundae and y is the cost of a large sundae, write a system of equations to represent this situation.

$S + L = 420$

$S + L = 270$

Peyton thinks that small sundaes cost $2.75 and large sundaes cost $6.75. Is Peyton correct? Justify your answer.

$30(2.75) + 50(6.75) = 420$

$82.50 + 337.50 = 420$

$15(2.75) + 35(6.75) = 270$ No

$41.25 + 236.25 = 277.50$

Using your equations, determine algebraically the cost of one small sundae and the cost of one large sundae.

$S + L = 420$

$S + L = 270$

$2S + 2L = 690$

$S + L = 345$

Score 2: The student wrote a correct justification.

Question 37

37 An ice cream shop sells small and large sundaes. One day, 30 small sundaes and 50 large sundaes were sold for \$420. Another day, 15 small sundaes and 35 large sundaes were sold for \$270. Sales tax is included in all prices.

If x is the cost of a small sundae and y is the cost of a large sundae, write a system of equations to represent this situation.

let x = cost of sm sundaes
let y = cost of lrg sundaes

day 1
30 sm
50 lrg
$420

$30x + 50y = 240$

day 2
15 sm
35 lrg
270

$15x + 35y = 270$

$45x +$

Peyton thinks that small sundaes cost \$2.75 and large sundaes cost \$6.75. Is Peyton correct? Justify your answer.

Using your equations, determine algebraically the cost of one small sundae and the cost of one large sundae.

Score 1: The student wrote one correct equation, but no further correct work was shown.

Question 37

37 An ice cream shop sells small and large sundaes. One day, 30 small sundaes and 50 large sundaes were sold for $420. Another day, 15 small sundaes and 35 large sundaes were sold for $270. Sales tax is included in all prices.

If x is the cost of a small sundae and y is the cost of a large sundae, write a system of equations to represent this situation.

$x = 30$ $\quad y = 30x + 50 = 420$

$y = 50$ $\quad y = 15x + 35 = 270$

Peyton thinks that small sundaes cost $2.75 and large sundaes cost $6.75. Is Peyton correct? Justify your answer.

Yes because the small sundaes are the right amount and the large should cost more.

Using your equations, determine algebraically the cost of one small sundae and the cost of one large sundae.

$y = 30x + 50 = 420$
$-50 \quad -50$

$\frac{30x}{30} = \frac{370}{30}$

$x = \$12.30$

small

$y = 15x + 35 = 270$
$-35 \quad -35$

$\frac{15x}{15} = \frac{235}{15}$

$x = \$15.70$

large

Score 0: The student did not show enough correct work to receive any credit.