The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

ALGEBRA I

Wednesday, June 18, 2025 — 1:15 to 4:15 p.m., only

MODEL RESPONSE SET

Table of Contents

25 A survey was taken to determine whether students preferred to watch videos or listen to music. Of the 100 students surveyed, 44 were seniors. Of the 65 students who preferred to watch videos, 42 were juniors. Use this information to complete the frequency table below.

	Juniors	Seniors	Total
Watch Videos	42	23	65
Listen to Music	14	21	35
Total	56	44	100

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

25 A survey was taken to determine whether students preferred to watch videos or listen to music. Of the 100 students surveyed, 44 were seniors. Of the 65 students who preferred to watch videos, 42 were juniors. Use this information to complete the frequency table below.

	Juniors	Seniors	Total
Watch Videos	42	23	65
Listen to Music	16	21	37
Total	56	44	100

Score 1: The student wrote 21 correctly in the table, but no further correct work is shown.

25 A survey was taken to determine whether students preferred to watch videos or listen to music. Of the 100 students surveyed, 44 were seniors. Of the 65 students who preferred to watch videos, 42 were juniors. Use this information to complete the frequency table below.

	Juniors	Seniors	Total
Watch Videos	42	23	55
Listen to Music	14	21	35
Total	56	44	100

Total=100students

Seniors=44

100
− 44
‾‾‾‾‾
56 Juniors

42 Juniors watch
+ 23 seniors watch
‾‾‾‾‾
55 total watch

65
− 42 Juniors watch
‾‾‾‾‾
23 seniors watch

44 seniors
− 23 seniors watch
‾‾‾‾‾
21 seniors listen

35 listen total
− 21 listen seniors
‾‾‾‾‾
14 juniors listen

Score 1: The student made one computational error.

25 A survey was taken to determine whether students preferred to watch videos or listen to music. Of the 100 students surveyed, 44 were seniors. Of the 65 students who preferred to watch videos, 42 were juniors. Use this information to complete the frequency table below.

	Juniors	Seniors	Total
Watch Videos	42	56	9 8
Listen to Music	23	44	6 7
Total	65	10 0	1 6 5

100
−44
56

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

26 Solve the inequality for y:

$$5(2 - y) > -11y - 8$$

$$5(2-y) > -11y - 8$$

$$10 - 5y > -11y - 8$$

$$-5y + 11y > -8 - 10$$

$$\frac{6y}{6} > \frac{-18}{6}$$

$$y > -3$$

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

26 Solve the inequality for y:

$$5(2 - y) > -11y - 8$$

$$10 - 5y > -11y - 8$$
$$+ 8 \qquad\qquad + 8$$

$$18 - 5y > -11y$$
$$+ 5y \qquad + 5y$$

$$\frac{18}{-6} > \frac{-6y}{-6}$$

$$-3 < y$$

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

26 Solve the inequality for y:

$$5(2 - y) > -11y - 8$$

$$10 - 5y > -11y - 8$$
$$+11y \qquad +11y$$
$$\overline{}$$

$$10 + 6y > -8$$
$$-10 \qquad\quad -10$$

$$\frac{6y}{6} > \frac{-18}{6}$$

$$\boxed{y < -3}$$

Score 1: The student wrote an incorrect inequality sign.

26 Solve the inequality for y:

$$5(2 - y) > -11y - 8$$

$$5(\overgroup{2 - Y}) > -11y - 8$$
$$10 - 5y > -11y - 8$$
$$-10 \qquad > \qquad -10$$
$$5y > -11y - 18$$
$$+11y \quad +11y$$
$$\frac{16y > -18}{16}$$
$$y > \frac{-18}{16}$$

Score 1: The student made an error by transposing a negative 5 to a positive 5.

26 Solve the inequality for y:

$$5(2 - y) > -11y - 8$$

$$5(2-y) > -11y -8$$
$$+\;/$$
$$2\;6$$

$$8+10-5y > -11y$$

$$18-5y > -11y$$
$$+5 \qquad +5$$

$$\frac{18}{6} < \frac{6y}{6}$$

$$\boxed{y=3}$$

Score 0: The student made two errors.

26 Solve the inequality for y:

$$5(2 - y) > -11y - 8$$

$$5(2-y) > -11y - 8$$

$$10 - 5y > -11y - 8$$
$$+8 \qquad\qquad +8$$

$$18 - 5y > -11y$$
$$+5y \quad +5y$$

$$\frac{18}{-16} > \frac{-16y}{-16}$$

$$-1.125 > y$$

Score 0:   The student made two errors.

27 Express $(5x - 3)(-2x + 7)$ as a trinomial in standard form.

$$-10x^2 + 35x + 6x - 21$$

$$-10x^2 + 41x - 21$$

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

27 Express $(5x - 3)(-2x + 7)$ as a trinomial in standard form.

$$-10x^2 + 41x - 21$$

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

27 Express $(5x - 3)(-2x + 7)$ as a trinomial in standard form.

$$-10x^2 + 35x - 6x - 21$$

$$-10x^2 + 29x - 21$$

Score 1: The student made one computational error.

27 Express $(5x - 3)(-2x + 7)$ as a trinomial in standard form.

$-10x + 35 + 6 + 35$

$41 + 35 - 10x$

• standard form: highest exponents in front

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

27 Express $(5x - 3)(-2x + 7)$ as a trinomial in standard form.

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

28 The first and fourth terms in an arithmetic sequence are given below.

$$-20, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, -2$$

$18/3$

$= 6$

Determine the eighth term.

$$a_n = a_1 + d(n-1)$$

step 1 $\quad a_8 = -20 + 6(8-1)$

Step 2 $\quad a_8 = -20 + 48 - 6$

step 3 $\quad a_8 = -20 + 42$

$$a_8 = 22$$

The 8th term is 22

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

28 The first and fourth terms in an arithmetic sequence are given below.

$d = 6$

$$-20, \underline{\quad -14 \quad}, \underline{\quad -8 \quad}, -2$$

Determine the eighth term.

1 −20
2 −14
3 −8
4 −2
5 4
6 10
7 16
8 22
9 28
10 34

$a_8 = 22$

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

28 The first and fourth terms in an arithmetic sequence are given below.

$$-20, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, -2$$

Determine the eighth term.

$$d = +6$$

$$f(1) = -20 \qquad f(4) = -2$$
$$f(n) = f(1) + d(n-1)$$

$f(4) \quad -2 + 6 = 4$
$f(5) \quad 4 + 6 = 10$
$f(6) \quad 10 + 6 = 16$
$f(7) \quad 16 + 6 = 22$
$f(8) \quad 22 + 6 = 28$

$$f(8) = 28$$

Score 1: The student misnumbered the terms.

28 The first and fourth terms in an arithmetic sequence are given below.

$$-20, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, -2$$

-20 to -2 = 18

Determine the eighth term.

18 ÷ 2 = 9 + the number is +9 so if -2 = 4th term the I just kept un adding 9 til i got to the eigth. term

$a_4 = -2$

$a_8 = 34$

Score 1: The student made an error in finding the common difference, but used it appropriately.

28 The first and fourth terms in an arithmetic sequence are given below.

$$-20, \underset{}{\underline{\;-14\;}}, \underset{}{\underline{\;-8\;}}, -2$$

$+6 \quad +6 \quad +6 \quad +6$

Determine the eighth term.

$a = -20 +$

$a_n = a_1 + d(n-1)$

$a_8 = -20 + d(8-1)$

$a_8 = -20 + 6(7)$

$a_8 = -14(7)$

$\boxed{a_8 = -98}$

Score 1: The student found the common difference of 6, but made an error in simplifying $a_8 = -20 + 6(7)$.

28 The first and fourth terms in an arithmetic sequence are given below.

$$-20, \underline{}, \underline{}, -2$$

Determine the eighth term.

1	2	3	4	5	6	7	8
-20	-12	-4	-2				

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

28 The first and fourth terms in an arithmetic sequence are given below.

$$-20, \underline{\hspace{0.5cm}}, \underline{\hspace{0.5cm}}, -2$$
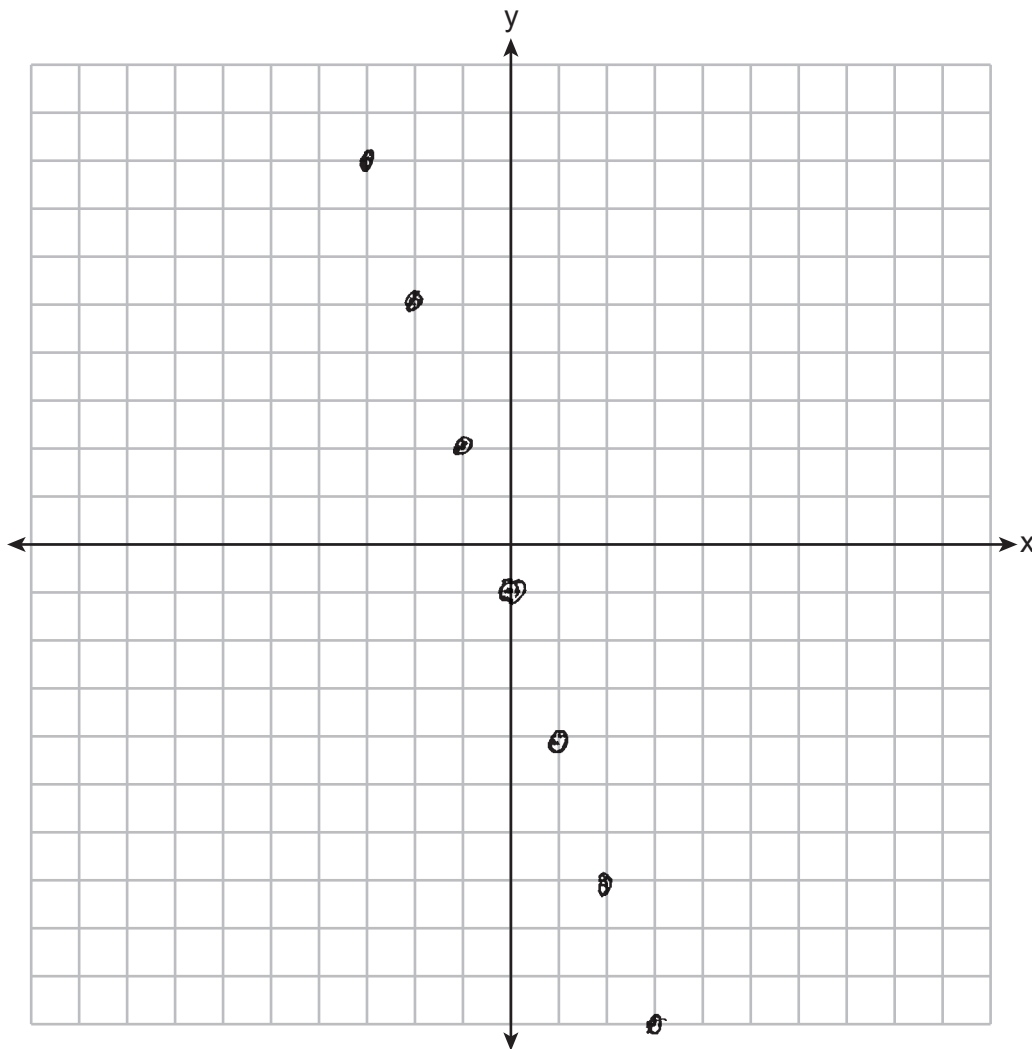
Determine the eighth term.

$a_n = a_1 + d(n-1)$

$a_8 = -20 + d(2-1)$

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

29 Write an equation in slope-intercept form for the line that passes through $(-2,5)$ and has a slope of -3. [Use of the set of axes below is optional.]

$$y = -3x - 1$$

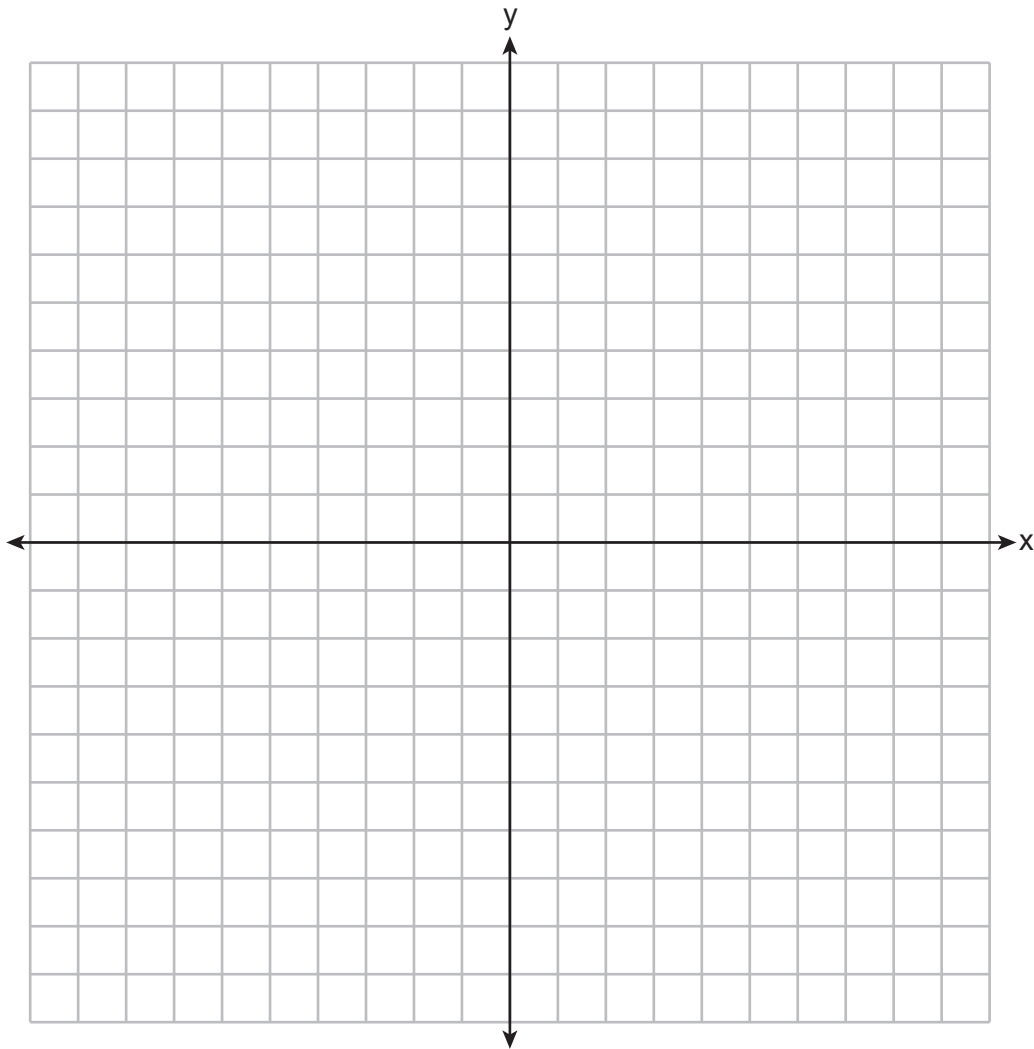**Score 2:** The student gave a complete and correct response.

29 Write an equation in slope-intercept form for the line that passes through $(-2,5)$ and has a slope of -3. [Use of the set of axes below is optional.]

$$y - 5 = -3(x - (-2))$$
$$y - 5 = -3x - 6$$
$$ + 5 + 5$$
$$y = -3x - 1$$

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

29 Write an equation in slope-intercept form for the line that passes through $(-2,5)$ and has a slope of -3. [Use of the set of axes below is optional.]
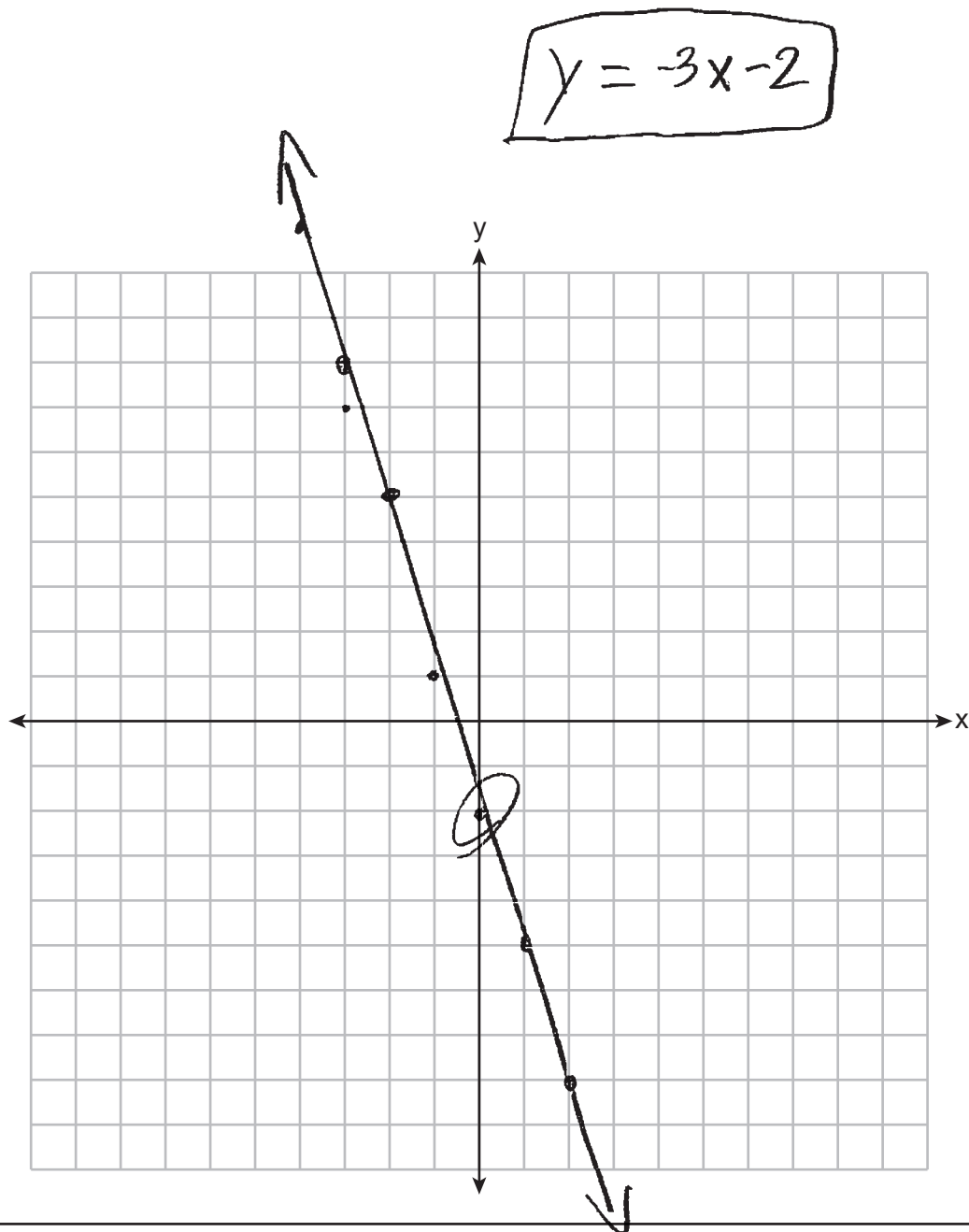
$$y = -3x - 2$$

Score 1: The student made one graphing error.

29 Write an equation in slope-intercept form for the line that passes through $(-2,5)$ and has a slope of -3. [Use of the set of axes below is optional.]

$y = mx + b$ xy

$y = mx + b$

$5 = (3)(-2) + b$

$5 = -6 + b$

X	Y
-2	-8
-1	-7
0	-6
1	-5
2	-4
3	-3
4	-2
5	-1

$(-2,5)$

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

29 Write an equation in slope-intercept form for the line that passes through $(-2,5)$ and has a slope of -3. [Use of the set of axes below is optional.]
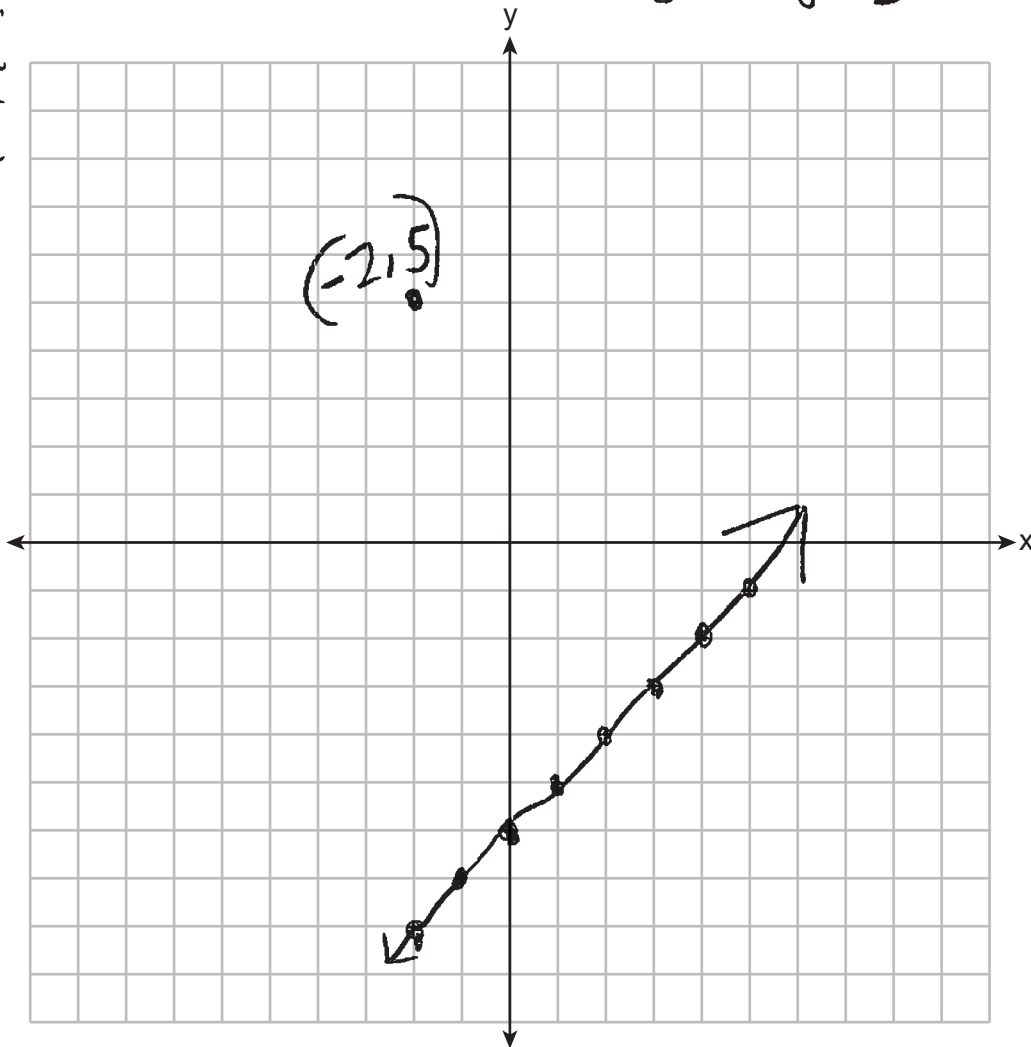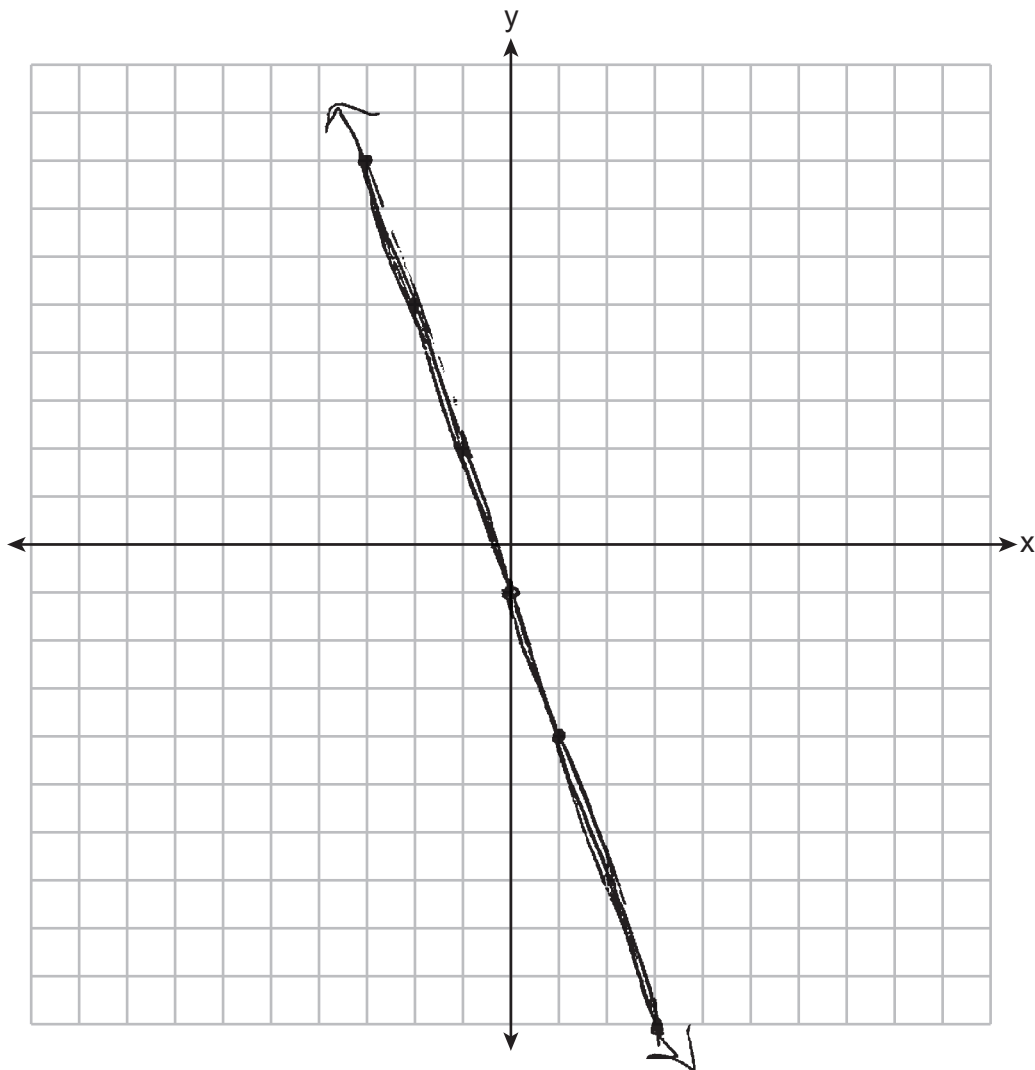

Score 0:   The student did not write an equation.

30 Factor the expression $x^3 - 36x$ completely.

$$\frac{x(x^2-36)}{x(x+6)(x-6)}$$

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

30 Factor the expression $x^3 - 36x$ completely.

$$\frac{x^3}{x} \quad \frac{36x}{x}$$

$$x^2 + 0x - 36$$

$$x(x-6)(x+6)$$

$$\frac{-36}{-6 \cdot 6}$$

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

30 Factor the expression $x^3 - 36x$ completely.

$$x^3 - 36x$$

$$x(x^2 - 36)$$

$$x(x - 6)(x + 6)$$

$$x(x - 6) = 0 \qquad x + 6 = 0$$
$$\qquad\qquad\qquad -6 \quad -6$$

$$x^2 - 6x = 0$$
$$+6x \quad 6x$$

$$\boxed{x_2 = -6}$$

$$\frac{x^2}{x} = \frac{6x}{x}$$

$$\boxed{x_1 = 6} \qquad\qquad x = [6, -6]$$

Score 1: The student factored correctly, but attempted to solve the factored expression as an equation.

30 Factor the expression $x^3 - 36x$ completely.

$$x(x^2 - 36)$$

$$x(x-4)(x+4)$$

Score 1: The student made one factoring error.

30 Factor the expression $x^3 - 36x$ completely.

$$X \left(x^3 - 36x \right)$$

$$x^2 - 36$$

$$(x-18)(x+18) = 0$$

$$X - 18 = 0 \quad | \quad x + 18 = 0$$

$$\boxed{X = 18} \quad \boxed{X = -18}$$

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

30 Factor the expression $x^3 - 36x$ completely.

$$x^3 - 36x$$

$$(x^2 - 6)(x + 6)$$

$$x^2 - 6 = 0 \qquad x + 6 = 0$$

$$x^2 = 46 \qquad \boxed{x = -6}$$

$$x = \pm 6$$

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

31 Graph $f(x) = -3x$ and $g(x) = x^2 + 2$ on the set of axes below.
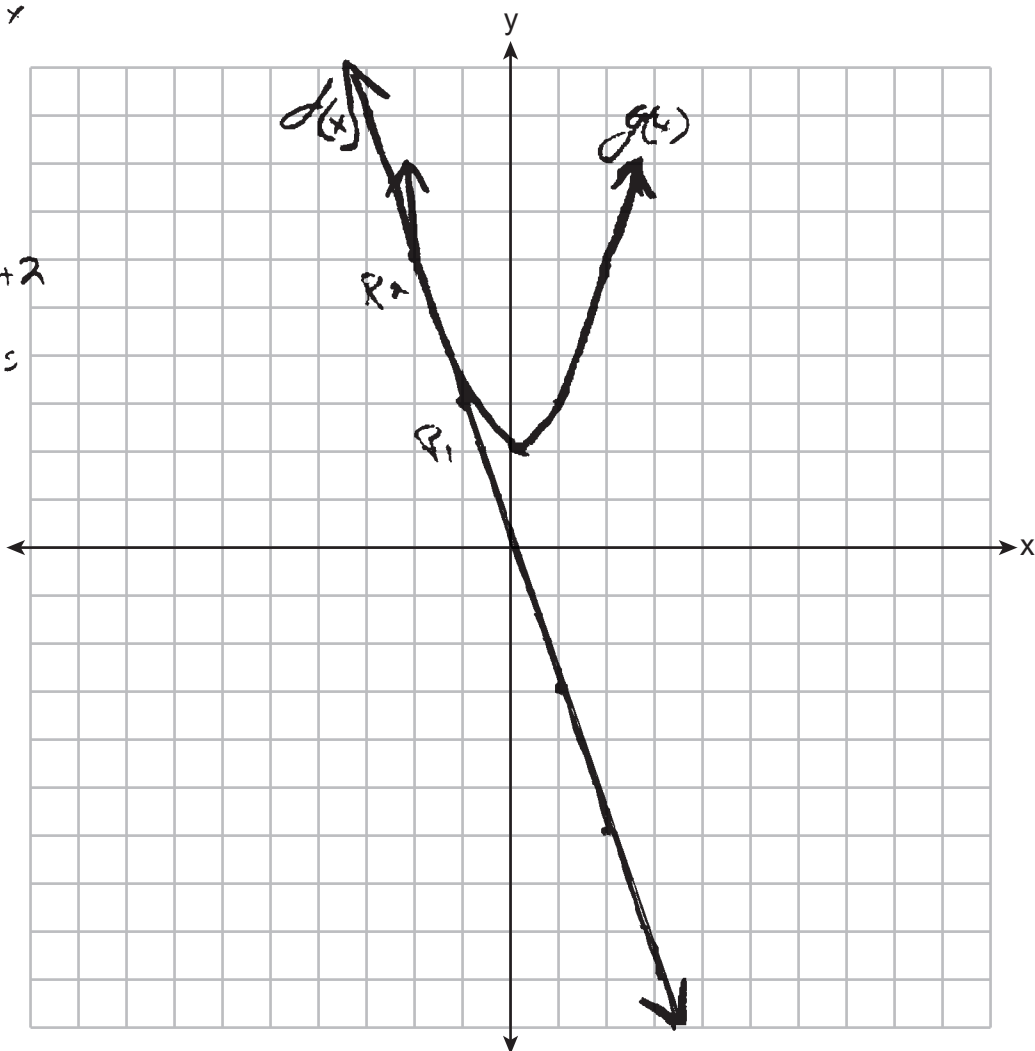
$f(x) = -3x$

$m = -3$

$b : 0$

$g(x) = x^2 + 2$

Up 2 units
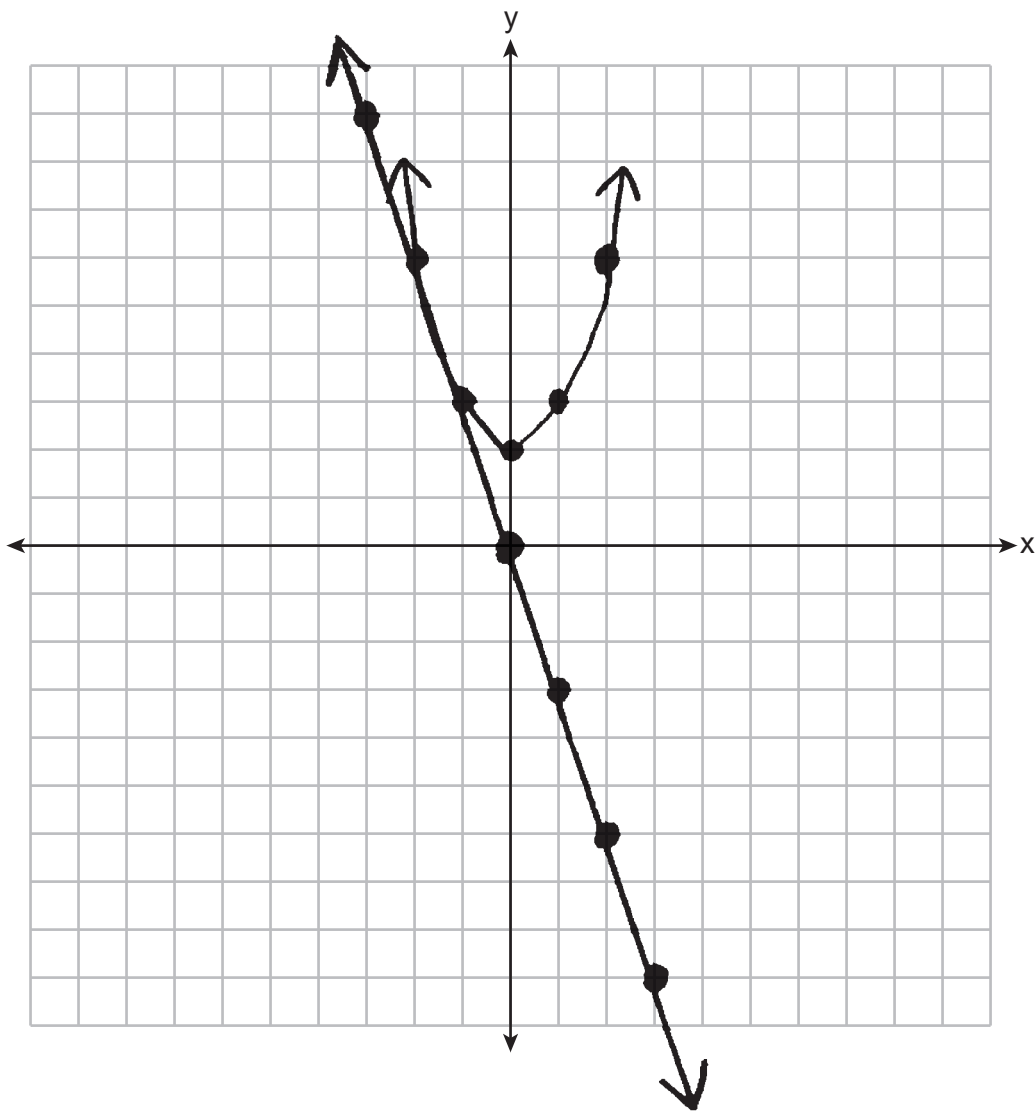
State the values of x that satisfy the equation $f(x) = g(x)$.

$x = -1$
$x = -2$

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

31 Graph $f(x) = -3x$ and $g(x) = x^2 + 2$ on the set of axes below.

State the values of x that satisfy the equation $f(x) = g(x)$.

$$f(-1) = g(-1) \qquad f(-2) = g(-2)$$

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

31 Graph $f(x) = -3x$ and $g(x) = x^2 + 2$ on the set of axes below.

State the values of x that satisfy the equation $f(x) = g(x)$.

$$X = -5.5$$
$$X = 2.5$$

$-3x = x^2 + 2$
$+3x \quad +3x$

$x^2 + 3x + 2$

$\dfrac{-3 \pm \sqrt{3^2 - 4(1)(2)}}{2(1)}$

$\dfrac{-3 \pm \sqrt{9 + 55}}{2}$

$\dfrac{-3-8}{2}$

-5.5

$-3 \pm \sqrt{64}$

$\dfrac{-3 + 8}{2} = 2.5$

Score 3: The student made one computational error when solving $f(x) = g(x)$ algebraically.

31 Graph $f(x) = -3x$ and $g(x) = x^2 + 2$ on the set of axes below.

f(x)

g(x)

f(x)

X	Y
-3	9
-2	6
-1	3
0	0
1	3
2	6
3	9

g(x)

X	Y
-2	6
-1	3
0	2
1	3
2	6

State the values of x that satisfy the equation $f(x) = g(x)$.

$(-2, 6)$ $(-1, 3)$

Score 3: The student stated the answer as coordinates.

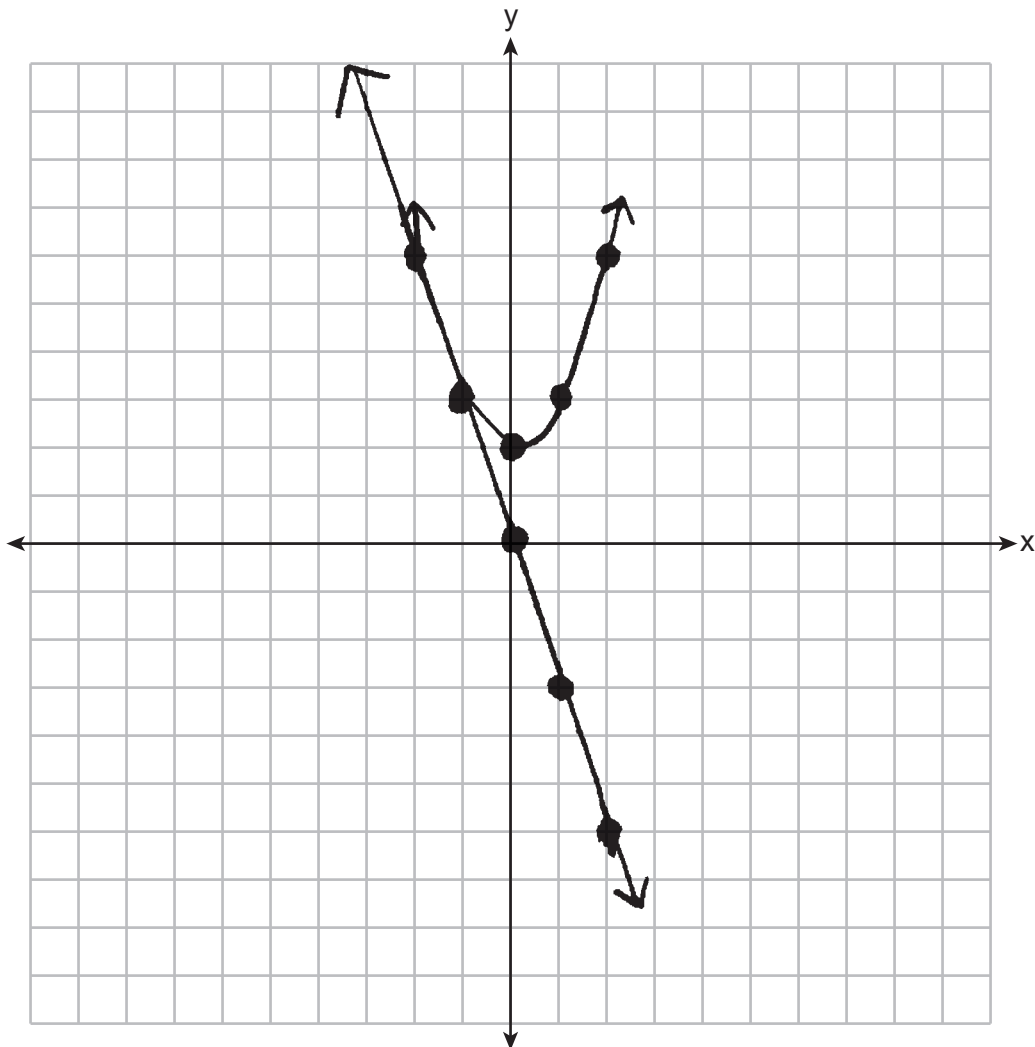**31** Graph $f(x) = -3x$ and $g(x) = x^2 + 2$ on the set of axes below.

State the values of x that satisfy the equation $f(x) = g(x)$.

$$f(x) = g(x)$$
$$f(-1) = g(-1)$$

Score 3: The student only gave one value for x.

31 Graph $f(x) = -3x$ and $g(x) = x^2 + 2$ on the set of axes below.

$Y = -3X$

y $\cancel{8y} = x^2 + 2$

State the values of x that satisfy the equation $f(x) = g(x)$.

$(-1, 3)$

Score 2: The student graphed both equations correctly, but no further correct work was shown.

31 Graph $f(x) = -3x$ and $g(x) = x^2 + 2$ on the set of axes below.

State the values of x that satisfy the equation $f(x) = g(x)$.

$\boxed{X = -1}$

$g(x) = x^2 + 2$

$f(x) = -3x$

$Y = f(x)$

$z = G(x)$

$y = z$

(ck) $y = -3(-1)$

$y = 3$

$z = -1^2 + 2$

$z = \dfrac{1+2}{3}$

$z = 3$

Score 2: The student graphed $f(x) = -3x$ correctly and stated $x = -1$.

Question 31

31 Graph $f(x) = -3x$ and $g(x) = x^2 + 2$ on the set of axes below.

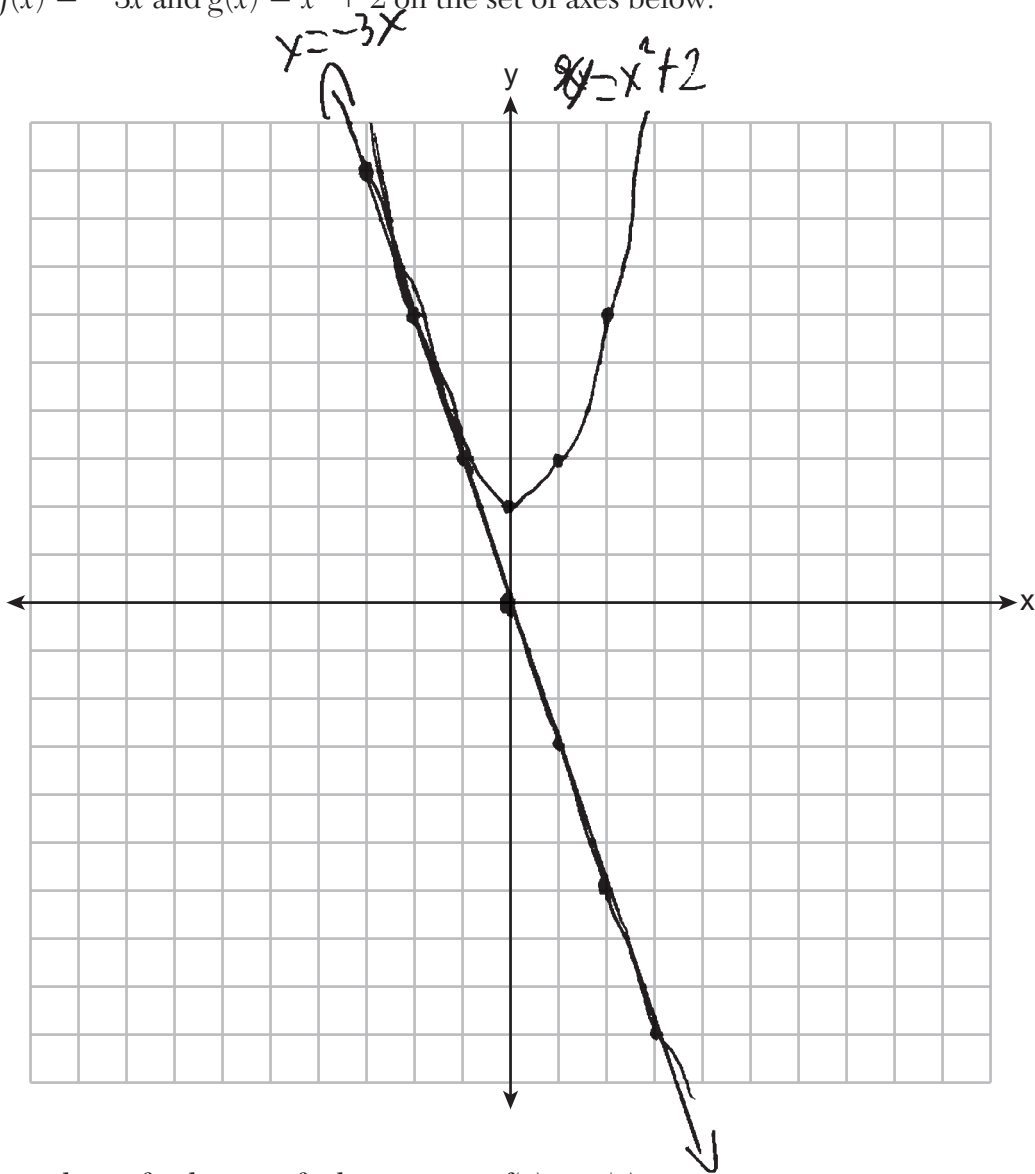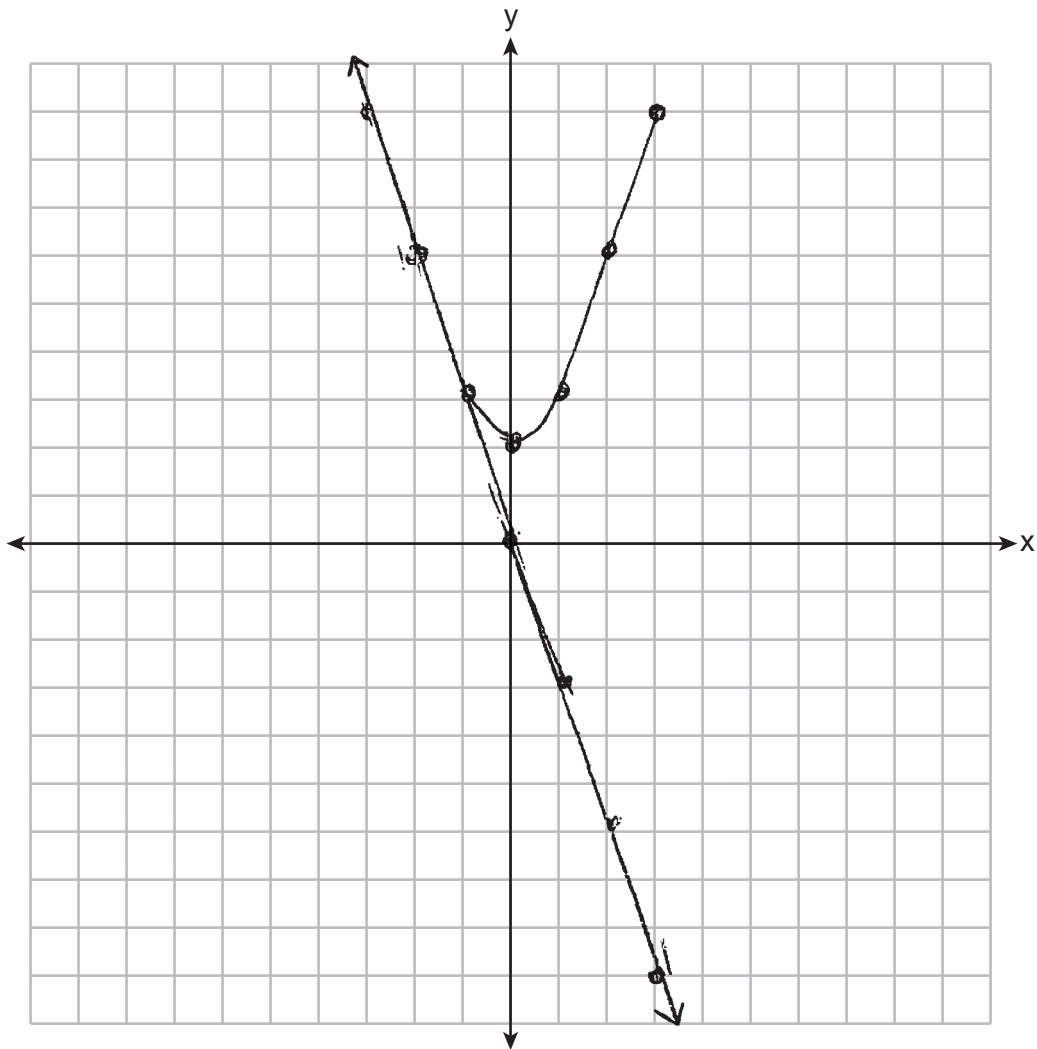State the values of x that satisfy the equation $f(x) = g(x)$.

$(-1, 3) \ (-2, 6) \ (-3, 11)$

Score 1: The student graphed $f(x) = -3x$ correctly, but no other correct work was shown.

31 Graph $f(x) = -3x$ and $g(x) = x^2 + 2$ on the set of axes below.
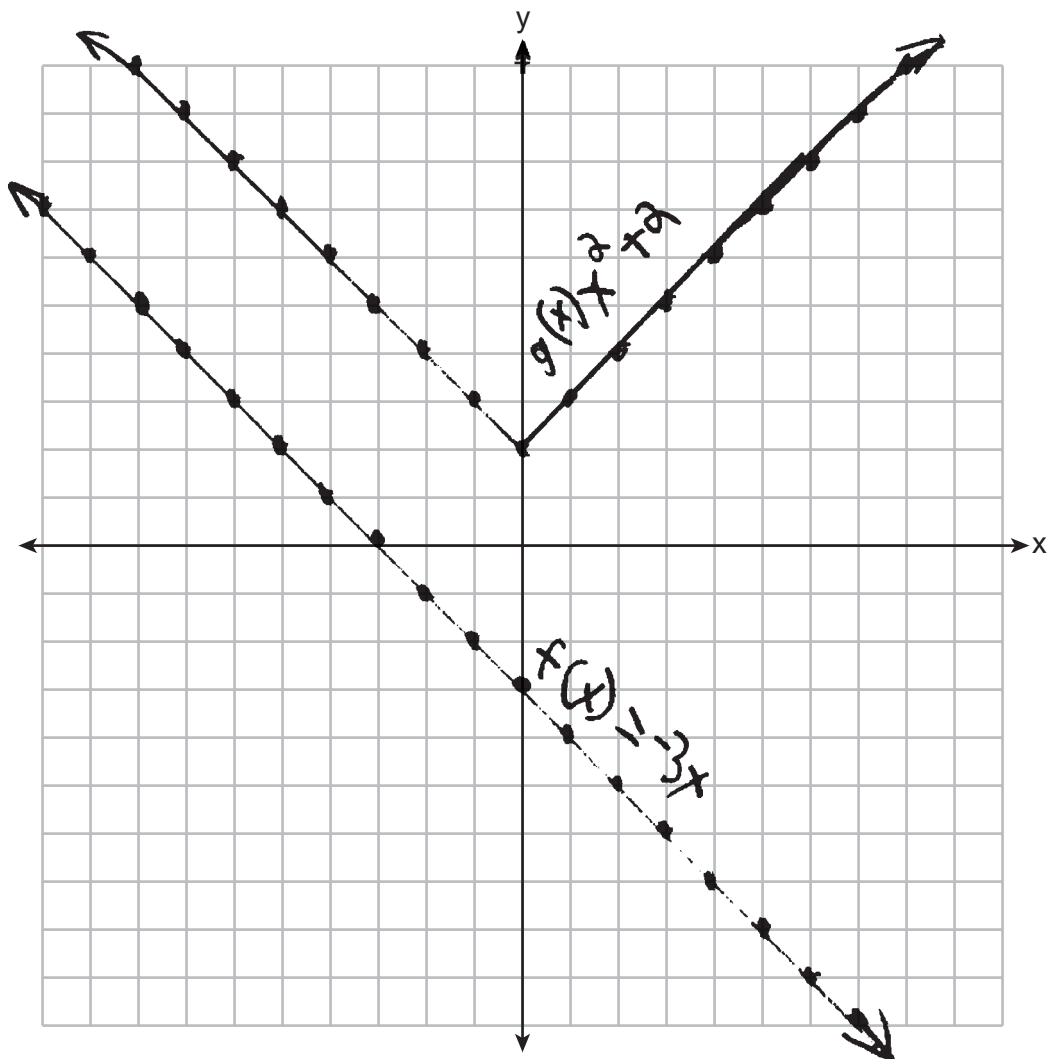
State the values of x that satisfy the equation $f(x) = g(x)$.

$$-3x = x^2$$

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

31 Graph $f(x) = -3x$ and $g(x) = x^2 + 2$ on the set of axes below.
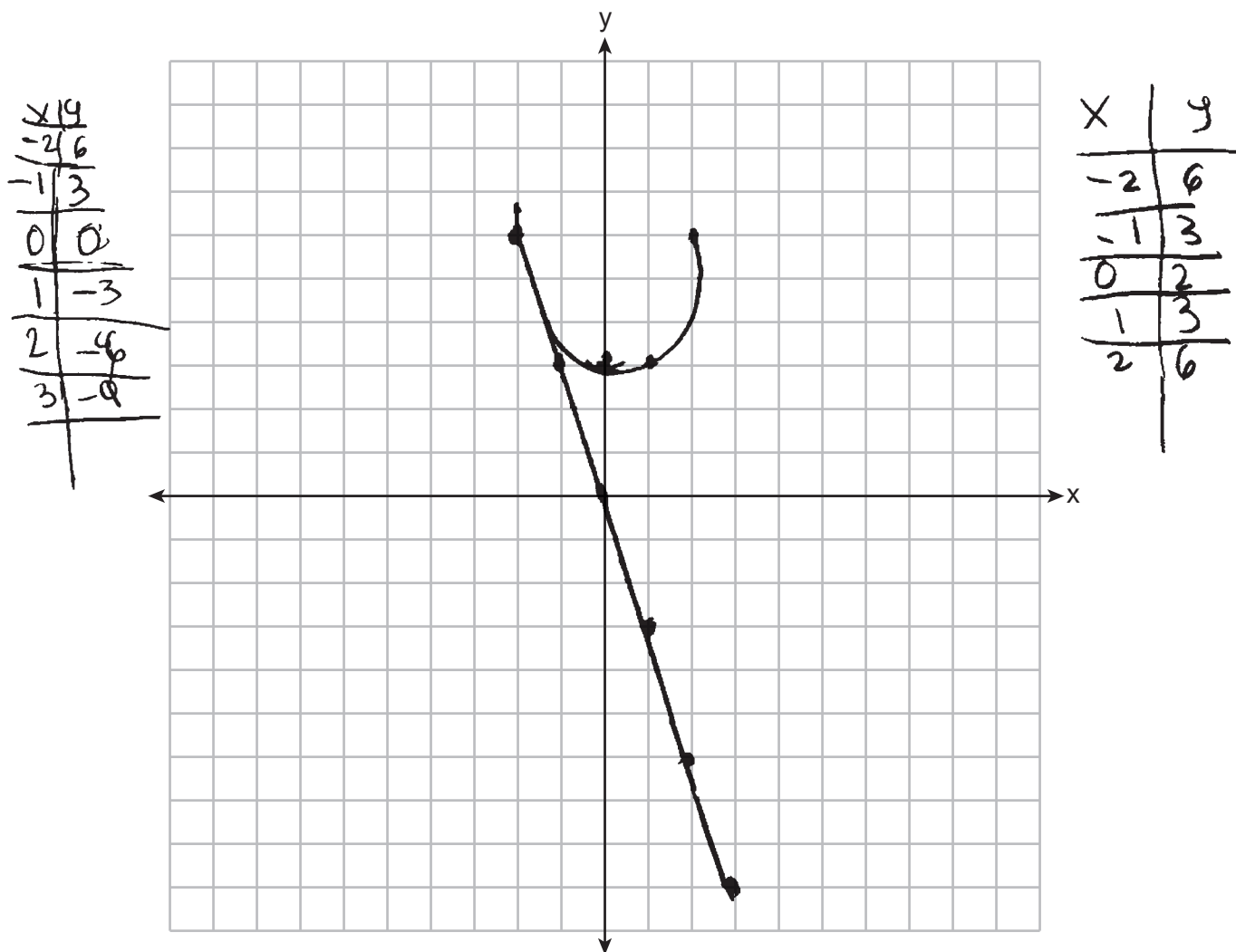
State the values of x that satisfy the equation $f(x) = g(x)$.

Score 0: The student did not put arrows on the line or extend the line to the end of the grid, and no further correct work was shown.

32 Using the quadratic formula, solve $6x^2 + 2x - 1 = 0$.

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

Express the answer in simplest radical form.

$$x = \frac{-2 \pm \sqrt{2^2 - 4(6)(-1)}}{2(6)}$$

$$x = \frac{-2 \pm \sqrt{4 + 24}}{12}$$

$$x = \frac{-2 \pm \sqrt{28}}{12}$$

$$\boxed{x = \frac{-2 \pm 2\sqrt{7}}{12}}$$

$\sqrt{28} =$

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

32 Using the quadratic formula, solve $6x^2 + 2x - 1 = 0$.

Express the answer in simplest radical form.

$$6x^2 + 2x - 1 = 0$$

$a = 6$

$b = 2$

$c = -1$

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

$$x = \frac{-(2) \pm \sqrt{(2)^2 - 4(6)(-1)}}{2(6)}$$

$$x = \frac{-2 \pm \sqrt{28}}{12}$$

$$\sqrt{28}$$

1	28
2	14
4	7

$$x = \frac{-2 \pm 2\sqrt{7}}{12}$$

$$x = \frac{-1 \pm 1\sqrt{7}}{6}$$

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

32 Using the quadratic formula, solve $6x^2 + 2x - 1 = 0$.

Express the answer in simplest radical form.

$$\frac{-(2) \pm \sqrt{(2)^2 - 4(6)(-1)}}{2(6)}$$

$$\frac{-2 \pm \sqrt{4 + 24}}{12} \qquad \frac{-2 \pm \sqrt{28}}{12}$$

$$\frac{-2 \pm \sqrt{4}\sqrt{7}}{12} \qquad \frac{-2 \pm 2\sqrt{7}}{12}$$

$$\boxed{\frac{-1}{6} \pm \frac{1}{6}\sqrt{7}}$$

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

32 Using the quadratic formula, solve $6x^2 + 2x - 1 = 0$.

$\overset{a}{} \overset{b}{} \overset{c}{}$

Express the answer in simplest radical form.

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

$$X = \frac{-2 \pm \sqrt{2^2 - 4(6)(-1)}}{2(6)}$$

$$X = \frac{-2 \pm \sqrt{28}}{12}$$

$$X = \frac{-2 + \sqrt{28}}{12} \qquad X = \frac{-2 - \sqrt{28}}{12}$$

$$X = \frac{-2 + 2\sqrt{7}}{12} \qquad X = \frac{-2 - 2\sqrt{7}}{12}$$

$$\boxed{X = \frac{\sqrt{7}}{12}} \qquad \boxed{X = \frac{-4\sqrt{7}}{12}}$$

Score 3: The student correctly found $x = \dfrac{-2 \pm 2\sqrt{7}}{12}$ but simplified incorrectly.

32 Using the quadratic formula, solve $6x^2 + 2x - 1 = 0$.

Express the answer in simplest radical form.

$$x = \frac{-2 \pm \sqrt{2^2 - 4(6)(-1)}}{2(2)}$$

$$x = \frac{-2 \pm \sqrt{4 - 24(-1)}}{4}$$

$$x = \frac{-2 \pm \sqrt{4 + 24}}{4}$$

$$x = \frac{-2 \pm \sqrt{28}}{4}$$

$$x = \frac{-2 + 2\sqrt{7}}{4} \qquad x = \frac{-2 - 2\sqrt{7}}{4} \qquad x = \frac{-2 \pm 2\sqrt{7}}{4}$$

$$x = -\frac{1}{2} + \frac{1}{2}\sqrt{7} \qquad x = -\frac{1}{2} - \frac{1}{2}\sqrt{7}$$

$$\left\{ -\frac{1}{2} + \frac{1}{2}\sqrt{7}, -\frac{1}{2} - \frac{1}{2}\sqrt{7} \right\}$$

Score 3: The student incorrectly substituted into the quadratic formula.

32 Using the quadratic formula, solve $6x^2 + 2x - 1 = 0$.

Express the answer in simplest radical form.

$$6x^2 + 2x - 1 = 0$$

$a = 6$
$b = 2$
$c = -1$

$$\frac{-2 \pm \sqrt{2^2 - 4(6)(-1)}}{2(6)}$$

$$\frac{-2 \pm \sqrt{28}}{12}$$

$$\frac{-2 \pm 4\sqrt{7}}{12}$$

$$\boxed{\frac{-2\sqrt{7}}{6}}$$

$\sqrt{28}$
$\sqrt{14 \cdot 2}$
$4\sqrt{7 \cdot 2 \cdot 2}$
$4\sqrt{7}$

Score 2: The student correctly found $\dfrac{-2 \pm \sqrt{28}}{12}$, but no further correct work was shown.

32 Using the quadratic formula, solve $6x^2 + 2x - 1 = 0$.

Express the answer in simplest radical form.

$$6x^2 + 2x - 1 = 0$$

$$\frac{-2 \pm \sqrt{(2)^2 - 4(6)(-1)}}{12}$$

$$X = \frac{-2 \pm \sqrt{5.29}}{12}$$

Score 1: The student made a correct substitution into the quadratic formula.

32 Using the quadratic formula, solve $6x^2 + 2x - 1 = 0$.

Express the answer in simplest radical form.

$$6x^2 + 2x - 1 = 0$$
$$x = \frac{-(2) \overset{+}{-} \sqrt{(2)^2 - 4(6)(1)}}{2(6)}$$
$$x = 1$$

Score 0: The student made an error in substituting into the quadratic formula.

32 Using the quadratic formula, solve $6x^2 + 2x - 1 = 0$.

Express the answer in simplest radical form.

$$x = \frac{-b \pm \sqrt{x^2 - 4AC}}{2A}$$

$$x = \frac{-2 \pm \sqrt{x^2 - 4 \cdot 6 \cdot -1}}{2 \cdot 6}$$

$$x = \frac{-2 \pm \sqrt{x^2 + 24}}{12}$$

$$x = \frac{-2 + \sqrt{x^2 + 24}}{12} \qquad x = \frac{-2 - \sqrt{x^2 + 24}}{12}$$

$$x = \frac{-2 + x + \sqrt{24}}{12} \qquad x = \frac{-2 - x - \sqrt{24}}{12}$$

$$x = \frac{-2 + x + \sqrt{4}\sqrt{6}}{12} \qquad x = -2 - x - \sqrt{4}\sqrt{6}$$

$$x = \frac{-2 + x + 2\sqrt{6}}{12} \qquad x = \frac{-2 - x - 2\sqrt{6}}{12}$$

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

33 The table below shows the price of a new cell phone and the length of time, in months, since its release.

Time Since Release, in Months (x)	0	3	6	9	12
Price, in Dollars (y)	1200	1150	1100	1000	920

State the linear regression equation for this set of data. Round all values to the *nearest hundredth*.

$$y = -23.67x + 1216$$

State the correlation coefficient for this data set, to the *nearest hundredth*.

$$r = -.99$$

State what the correlation coefficient indicates about the linear fit of the data.

The correlation coefficient indicates that the linear fit of the data is a strong linear correlation.

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

33 The table below shows the price of a new cell phone and the length of time, in months, since its release.

Time Since Release, in Months (x)	0	3	6	9	12
Price, in Dollars (y)	1200	1150	1100	1000	920

State the linear regression equation for this set of data. Round all values to the *nearest hundredth*.

$$y = -23.67 + 1216$$

State the correlation coefficient for this data set, to the *nearest hundredth*.

−0.99

State what the correlation coefficient indicates about the linear fit of the data.

This would have a strong negative association
The more time since the release date, the less it
costs.

Score 3: The student wrote -23.67 instead of $-23.67x$.

33 The table below shows the price of a new cell phone and the length of time, in months, since its release.

Time Since Release, in Months (x)	0	3	6	9	12
Price, in Dollars (y)	1200	1150	1100	1000	920

State the linear regression equation for this set of data. Round all values to the *nearest hundredth*.

$$y = -23.67x + 1216$$

State the correlation coefficient for this data set, to the *nearest hundredth*.

$$r = -0.99$$

State what the correlation coefficient indicates about the linear fit of the data.

As the times go by, the Price will start to decrease

Score 3: The student did not state strong.

33 The table below shows the price of a new cell phone and the length of time, in months, since its release.

Time Since Release, in Months (x)	0	3	6	9	12
Price, in Dollars (y)	1200	1150	1100	1000	920

State the linear regression equation for this set of data. Round all values to the *nearest hundredth*.

~~mmmm~~

$$Y = -23.\overline{6}X + 1216$$

State the correlation coefficient for this data set, to the *nearest hundredth*.

$$r = 0.99$$

State what the correlation coefficient indicates about the linear fit of the data.

Since r=0.99, the linear fit is a very strong correlation. As time increases, the price decreases.

Score 2: The student made one rounding error and wrote $r = 0.99$ instead of $r = -0.99$.

33 The table below shows the price of a new cell phone and the length of time, in months, since its release.

Time Since Release, in Months (x)	0	3	6	9	12
Price, in Dollars (y)	1200	1150	1100	1000	920

State the linear regression equation for this set of data. Round all values to the *nearest hundredth*.

$$ax + b$$
$$-23.67x + 1216$$

State the correlation coefficient for this data set, to the *nearest hundredth*.

.99

State what the correlation coefficient indicates about the linear fit of the data.

The longer a phone is out the lower the Price will go.

Score 1: The student wrote a correct expression.

33 The table below shows the price of a new cell phone and the length of time, in months, since its release.

Time Since Release, in Months (x)	0	3	6	9	12
Price, in Dollars (y)	1200	1150	1100	1000	920

State the linear regression equation for this set of data. Round all values to the *nearest hundredth*.

$$Y = ax + b$$
$$a = -23.66666667 \quad \longrightarrow = -23.7$$
$$r^2 = 0.9784549689 \longrightarrow = .98$$
$$r = -0.9891688273 \longrightarrow = -.99$$
$$b = 1216$$

State the correlation coefficient for this data set, to the *nearest hundredth*.

<u>.98</u>

State what the correlation coefficient indicates about the linear fit of the data.

Score 1: The student made a rounding error in stating the value of a, and no further correct work was shown.

33 The table below shows the price of a new cell phone and the length of time, in months, since its release.

Time Since Release, in Months (x)	0	3	6	9	12
Price, in Dollars (y)	1200	1150	1100	1000	920

State the linear regression equation for this set of data. Round all values to the *nearest hundredth*.

$$mx + b$$

State the correlation coefficient for this data set, to the *nearest hundredth*.

$$-0.9$$

State what the correlation coefficient indicates about the linear fit of the data.

The corelation coefficient indicates how close this data is to 1.

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

33 The table below shows the price of a new cell phone and the length of time, in months, since its release.

Time Since Release, in Months (x)	0	3	6	9	12
Price, in Dollars (y)	1200	1150	1100	1000	920

State the linear regression equation for this set of data. Round all values to the *nearest hundredth*.

From 50 to 100 then 80

State the correlation coefficient for this data set, to the *nearest hundredth*.

It goes down over a longer period of time

State what the correlation coefficient indicates about the linear fit of the data.

I think that the longer since it has released the price will go down

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

34 Solve the following system of equations algebraically for all values of x and y.

Substitution

$$y = x^2 + 9x + 4$$
$$y - 2x = -6$$

$(x^2 + 9x + 4) - 2x = -6$

$x^2 + 7x + 4 = -6$

$ +6 \quad +6$

$x^2 + 7x + 10 = 0$

$(x + 5)(x + 2) = 0$

$x + 5 = 0$

$x = -5$

$x + 2 = 0$

$x = -2$

$y - 2(-2) = -6$

$y + 4 = -6$

$ -4 \quad -4$

$y = -10$

$y - 2(-5) = -6$

$y + 10 = -6$

$-10 \quad -10$

$y = -16$

$\boxed{(-2, -10)}$

$\boxed{(-5, -16)}$

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

34 Solve the following system of equations algebraically for all values of x and y.

$$y = x^2 + 9x + 4$$
$$y - 2x = -6$$

$x^2 + 9x + 4 - 2x = -6$

$x^2 + 7x + 4 = -6$
$ +6 +6$

$x^2 + 7x + 10 = 0$
$ +2.25 +2.25$

$x^2 + 7x + 12.25 = 2.25$

$\sqrt{(x+3.5)^2} \sqrt{2.25}$

$x + 3.5 = 1.5$ ·or $x + 3.5 = -1.5$
$ -3.5 -3.5 -3.5 -3.5$

$x = -2$ or $x = -5$

$y - (-4) = -6$ $y - (-10) = -6$
$y + 4 = -6$ $y + 10 = -6$
$ -4 -4$ $ -10 -10$
$y = -10$ $y = -16$

$x = -2$ or $\begin{matrix} x = -5 \\ y = -16 \end{matrix}$
$y = -10$

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

34 Solve the following system of equations algebraically for all values of x and y.

$$y = x^2 + 9x + 4$$
$$y - 2x = -6$$

$y = 2x - 6$

$4 - 6$

$x = \dfrac{-6 \pm \sqrt{6^2 - 4ac}}{2a}$

$2x - 6 = x^2 + 9x + 4$

$-2x \quad +6$

$x^2 + 7x + 10 = 0$

$x = \dfrac{-(7) \pm \sqrt{(7)^2 - (4)(1)(10)}}{2(1)}$

$\sqrt{9}$

$3 \cdot 3$

$x = \dfrac{-7 \pm \sqrt{49 - 40}}{2}$

$x = \dfrac{-7 \pm 3}{2} \qquad \boxed{x = -5, -2}$

$-3.5 + 1.5$

Score 3: The student correctly found $x = -5$ and $x = -2$.

34 Solve the following system of equations algebraically for all values of x and y.

$$y = x^2 + 9x + 4$$
$$y - 2x = -6$$

$y = 2x - 6$

$2x - 6 = x^2 + 9x + 4$

$-6 = x^2 + 7x + 4$

$0 = x^2 + 7x + 10$

$-10 = x^2 + 7x$

$2.25 = x^2 + 7x + 12.25$

$2.25 = (x + 3.5)^2$

$\pm\sqrt{2.25} = x + 3.5$

$-3.5 \pm \sqrt{2.25} = x$

$x = -2$

$y = -10$

$y = -10$
$x = -2$

Score 3: The student only found one solution.

34 Solve the following system of equations algebraically for all values of x and y.

$$y = x^2 + 9x + 4$$
$$y - 2x = -6$$

$$y = x^2 + 9x + 4$$
$$y = 2x - 6$$

$$2x - 6 = x^2 + 9x + 4 = 2x - 6$$

$$x^2 + 7x + 10 = 0$$

$$y = (-5)^2 + 9(-5) + 4 \qquad (x + 5)(x + 2) = 0$$

$$y = -16 \qquad\qquad x = -5 \mid x = 2$$

Score 3: The student only found one solution $(-5, -16)$.

34 Solve the following system of equations algebraically for all values of x and y.

$$y = x^2 + 9x + 4$$
$$y - 2x = -6$$

$x^2 + 9x + 4 = 2x = -6$

$x^2 + 7X = -10$

$x^2 + 7X + 12.25 = -10 + 12.25$

$\sqrt{(x + 3.5)^2} = \sqrt{2\frac{1}{4}}$

$X + 3.5 = \sqrt{2\frac{1}{4}}$
$-3.5 \quad -3.5$
$X = -3.5 \pm \sqrt{2\frac{1}{4}}$

Score 2: The student correctly found $(x + 3.5)^2 = 2.25$.

34 Solve the following system of equations algebraically for all values of x and y.

$$y = x^2 + 9x + 4$$
$$y - 2x = -6$$

$$X^2 + 9X + 4 - 2X = -6$$

$$X^2 + 7X + 4 = -6$$
$$\underline{ +6 \quad +6}$$
$$X^2 + 7X + 10 = 0$$
$$-16 \quad -16$$

$$\frac{X^2 + 7X}{7} = \frac{-10}{7}$$

$$\sqrt{X^2_{+x}} = \sqrt{-1.4}$$

$$\frac{2X}{2} \frac{\sqrt{-1.2}}{2}$$

$$X = \frac{\sqrt{1.2}}{2}$$

Score 1: The student wrote $x^2 + 7x + 10 = 0$.

34 Solve the following system of equations algebraically for all values of x and y.

$$y = x^2 + 9x + 4$$

$$y - 2x = -6$$

$0 = (x^2 + 9x + 20.25) + 4 - 20.25$

$\frac{9^2 - 4.5^2 = 20.25}{2}$

$(4.5, -16.25)$

$y - 2x = -6$

$+2x \quad +2x$

$0 = 2x - 6$
$+6 \quad +6$

$\frac{6}{2} = \frac{2x}{2}$

$x = 3$

$y - 2(3) = -6$

$y - 6 = -6$
$+6 \quad +6$

$y = 0$

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

34 Solve the following system of equations algebraically for all values of x and y.

$$y = x^2 + 9x + 4$$
$$y - 2x = -6$$

Y =
Plot
2nd table

$Y = x^2 + 9x + 4$

$Y = x^2 + 9x + 4$

$Y - 2x = -6$
$+2x \quad +2x$
$Y = 2x - 6$

X	Y
-2	-10
-1	-4
0	4
1	14
2	26

$Y - 2x = -6$

X	Y
-2	-10
-1	-8
0	-6
1	-4
2	-2

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

35 Sarah earns $6 per hour babysitting and $12 per hour tutoring. Her goal is to earn at least $120 per week. Sarah is allowed to work a maximum of 14 hours per week doing both jobs.

If x represents the number of hours Sarah babysits and y represents the number of hours she tutors, write a system of inequalities that could model this situation.

$$6x + 12y \geq 120$$
$$x + y \leq 14$$

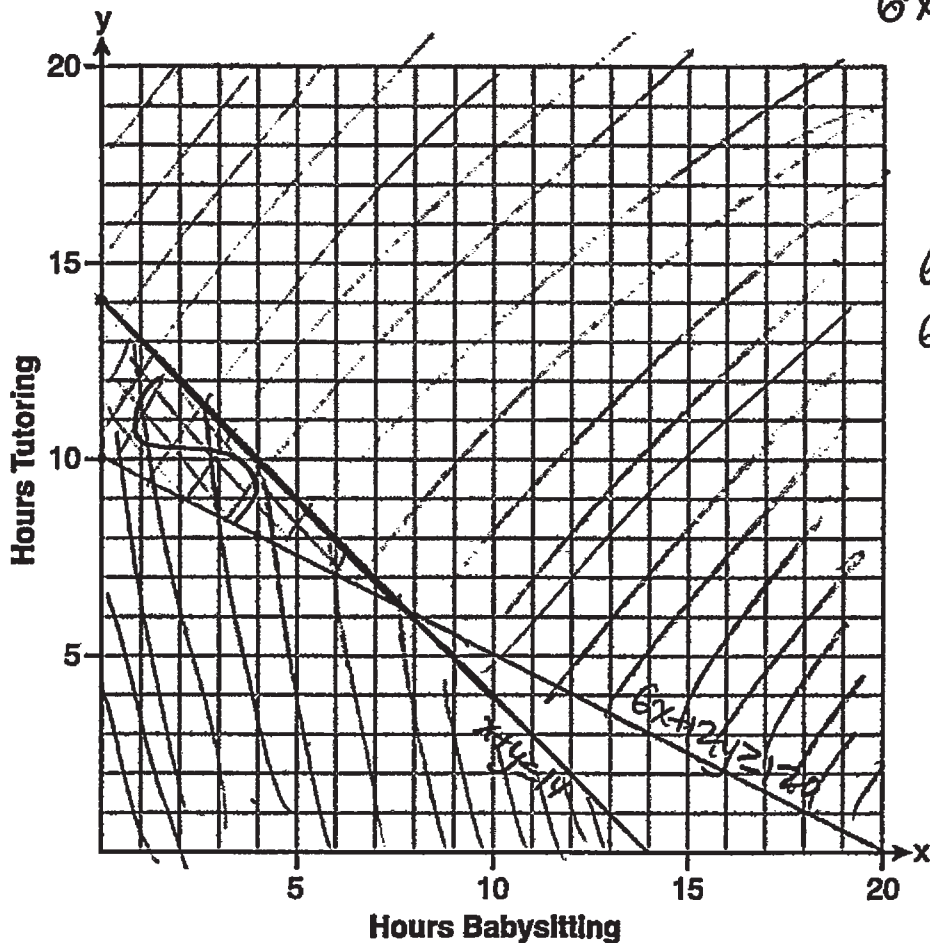On the set of axes below, graph the system of inequalities that you wrote.

$x + y \leq 14$

$y \leq -x + 14$

$(0, 0)$

$x + y \leq 14$

$0 + 0 \overset{?}{\leq} 14$

$0 \leq 14 \checkmark$

$6x + 12y \geq 120$

$12y \geq -6x + 120$

$y \geq -\frac{1}{2}x + 10$

$(0, 0)$

$6x + 12y \geq 120$

$6(0) + 12(0) \overset{?}{\geq} 120$

$0 \overset{?}{\geq} 120$

Hours Tutoring

Hours Babysitting

Question 35 is continued on the next page.

Score 6: The student gave a complete and correct response.
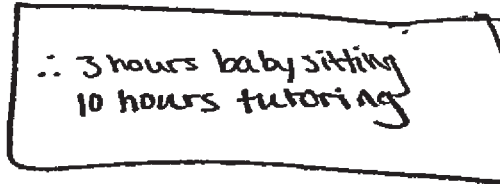
Question 35 continued

State a combination of hours babysitting and tutoring that would satisfy this situation. Justify your answer.

$(5,8)$ 5 hours babysitting, 8 hours tutoring

$x+y \leq 14$

$5+8 \leq 14$

$13 \leq 14 \checkmark$

$6x+12y \geq 120$

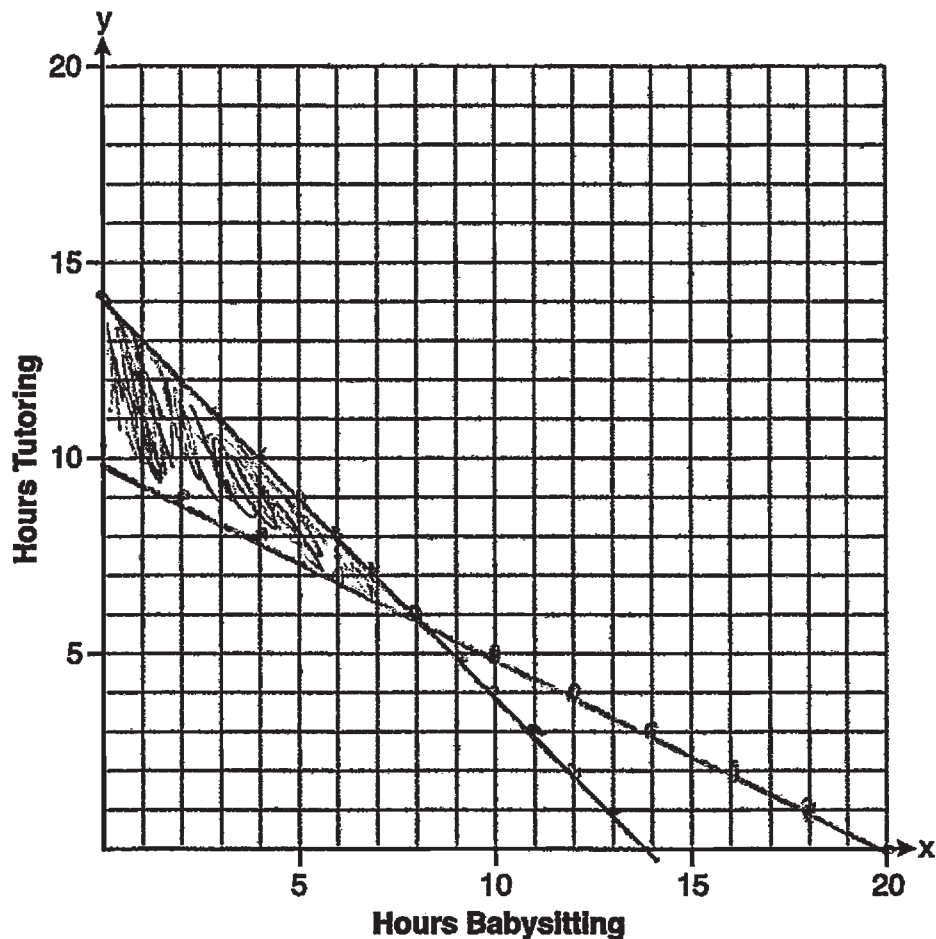$6(5)+12(8) \geq 120$

$30+96 \geq 120$

$126 \geq 120 \checkmark$

35 Sarah earns $6 per hour babysitting and $12 per hour tutoring. Her goal is to earn at least $120 per week. Sarah is allowed to work a maximum of 14 hours per week doing both jobs.

If x represents the number of hours Sarah babysits and y represents the number of hours she tutors, write a system of inequalities that could model this situation.

$x = $ hours Bab
$y = $ hours Tut

$$6x + 12y \geq 120$$
$$x + y \leq 14$$

On the set of axes below, graph the system of inequalities that you wrote.

$$\frac{12y \geq -6x + 120}{12}$$
$$y \geq \frac{-1}{2}x + 10$$

$$y \leq -x + 14$$

x+y ≤ 14

6x+12y ≥ 120

Hours Tutoring
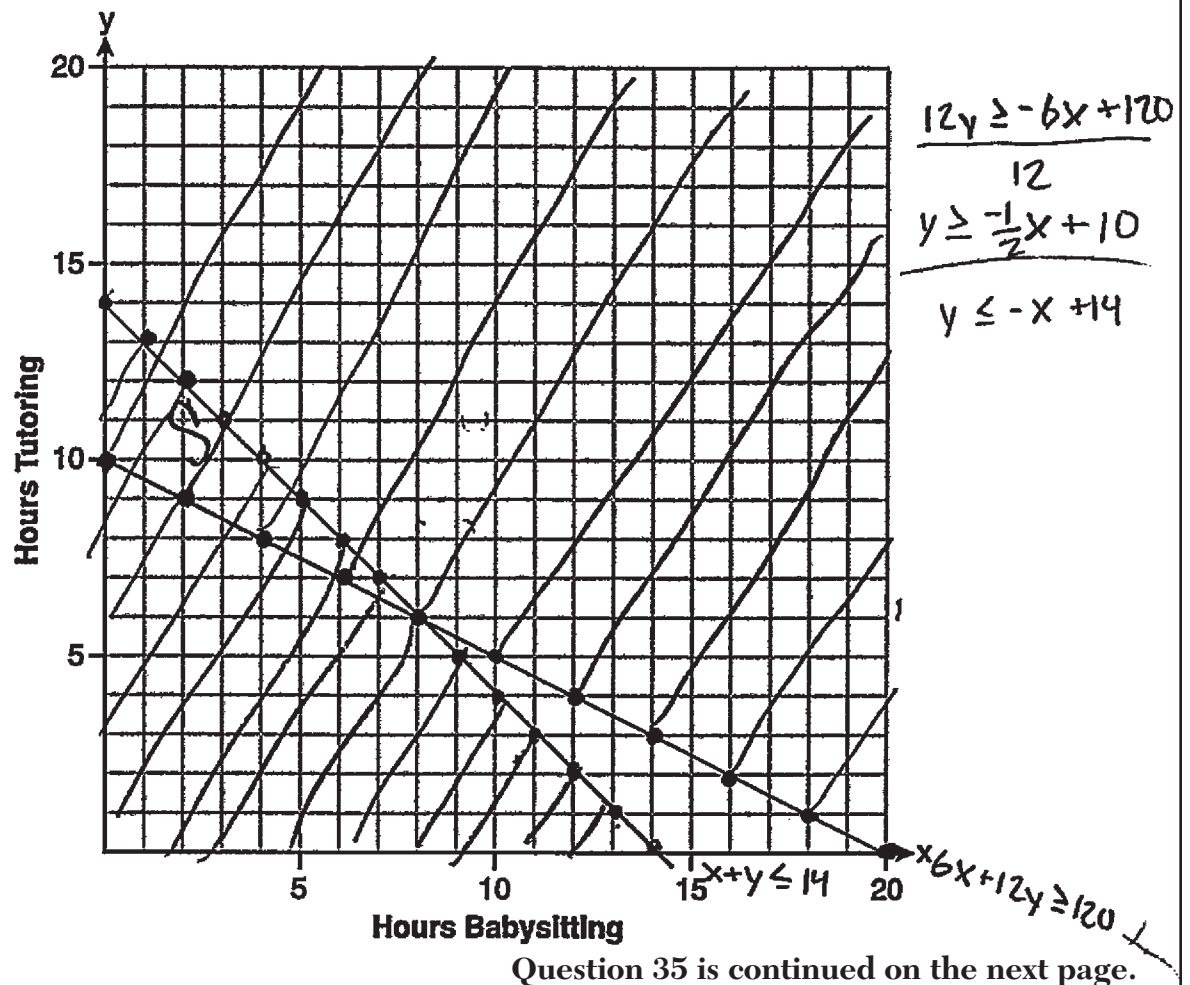
Hours Babysitting

Question 35 is continued on the next page.

Score 5: The student did not give a justification.

Question 35 continued

State a combination of hours babysitting and tutoring that would satisfy this situation. Justify your answer.

∴ 3 hours babysitting
10 hours tutoring

35 Sarah earns $6 per hour babysitting and $12 per hour tutoring. Her goal is to earn at least $120 per week. Sarah is allowed to work a maximum of 14 hours per week doing both jobs.

If x represents the number of hours Sarah babysits and y represents the number of hours she tutors, write a system of inequalities that could model this situation.

$$x + y \leq 14$$

$$6x + 12y \geq 120$$

On the set of axes below, graph the system of inequalities that you wrote.

Hours Babysitting

Score 5:   The student did not label at least one inequality.

Question 35 continued

State a combination of hours babysitting and tutoring that would satisfy this situation. Justify your answer.

If she babysits for 1 hour and tutors for 11 she will meet her goal because the point (1,11) is in the solution set.

35 Sarah earns $6 per hour babysitting and $12 per hour tutoring. Her goal is to earn at least $120 per week. Sarah is allowed to work a maximum of 14 hours per week doing both jobs.

If x represents the number of hours Sarah babysits and y represents the number of hours she tutors, write a system of inequalities that could model this situation.

$$6x + 12y \geq 120$$
$$x + y \leq 14$$

On the set of axes below, graph the system of inequalities that you wrote.

Hours Tutoring (y-axis)

Hours Babysitting (x-axis)
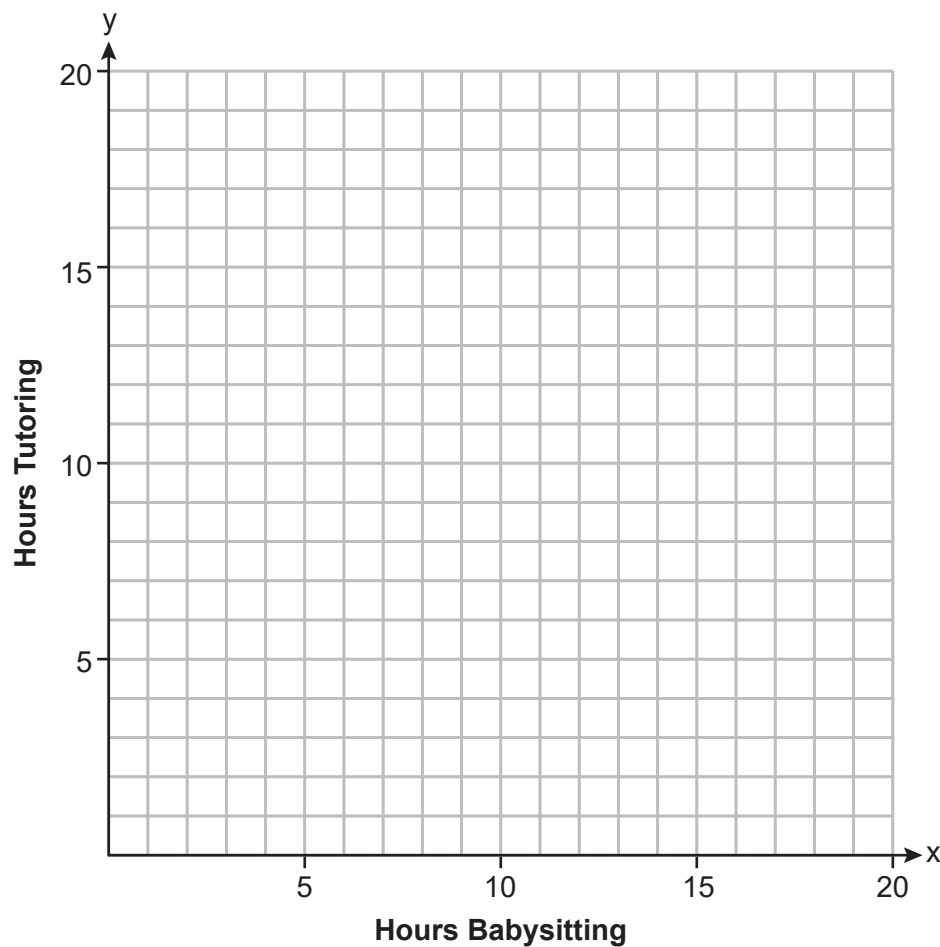
Question 35 is continued on the next page.

Score 4: The student did not graph the system of inequalities.

Question 35 continued

State a combination of hours babysitting and tutoring that would satisfy this situation. Justify your answer.

$x = 6$ $y = 8$ This works because they add up to 14 and when you plug them into the top equation, you get 132.

35 Sarah earns $6 per hour babysitting and $12 per hour tutoring. Her goal is to earn at least $120 per week. Sarah is allowed to work a maximum of 14 hours per week doing both jobs.

If x represents the number of hours Sarah babysits and y represents the number of hours she tutors, write a system of inequalities that could model this situation.

$$x + y \le 14$$
$$6x + 12y \ge 120$$

Let x = hours of babysitting

Let y = hours of tutoring

$$6x + 12y \ge 120$$
$$-6x \qquad -6x$$

On the set of axes below, graph the system of inequalities that you wrote.

$$x + y \le 14$$
$$-x \qquad -x$$
$$y \le -x + 14$$

$$\frac{12y}{12} \ge \frac{120 - 6x}{12}$$

$$y \ge -\frac{1}{2}x + 12$$

$x + y \le 14$

Hours Tutoring (y-axis)

Hours Babysitting (x-axis)
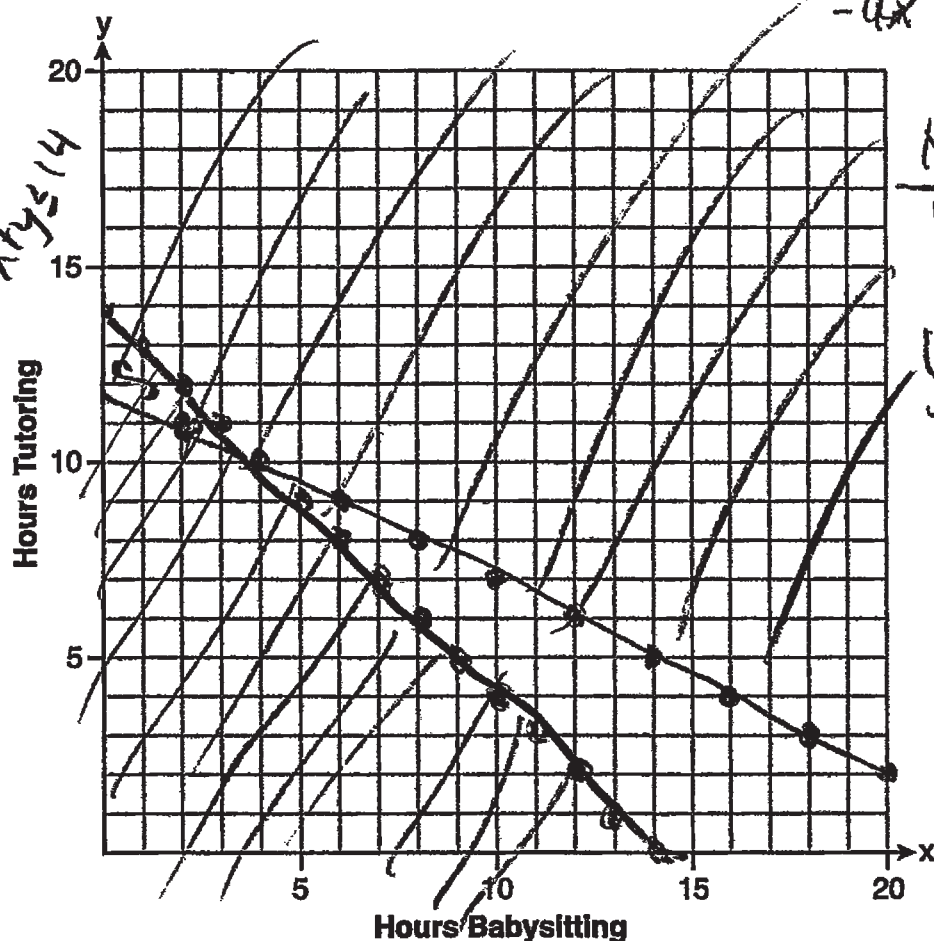
Question 35 is continued on the next page.

Score 3: The student wrote a correct system of inequalities and graphed one inequality correctly.

Question 35 continued

State a combination of hours babysitting and tutoring that would satisfy this situation. Justify your answer.

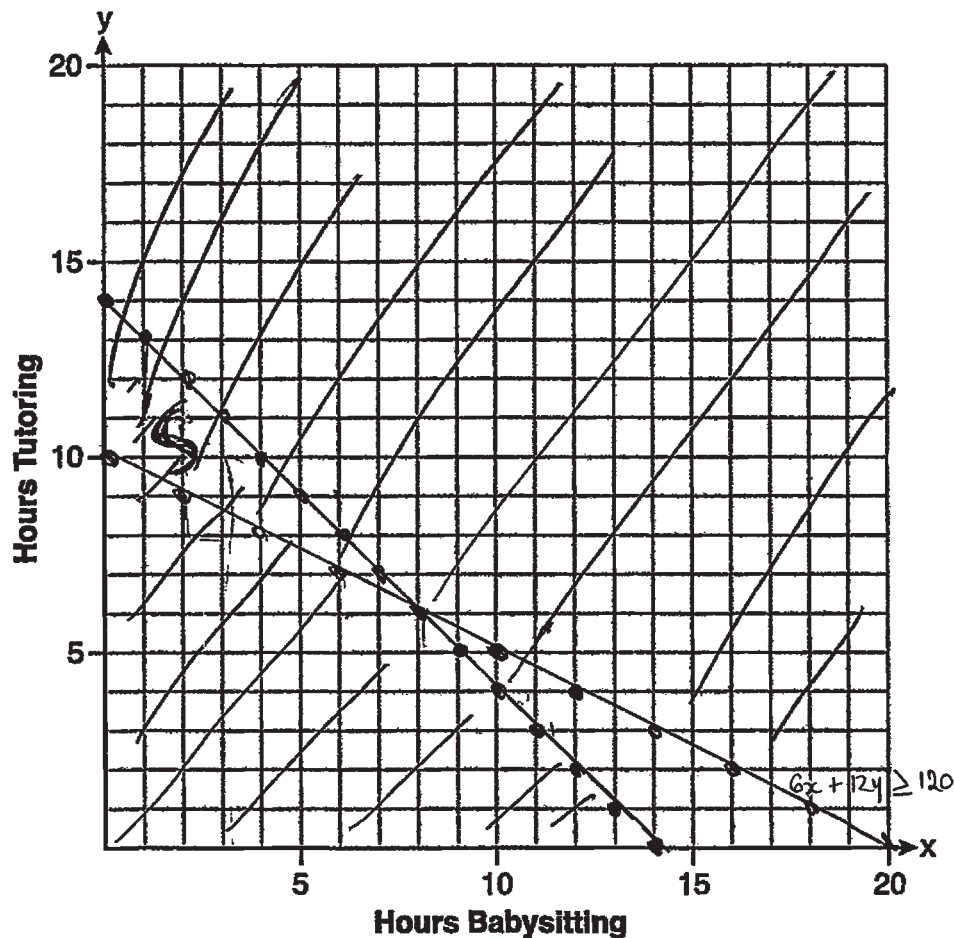1 hour babysitting and 14 hours tutoring

35 Sarah earns $6 per hour babysitting and $12 per hour tutoring. Her goal is to earn at least $120 per week. Sarah is allowed to work a maximum of 14 hours per week doing both jobs.

If x represents the number of hours Sarah babysits and y represents the number of hours she tutors, write a system of inequalities that could model this situation.

$$6x + 12y \geq 120$$
$$x + y < 14$$

$$12y \geq 120 - 6x$$
$$y \geq 10 - \tfrac{1}{2}x$$
$$y < 14 - x$$

On the set of axes below, graph the system of inequalities that you wrote.

$$6x + 12y \geq 120$$

Hours Babysitting

Score 3: The student wrote, graphed, and labeled one inequality correctly and stated a correct combination of hours, but did not justify their answer.

Question 35 continued

State a combination of hours babysitting and tutoring that would satisfy this situation.
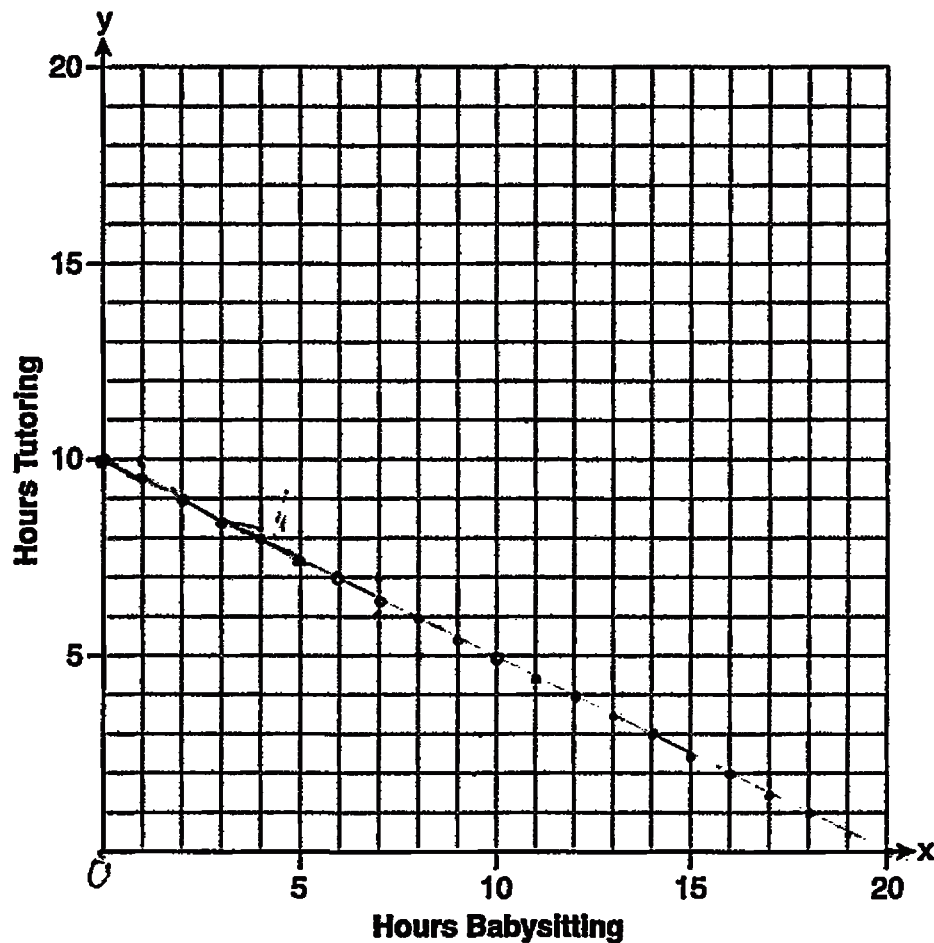Justify your answer.

2 hours babysitting
12 hours tutoring

35 Sarah earns $6 per hour babysitting and $12 per hour tutoring. Her goal is to earn at least $120 per week. Sarah is allowed to work a maximum of 14 hours per week doing both jobs.

If *x* represents the number of hours Sarah babysits and *y* represents the number of hours she tutors, write a system of inequalities that could model this situation.

$$12t + 6b \geq 120$$

$$t + b \leq 14$$

On the set of axes below, graph the system of inequalities that you wrote.

Hours Babysitting

Question 35 is continued on the next page.

Score 2: The student wrote an appropriate system of inequalities using incorrect variables and stated a correct combination of hours.

Question 35 continued

State a combination of hours babysitting and tutoring that would satisfy this situation. Justify your answer.

0 hr. babysitting & 10 hr. tutoring.

35 Sarah earns $6 per hour babysitting and $12 per hour tutoring. Her goal is to earn at least $120 per week. Sarah is allowed to work a maximum of 14 hours per week doing both jobs.

If x represents the number of hours Sarah babysits and y represents the number of hours she tutors, write a system of inequalities that could model this situation.
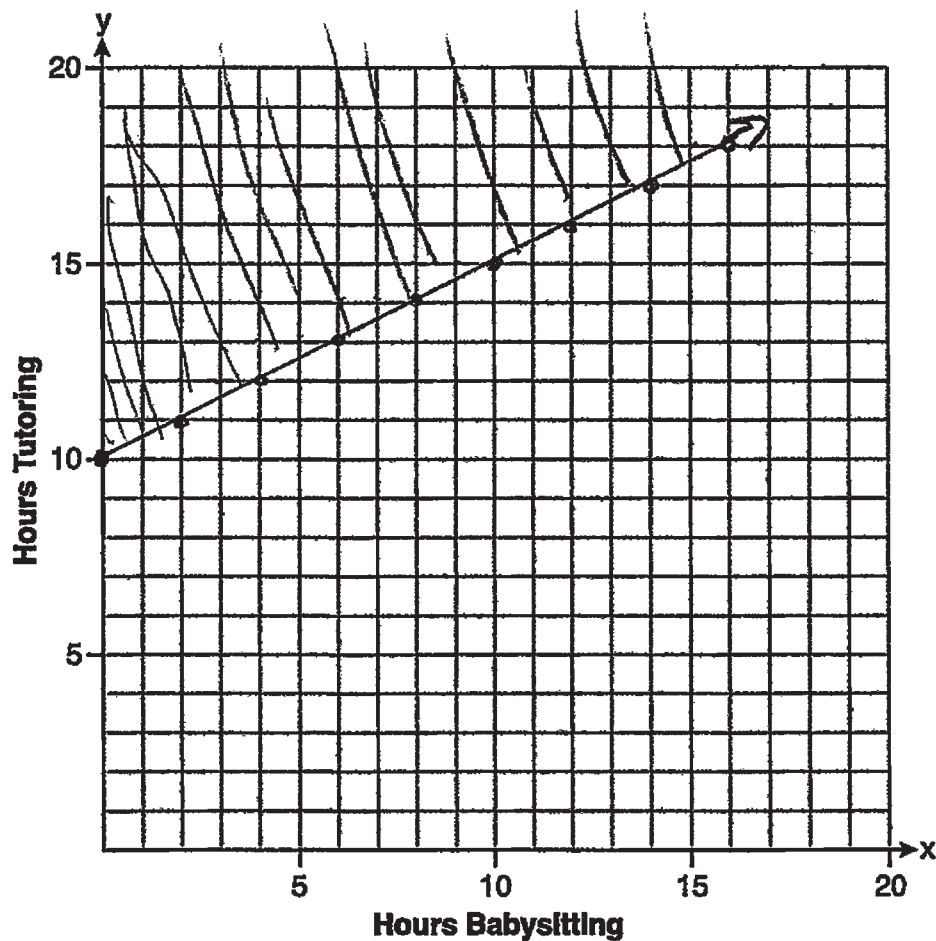
$$6x + 12y \geq 120$$

$$6(7) + 12(7) \geq 120 \quad \cancel{y + \leq x}$$

$$y = mx + b$$

$$\frac{12y}{12} \geq \frac{6x + 120}{12}$$

$$y \geq \tfrac{1}{2}x + 10$$

On the set of axes below, graph the system of inequalities that you wrote.

Hours Tutoring

Hours Babysitting

Score 1: The student wrote one correct inequality.

Question 35 continued

State a combination of hours babysitting and tutoring that would satisfy this situation. Justify your answer.

35 Sarah earns $6 per hour babysitting and $12 per hour tutoring. Her goal is to earn at least $120 per week. Sarah is allowed to work a maximum of 14 hours per week doing both jobs.
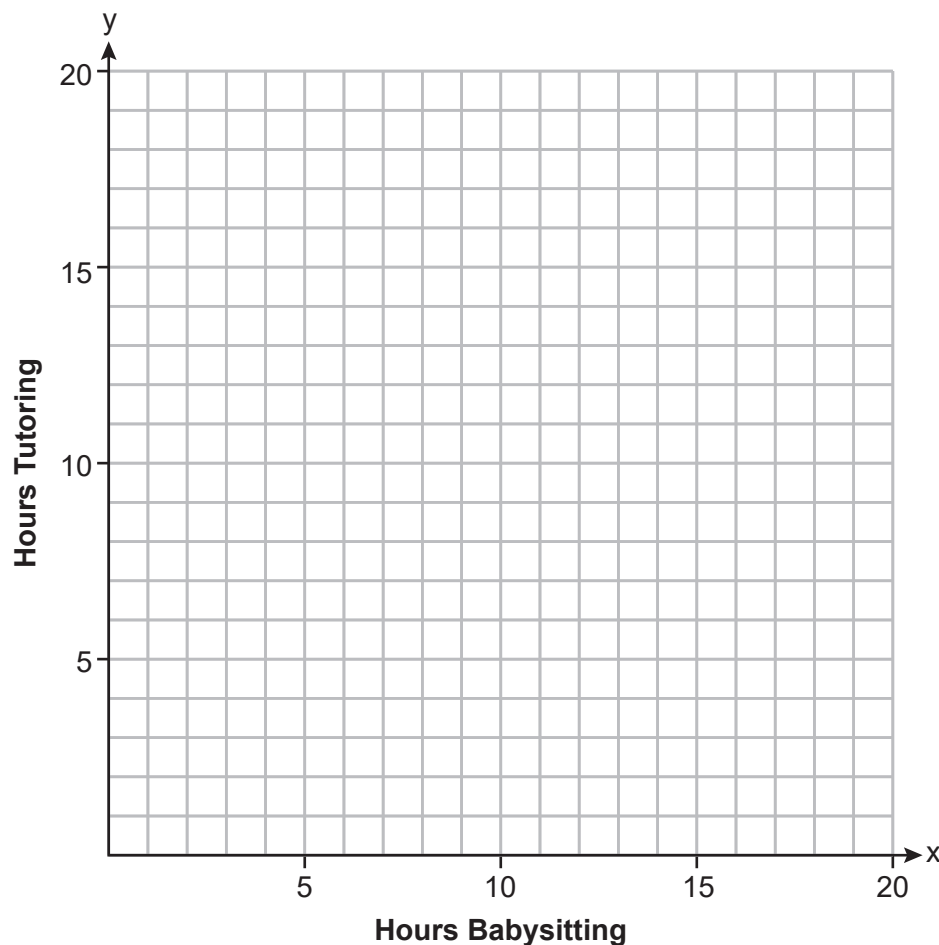
If x represents the number of hours Sarah babysits and y represents the number of hours she tutors, write a system of inequalities that could model this situation.

$$x + y = 14$$
$$6x + 12y = 120$$

$$\underset{-6x}{6x} + 12y = 120 \quad -6x$$
$$\frac{12y}{12} = \frac{120}{12} \frac{-6x}{12}$$
$$y = 10 - 0.5x$$

On the set of axes below, graph the system of inequalities that you wrote.

Hours Tutoring (y-axis)

Hours Babysitting (x-axis)

Question 35 is continued on the next page.

Score 1: The student wrote correct equations.

Question 35 continued

State a combination of hours babysitting and tutoring that would satisfy this situation. Justify your answer.

35 Sarah earns \$6 per hour babysitting and \$12 per hour tutoring. Her goal is to earn at least \$120 per week. Sarah is allowed to work a maximum of 14 hours per week doing both jobs.
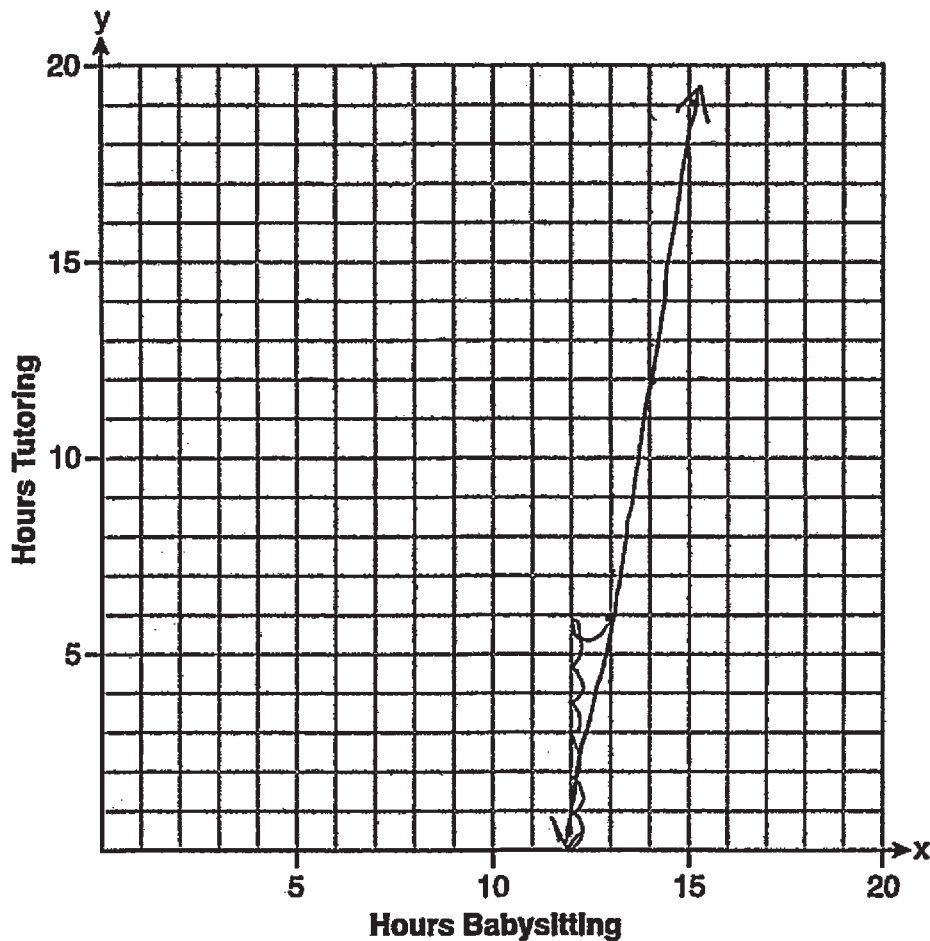
If x represents the number of hours Sarah babysits and y represents the number of hours she tutors, write a system of inequalities that could model this situation.

$x = $ # of hours babysitting
$y = $ # of hours tutoring

$6x + 12y = $ $\boxed{y = 12 + 6x}$

On the set of axes below, graph the system of inequalities that you wrote.

Hours Tutoring

Hours Babysitting

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

Question 35 continued

State a combination of hours babysitting and tutoring that would satisfy this situation. Justify your answer.

$$6(2) = 12$$
$$12(2)$$

$$6(10) = 60 = ^{\$120}$$
$$12(5) = 60 = ^{}$$
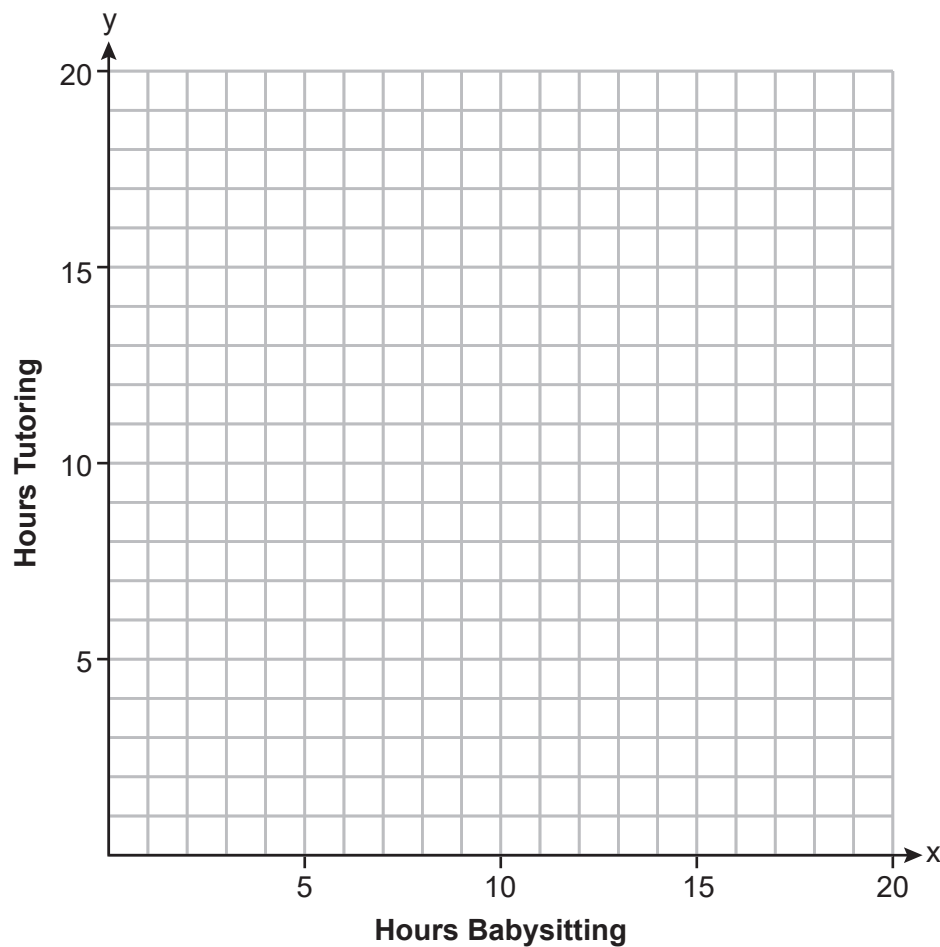
10 hours babysitting and 5 hours tutoring to get $120

35 Sarah earns $6 per hour babysitting and $12 per hour tutoring. Her goal is to earn at least $120 per week. Sarah is allowed to work a maximum of 14 hours per week doing both jobs.

If x represents the number of hours Sarah babysits and y represents the number of hours she tutors, write a system of inequalities that could model this situation.

$$6x + 12y > 120$$

On the set of axes below, graph the system of inequalities that you wrote.

Hours Tutoring

Hours Babysitting

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

Question 35 continued

State a combination of hours babysitting and tutoring that would satisfy this situation. Justify your answer.