SPANISH EDITION
INTEGRATED ALGEBRA
TUESDAY, JANUARY 27, 2015
1:15 to 4:15 P.M., ONLY

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

ÁLGEBRA INTEGRADA

Martes, 27 de enero de 2015 — 1:15 a 4:15 p.m., solamente

Nombre del estudiante: _____

Nombre de la escuela: _____

La posesión o el uso de cualquier aparato destinado a la comunicación están estrictamente prohibidos mientras esté realizando el examen. Si usted tiene o utiliza cualquier aparato destinado a la comunicación, aunque sea brevemente, su examen será invalidado y no se calculará su calificación.

Escriba en letra de molde su nombre y el nombre de su escuela en las líneas de arriba.

Se le ha proporcionado una hoja de respuestas separada para la Parte I. Siga las instrucciones del supervisor para completar la información del estudiante en su hoja de respuestas.

Este examen tiene cuatro partes, con un total de 39 preguntas. Usted debe responder todas las preguntas de este examen. Escriba sus respuestas a las preguntas de selección múltiple de la Parte I en la hoja de respuestas separada. Escriba sus respuestas a las preguntas de las Partes II, III y IV directamente en este folleto. Todo el trabajo debe ser realizado con bolígrafo de tinta permanente, con excepción de los gráficos y los dibujos, que deben hacerse con lápiz grafito. Indique claramente los pasos necesarios, incluyendo apropiadamente las sustituciones de fórmulas, diagramas, gráficos, tablas, etc. Las fórmulas que podría necesitar para responder a ciertas preguntas se encuentran al final de este examen. Esta hoja está perforada para que pueda desprenderla de este folleto.

No se permite el uso de papel de borrador para ninguna parte de este examen, pero puede usar los espacios en blanco en este folleto como papel de borrador. Una hoja perforada de papel cuadriculado de borrador está provista al final de este folleto para cualquier pregunta para la cual sea útil un gráfico, aunque no se requiere. Puede desprender esta hoja del folleto. Todo trabajo realizado en esta hoja de papel cuadriculado de borrador *no* será calificado.

Cuando haya terminado el examen, deberá firmar la declaración impresa al final de la hoja de respuestas, indicando que no tenía conocimiento ilegal previo de las preguntas o respuestas del examen y que no ha dado ni recibido asistencia alguna para responder a las preguntas durante el examen. Su hoja de respuestas no será aceptada si no firma dicha declaración.

Aviso...

Se le debe proporcionar una calculadora para hacer gráficos y una regla para que utilice mientras realiza el examen.

NO ABRA ESTE FOLLETO DE EXAMEN HASTA QUE SE LE INDIQUE.

Parte I

Responda las 30 preguntas de esta parte. Cada respuesta correcta recibirá 2 créditos. No se dará ningún crédito parcial. Para cada pregunta, escriba en la hoja de respuestas separada el número que precede a la palabra o expresión que mejor complete el enunciado o que mejor responda a la pregunta. [60]

Utilice este espacio para sus cálculos.

1 Si $A = \{1, 2, 3, 4, 5, 6, 7, 8\}$ y $B = \{2, 4, 6, 8, 10, 12\}$, la intersección de los conjuntos A y B es

(1) $\{10, 12\}$
(2) $\{2, 4, 6, 8\}$
(3) $\{1, 3, 5, 7\}$
(4) $\{1, 2, 3, 4, 5, 6, 7, 8, 10, 12\}$

2 ¿Cuál es el valor de n en la ecuación $0.2(n - 6) = 2.8$?

(1) 8
(2) 2
(3) 20
(4) 44

3 La expresión $\frac{24x^6y^3}{-6x^3y}$ es equivalente a

(1) $-4x^2y^3$
(2) $-4x^3y^3$
(3) $-4x^9y^4$
(4) $-4x^3y^2$

4 ¿Qué situación está representada por datos bivariados?

(1) Un estudiante enumera los puntajes que obtuvo en los exámenes de Álgebra en un mes.
(2) Un luchador registra su peso antes de cada combate.
(3) Un músico escribe los minutos que practica su instrumento cada día.
(4) Un vendedor de helados realiza un seguimiento de la temperatura diaria más alta y cuántas paletas heladas vende cada día.

Utilice este espacio para sus cálculos.

5 Un cilindro tiene una base circular con un radio de 3 unidades y una altura de 7 unidades. ¿Cuál es el volumen del cilindro en unidades cúbicas?

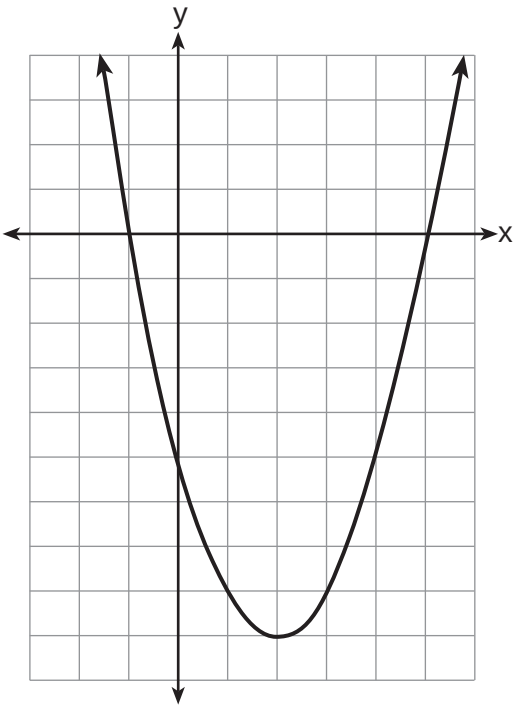
(1) 2π

(2) 42π

(3) 63π

(4) 147π

6 A continuación se muestra el gráfico de $f(x)$.



Basándose en este gráfico, ¿cuáles son las raíces de la ecuación $f(x) = 0$?

(1) 1 y -5

(2) -1 y 5

(3) 2 y -9

(4) -1 y -5 y 5

7 Jose desea recorrer un total de 50 millas en su bicicleta este fin de semana. Si recorre m millas el sábado, ¿qué expresión representa la cantidad de millas que debe recorrer el domingo?

(1) $m - 50$

(2) $m + 50$

(3) $50 - m$

(4) $50m$

Utilice este espacio para sus cálculos.

8 Cuatro estudiantes juegan un juego de matemáticas en la casa. Una de las preguntas del juego de matemáticas les pide que escriban una ecuación algebraica.

Brandon escribió: $3(5x - 0)$
William escribió: $7 < 2(6 + x)$
Alice escribió: $15x$
Kayla escribió: $11 = 2x + 3$

¿Qué estudiante escribió una ecuación algebraica?

(1) Brandon
(2) William
(3) Alice
(4) Kayla

9 Un estudiante empleó 15 minutos en pintar un cartel de anuncios de 2 pies por 3 pies. A la *décima de un minuto más cercana*, ¿cuánto empleó el estudiante en pintar 1 pie cuadrado?

(1) 0.4
(2) 1.5
(3) 2.5
(4) 3.5

10 ¿Cuál es una ecuación de la línea que pasa a través de los puntos (2,1) y (6,−5)?

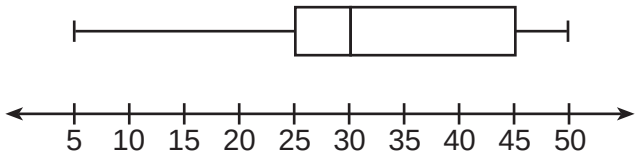
(1) $y = -\frac{3}{2}x - 2$
(2) $y = -\frac{3}{2}x + 4$
(3) $y = -\frac{2}{3}x - 1$
(4) $y = -\frac{2}{3}x + \frac{7}{3}$

11 ¿Qué es $\frac{10}{7x} - \frac{3}{5x}$ expresado en la forma más simple?

(1) $\frac{7}{2x}$
(2) $\frac{29}{2x}$
(3) $\frac{29}{35x}$
(4) $\frac{55}{35x}$

Utilice este espacio para sus cálculos.

12 En el siguiente diagrama de caja y bigotes, ¿cuál es el 2.º cuartil?



(1) 25
(2) 30
(3) 45
(4) 50

13 La longitud de un rectángulo es tres pies menos que dos veces su ancho. Si x representa el ancho del rectángulo, en pies, ¿qué desigualdad representa el área del rectángulo que tiene *como máximo* 30 pies cuadrados?

(1) $x(2x - 3) \leq 30$
(2) $x(2x - 3) \geq 30$
(3) $x(3 - 2x) \leq 30$
(4) $x(3 - 2x) \geq 30$

14 ¿Qué conjunto es una función?

(1) {(3,4), (3,5), (3,6), (3,7)}
(2) {(1,2), (3,4), (4,3), (2,1)}
(3) {(6,7), (7,8), (8,9), (6,5)}
(4) {(0,2), (3,4), (0,8), (5,6)}

15 Se registraron los pesos de 40 estudiantes. Si el percentil 75 de sus pesos fue 140 libras, ¿cuál es la cantidad total de estudiantes que pesaron *más de* 140 libras?

(1) 10
(2) 20
(3) 30
(4) 4

16 ¿Cuál es la pendiente de la línea representada por la ecuación $4x + 3y = 7$?

(1) $\frac{7}{4}$
(2) $\frac{7}{3}$
(3) $-\frac{3}{4}$
(4) $-\frac{4}{3}$

Utilice este espacio para sus cálculos.

17 ¿Cómo se expresa $\sqrt{150} + \sqrt{24}$ en la forma radical más simple?

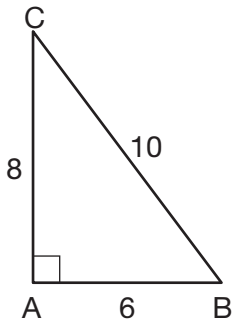
(1) $7\sqrt{6}$

(2) $7\sqrt{12}$

(3) $\sqrt{87}$

(4) $\sqrt{174}$

18 En el siguiente triángulo $\triangle ABC$, la medida de $\angle A = 90°$, $AB = 6$, $AC = 8$ y $BC = 10$.



¿Qué razón representa el seno de $\angle B$?

(1) $\frac{10}{8}$

(2) $\frac{8}{6}$

(3) $\frac{6}{10}$

(4) $\frac{8}{10}$

19 Las ecuaciones $6x + 5y = 300$ y $3x + 7y = 285$ representan el dinero que se recolectó de la venta de canastas de regalos en un evento de recaudación de fondos de una escuela. Si x representa el costo de cada canasta de regalos de refrigerios e y representa el costo de cada canasta de regalos de chocolate, ¿cuál es el costo de cada canasta de regalos de chocolate?

(1) \$20

(2) \$25

(3) \$30

(4) \$54

20 ¿Qué ecuación representa el eje de simetría del gráfico de la ecuación $y = x^2 + 4x - 5$?

(1) $x = -2$

(2) $x = 4$

(3) $y = -2$

(4) $y = 4$

Utilice este espacio para sus cálculos.

21 ¿Para qué valor de x la expresión $\frac{x+2}{2x-1}$ es indefinida?

(1) 0

(2) -2

(3) $-\frac{1}{2}$

(4) $\frac{1}{2}$

22 El año pasado, Nick recorrió un total de 8000 millas en su bicicleta. A la *yarda más cercana*, ¿cuántas yardas recorrió Nick en promedio cada día?

1 milla = 1760 yardas
1 año = 365 días

(1) 22

(2) 236

(3) 1659

(4) 38,575

23 El conjunto de números enteros *no* se cierra con respecto a

(1) la división

(2) la multiplicación

(3) la suma

(4) la resta

24 Se lanza al aire un cohete modelo desde el nivel del piso. La altura, en pies, está representada por $p(x) = -16x^2 + 32x$, donde x es la cantidad de segundos transcurridos. ¿Cuál es la cantidad total de segundos que el cohete modelo estará en el aire?

(1) 1

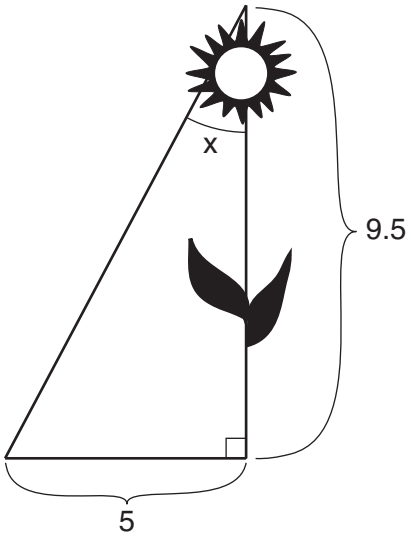
(2) 2

(3) 0

(4) 16

Utilice este espacio para sus cálculos.

25 El siguiente diagrama muestra el vuelo de un pájaro desde la punta de un girasol de 9.5 pies de alto hasta un punto en el suelo que está a 5 pies de la base del girasol.



A la *décima de un grado más cercana*, ¿cuál es la medida del ángulo x?

(1) 27.8
(2) 31.8
(3) 58.2
(4) 62.2

26 ¿Qué conjunto de números representa las longitudes de los lados de un triángulo rectángulo?

(1) {7, 24, 25}
(2) {9, 16, 23}
(3) {10, 12, 14}
(4) {14, 16, 18}

27 ¿Cuál es el número total de combinaciones diferentes de siete letras que se pueden hacer con la palabra *HEXAGON* si cada letra se usa solo una vez?

(1) 28
(2) 49
(3) 720
(4) 5040

Utilice este espacio para sus cálculos.

28 Cada uno de tres estudiantes lanza un cubo de madera cuyas caras están pintadas de rojo, blanco y azul. Se registra el color de la cara superior cada vez que se lanza el cubo. La siguiente tabla muestra los resultados.

Estudiante	Cantidad de lanzamientos	Rojo	Blanco	Azul
1	30	11	7	12
2	50	19	11	20
3	20	8	4	8

Si un cuarto estudiante lanzara el cubo 75 veces, basándose en estos datos experimentales, ¿aproximadamente cuántas veces se puede esperar que el cubo caiga con la cara azul hacia arriba?

(1) 25
(2) 30
(3) 35
(4) 40

29 Dominick grafica la ecuación $y = a|x|$ donde a es un entero positivo. Si Gina multiplica a por -3, el nuevo gráfico será

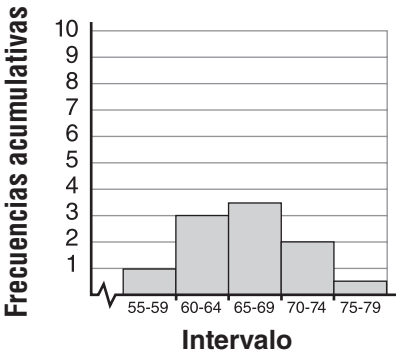
(1) más angosto y abierto hacia abajo
(2) más angosto y abierto hacia arriba
(3) más ancho y abierto hacia abajo
(4) más ancho y abierto hacia arriba

Utilice este espacio para sus cálculos.

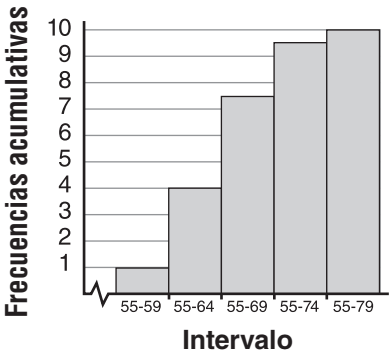
30 El Sr. Suppe registró la altura, en pulgadas, de cada estudiante de su clase. Los resultados se registraron en la siguiente tabla.

60	59	70	65	64
61	58	72	75	66
65	67	63	62	68
68	69	74	61	70

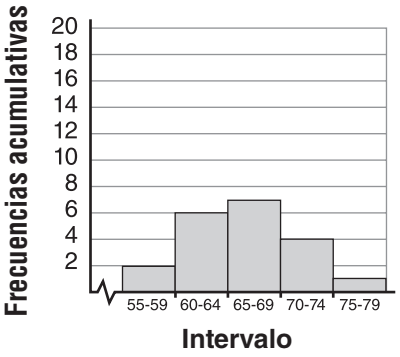
¿Qué histograma de frecuencias acumulativas representa los datos?



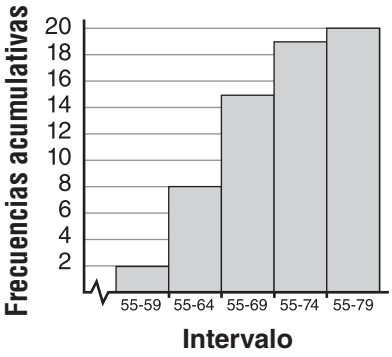
(1)



(3)



(2)

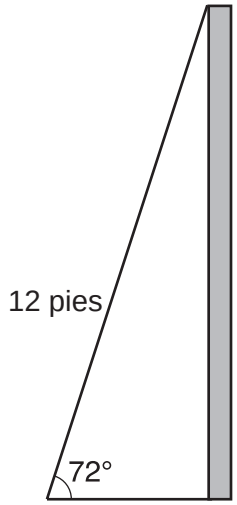


(4)

Parte II

Responda las 3 preguntas de esta parte. Cada respuesta correcta recibirá 2 créditos. Indique claramente los pasos necesarios, incluyendo apropiadamente las sustituciones de fórmulas, diagramas, gráficos, tablas, etc. Para todas las preguntas en esta parte, una respuesta numérica correcta sin demostrar el trabajo recibirá solamente 1 crédito. Todas las respuestas deben escribirse con bolígrafo de tinta permanente, con excepción de los gráficos y los dibujos, que deben hacerse con lápiz grafito. [6]

31 Como se muestra en el siguiente diagrama, una escalera de 12 pies de largo está recostada sobre una pared y crea un ángulo de 72º con el piso.



Calcule, a la *décima de un pie más cercana*, la distancia desde la pared hasta la base de la escalera.

32 Carla compró un vestido en una oferta con un descuento del 20% sobre el precio original. El precio de oferta del vestido fue $28.80. Calcule el precio original del vestido, en dólares.

33 La probabilidad de que un estudiante tenga un perro es de $\frac{1}{3}$. La probabilidad de que el mismo estudiante tenga un perro y un gato es de $\frac{2}{15}$. Determine la probabilidad de que el estudiante tenga un gato.

Parte III

Responda las 3 preguntas de esta parte. Cada respuesta correcta recibirá 3 créditos. Indique claramente los pasos necesarios, incluyendo apropiadamente las sustituciones de fórmulas, diagramas, gráficos, tablas, etc. Para todas las preguntas en esta parte, una respuesta numérica correcta sin demostrar el trabajo recibirá solamente 1 crédito. Todas las respuestas deben escribirse con bolígrafo de tinta permanente, con excepción de los gráficos y los dibujos, que deben hacerse con lápiz grafito. [9]

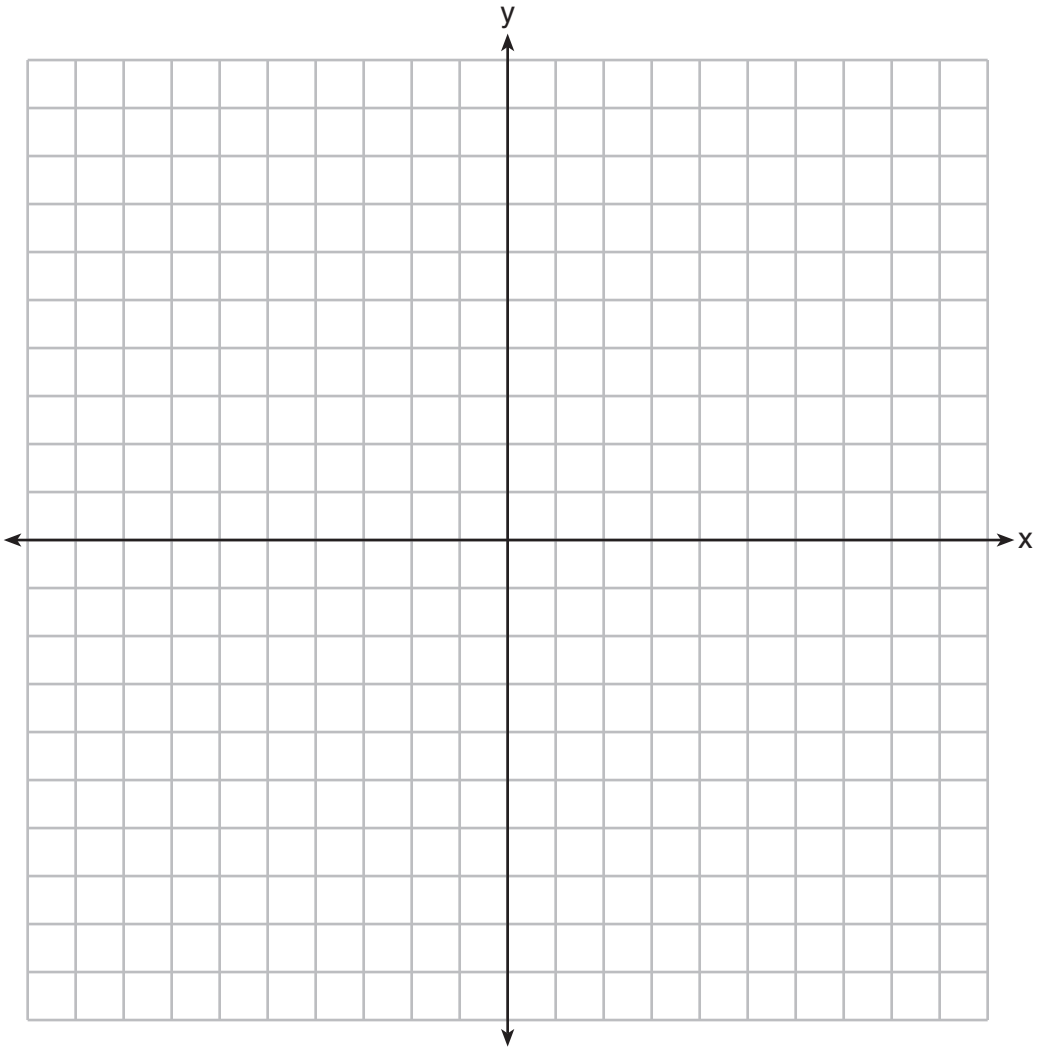
34 Un DVD cuesta dos veces lo que cuesta un CD de música. Jack compra 2 DVD y 2 CD y gasta $45. Determine cuánto cuesta un CD, en dólares. [Solamente una solución algebraica puede recibir crédito completo].

35 Noj tiene los siguientes resultados de exámenes:

76, 84, 69, 74, 91

Su maestro le permitirá volver a tomar el examen en el que obtuvo el resultado más bajo. Noj quiere tener un promedio de *al menos* 82. Determine la *menor* cantidad de puntos adicionales que Noj debe sacar cuando vuelva a tomar el examen.

36 Grafique $y < x$ y $x > 5$ en los siguientes ejes.

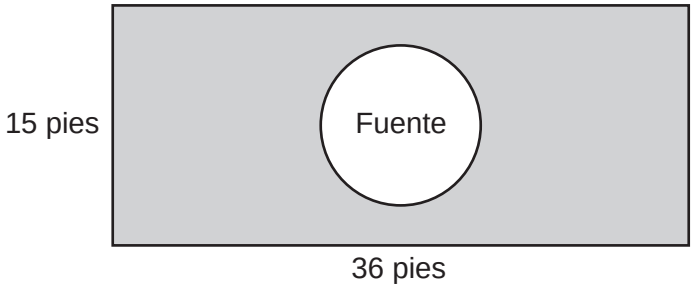


Enuncie las coordenadas de un punto en el conjunto de soluciones.

Parte IV

Responda las 3 preguntas de esta parte. Cada respuesta correcta recibirá 4 créditos. Indique claramente los pasos necesarios, incluyendo apropiadamente las sustituciones de fórmulas, diagramas, gráficos, tablas, etc. Para todas las preguntas en esta parte, una respuesta numérica correcta sin demostrar el trabajo recibirá solamente 1 crédito. Todas las respuestas deben escribirse con bolígrafo de tinta permanente, con excepción de los gráficos y los dibujos, que deben hacerse con lápiz grafito. [12]

37 Se solicitó a la empresa The Rock Solid Concrete Company pavimentar un área rectangular que rodea una fuente circular con un diámetro de 8 pies, como se muestra en el siguiente diagrama.



Calcule el área, al *pie cuadrado más cercano*, que debe pavimentarse.

Calcule el costo, *en dólares*, de pavimentar el área si la empresa Rock Solid Concrete Company cobra $8.95 por pie cuadrado.

38 Resuelva algebraicamente el siguiente sistema de ecuaciones:

$$y = x^2 + 5x - 17$$
$$y = x - 5$$

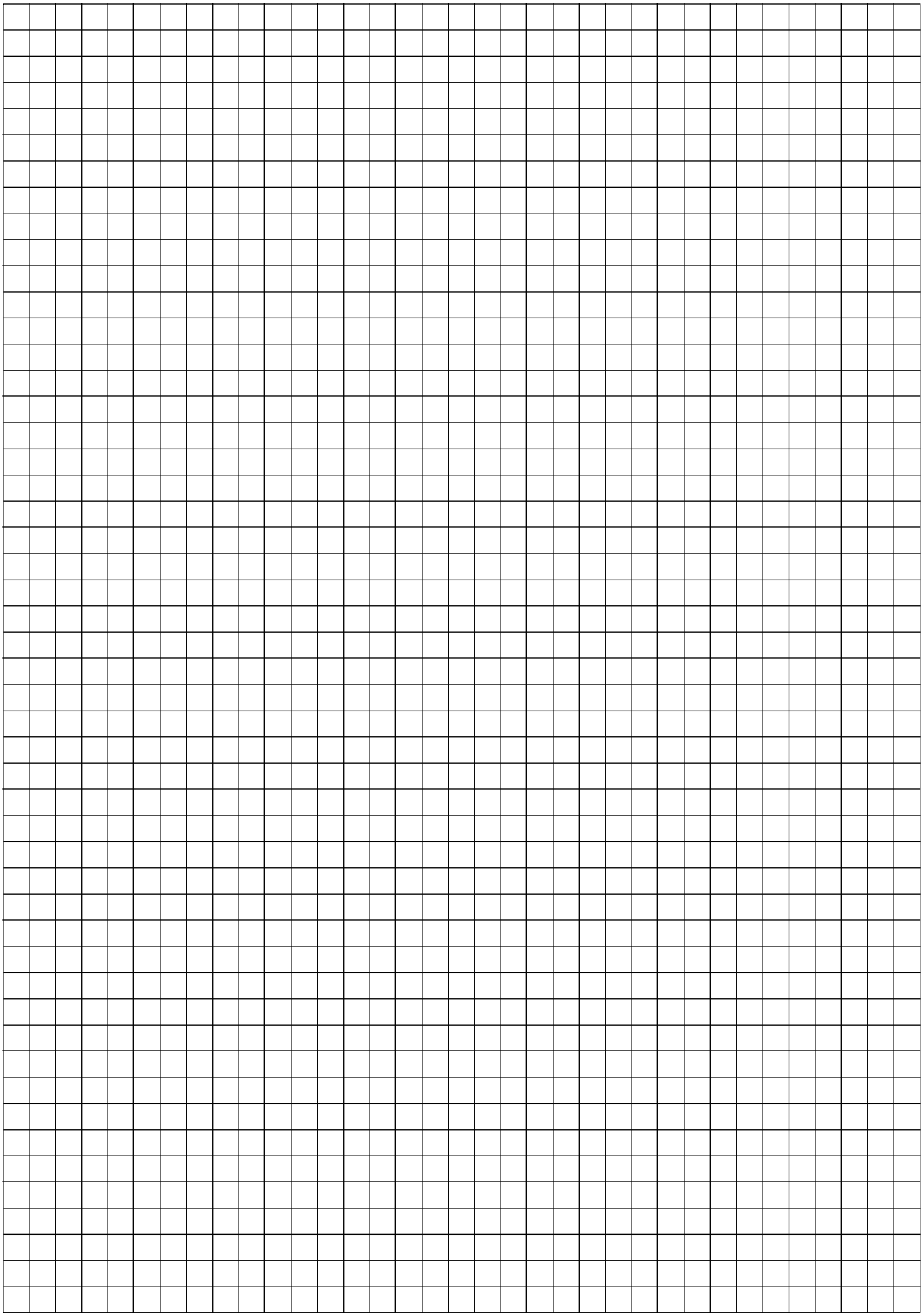
39 Realice las operaciones indicadas y exprese el resultado en la forma más simple:

$$\left(\frac{10x^2y}{x^2 + xy}\right) \bullet \left(\frac{(x + y)^2}{2x}\right) \div \left(\frac{x^2 - y^2}{5y^2}\right)$$

Desprender por la línea perforada

Desprender por la línea perforada

Papel cuadriculado de borrador — Esta hoja *no* será calificada.



Papel cuadriculado de borrador — Esta hoja *no* será calificada.

Desprender por la línea perforada

Desprender por la línea perforada

Desprender por la línea perforada

Hoja de referencia

Razones trigonométricas		$\text{sen A} = \frac{opuesto}{hipotenusa}$
		$\cos \text{A} = \frac{adyacente}{hipotenusa}$
		$\tan \text{A} = \frac{opuesto}{adyacente}$

Área	trapecio	$\text{A} = \frac{1}{2}h(b_1 + b_2)$

Volumen	cilindro	$\text{V} = \pi r^2 h$

Área de superficie	prisma rectangular	$\text{SA} = 2lw + 2hw + 2lh$
	cilindro	$\text{SA} = 2\pi r^2 + 2\pi rh$

Geometría analítica	$m = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$

Desprender por la línea perforada

INTEGRATED ALGEBRA SPANISH EDITION

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Impreso en papel reciclado

INTEGRATED ALGEBRA SPANISH EDITION

FOR TEACHERS ONLY

The University of the State of New York
REGENTS HIGH SCHOOL EXAMINATION

INTEGRATED ALGEBRA

Tuesday, January 27, 2015 — 1:15 to 4:15 p.m., only

SCORING KEY AND RATING GUIDE

Mechanics of Rating

The following procedures are to be followed for scoring student answer papers for the Regents Examination in Integrated Algebra. More detailed information about scoring is provided in the publication *Information Booklet for Scoring the Regents Examinations in Mathematics*.

Do *not* attempt to correct the student's work by making insertions or changes of any kind. In scoring the open-ended questions, use check marks to indicate student errors. Unless otherwise specified, mathematically correct variations in the answers will be allowed. Units need not be given when the wording of the questions allows such omissions.

Each student's answer paper is to be scored by a minimum of three mathematics teachers. No one teacher is to score more than approximately one-third of the open-ended questions on a student's paper. Teachers may not score their own students' answer papers. On the student's separate answer sheet, for each question, record the number of credits earned and the teacher's assigned rater/scorer letter.

Schools are not permitted to rescore any of the open-ended questions on this exam after each question has been rated once, regardless of the final exam score. Schools are required to ensure that the raw scores have been added correctly and that the resulting scale score has been determined accurately.

Raters should record the student's scores for all questions and the total raw score on the student's separate answer sheet. Then the student's total raw score should be converted to a scale score by using the conversion chart that will be posted on the Department's web site at: http://www.p12.nysed.gov/assessment/ on Tuesday, January 27, 2015. Because scale scores corresponding to raw scores in the conversion chart may change from one administration to another, it is crucial that, for each administration, the conversion chart provided for that administration be used to determine the student's final score. The student's scale score should be entered in the box provided on the student's separate answer sheet. The scale score is the student's final examination score.

If the student's responses for the multiple-choice questions are being hand scored prior to being scanned, the scorer must be careful not to make any marks on the answer sheet except to record the scores in the designated score boxes. Marks elsewhere on the answer sheet will interfere with the accuracy of the scanning.

Part I

Allow a total of 60 credits, 2 credits for each of the following.

(1) 2	(11) 3	(21) . . . . . 4 . . . . .
(2) 3	(12) 2	(22) . . . . . 4 . . . . .
(3) 4	(13) 1	(23) . . . . . 1 . . . . .
(4) 4	(14) 2	(24) . . . . . 2 . . . . .
(5) 3	(15) 1	(25) . . . . . 1 . . . . .
(6) 2	(16) 4	(26) . . . . . 1 . . . . .
(7) 3	(17) 1	(27) . . . . . 4 . . . . .
(8) 4	(18) 4	(28) . . . . . 2 . . . . .
(9) 3	(19) 3	(29) . . . . . 1 . . . . .
(10) 2	(20) 1	(30) . . . . . 4 . . . . .

Updated information regarding the rating of this examination may be posted on the New York State Education Department's web site during the rating period. Check this web site at: http://www.p12.nysed.gov/assessment/ and select the link "Scoring Information" for any recently posted information regarding this examination. This site should be checked before the rating process for this examination begins and several times throughout the Regents Examination period.

Beginning in January 2013, the Department is providing supplemental scoring guidance, the "Sample Response Set," for the Regents Examination in Integrated Algebra. This guidance is not required as part of the scorer training. It is at the school's discretion to incorporate it into the scorer training or to use it as supplemental information during scoring. While not reflective of all scenarios, the sample student responses selected for the Sample Response Set illustrate how less common student responses to open-ended questions may be scored. The Sample Response Set will be available on the Department's web site at http://www.nysedregents.org/IntegratedAlgebra/.

General Rules for Applying Mathematics Rubrics

I. General Principles for Rating

The rubrics for the constructed-response questions on the Regents Examination in Integrated Algebra are designed to provide a systematic, consistent method for awarding credit. The rubrics are not to be considered all-inclusive; it is impossible to anticipate all the different methods that students might use to solve a given problem. Each response must be rated carefully using the teacher's professional judgment and knowledge of mathematics; all calculations must be checked. The specific rubrics for each question must be applied consistently to all responses. In cases that are not specifically addressed in the rubrics, raters must follow the general rating guidelines in the publication *Information Booklet for Scoring the Regents Examinations in Mathematics*, use their own professional judgment, confer with other mathematics teachers, and/or contact the State Education Department for guidance. During each Regents Examination administration period, rating questions may be referred directly to the Education Department. The contact numbers are sent to all schools before each administration period.

II. Full-Credit Responses

A full-credit response provides a complete and correct answer to all parts of the question. Sufficient work is shown to enable the rater to determine how the student arrived at the correct answer.

When the rubric for the full-credit response includes one or more examples of an acceptable method for solving the question (usually introduced by the phrase "such as"), it does not mean that there are no additional acceptable methods of arriving at the correct answer. Unless otherwise specified, mathematically correct alternative solutions should be awarded credit. The only exceptions are those questions that specify the type of solution that must be used; e.g., an algebraic solution or a graphic solution. A correct solution using a method other than the one specified is awarded half the credit of a correct solution using the specified method.

III. Appropriate Work

Full-Credit Responses: The directions in the examination booklet for all the constructed-response questions state: "Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc." The student has the responsibility of providing the correct answer ***and*** showing how that answer was obtained. The student must "construct" the response; the teacher should not have to search through a group of seemingly random calculations scribbled on the student paper to ascertain what method the student may have used.

Responses With Errors: Rubrics that state "Appropriate work is shown, but…" are intended to be used with solutions that show an essentially complete response to the question but contain certain types of errors, whether computational, rounding, graphing, or conceptual. If the response is incomplete; i.e., an equation is written but not solved or an equation is solved but not all of the parts of the question are answered, appropriate work has ***not*** been shown. Other rubrics address incomplete responses.

IV. Multiple Errors

Computational Errors, Graphing Errors, and Rounding Errors: Each of these types of errors results in a 1-credit deduction. Any combination of two of these types of errors results in a 2-credit deduction. No more than 2 credits should be deducted for such mechanical errors in any response. The teacher must carefully review the student's work to determine what errors were made and what type of errors they were.

Conceptual Errors: A conceptual error involves a more serious lack of knowledge or procedure. Examples of conceptual errors include using the incorrect formula for the area of a figure, choosing the incorrect trigonometric function, or multiplying the exponents instead of adding them when multiplying terms with exponents. A response with one conceptual error can receive no more than half credit.

If a response shows repeated occurrences of the same conceptual error, the student should not be penalized twice. If the same conceptual error is repeated in responses to other questions, credit should be deducted in each response.

If a response shows two (or more) different major conceptual errors, it should be considered completely incorrect and receive no credit.

If a response shows one conceptual error and one computational, graphing, or rounding error, the teacher must award credit that takes into account both errors; i.e., awarding half credit for the conceptual error and deducting 1 credit for each mechanical error (maximum of two deductions for mechanical errors).

Part II

For each question, use the specific criteria to award a maximum of 2 credits. Unless otherwise specified, mathematically correct alternative solutions should be awarded appropriate credit.

(31) **[2]** 3.7, and correct work is shown.

[1] Appropriate work is shown, but one computational or rounding error is made. An appropriate distance is given.

or

[1] Appropriate work is shown, but one conceptual error is made, such as using an incorrect trigonometric function. An appropriate distance is given.

or

[1] A correct trigonometric equation is written, but no further correct work is shown.

or

[1] 3.7, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(32) **[2]** 36, and correct work is shown.

[1] Appropriate work is shown, but one computational error is made.

or

[1] Appropriate work is shown, but one conceptual error is made.

or

[1] A correct equation is written, but no further correct work is shown.

or

[1] 36, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(33) **[2]** $\frac{2}{5}$ or equivalent, and correct work is shown.

[1] Appropriate work is shown, but one computational error is made. An appropriate probability is found.

or

[1] Appropriate work is shown, but one conceptual error is made. An appropriate probability is found.

or

[1] $\frac{2}{5}$, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

Part III

For each question, use the specific criteria to award a maximum of 3 credits. Unless otherwise specified, mathematically correct alternative solutions should be awarded appropriate credit.

(34) **[3]** 7.50 or equivalent and correct work is shown.

[2] Appropriate work is shown, but one computational error is made. An appropriate cost is found.

or

[2] Appropriate work is shown, but 15, the price of one DVD, is found.

[1] Appropriate work is shown, but two or more computational errors are made. An appropriate cost is found.

or

[1] Appropriate work is shown, but one conceptual error is made. An appropriate cost is found.

or

[1] A correct single variable equation or system of equations is written, but no further correct work is shown.

or

[1] 7.50, but a method other than algebraic is used.

or

[1] 7.50, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(35) **[3]** 16 and correct work is shown.

[2] Appropriate work is shown, but one computational error is made. An appropriate answer is given.

or

[2] Appropriate work is shown to find 85, the minimum score needed on the retest, but no further correct work is shown.

[1] Appropriate work is shown, but one conceptual error is made, but an appropriate answer is given.

or

[1] Appropriate work is shown, but two or more computational errors are made, but an appropriate answer is given

or

[1] 16 and no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(36) **[3]** Correct graphs are drawn and at least one is labeled, and coordinates of a point within the solution set are found.

[2] Correct graphs are drawn and at least one is labeled, but no coordinates or incorrect coordinates are stated.

or

[2] Appropriate work is shown, but one graphing or labeling error is made. Appropriate coordinates are stated.

[1] Appropriate work is shown, but two or more graphing or labeling errors are made. Appropriate coordinates are stated.

or

[1] Appropriate work is shown, but one conceptual error is made. Appropriate coordinates are stated.

or

[1] Only one correct graph is drawn and labeled, but no further correct work is shown.

or

[1] Only correct coordinates of a point in the solution set are stated, but no graphs are drawn.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

Part IV

For each question, use the specific criteria to award a maximum of 4 credits. Unless otherwise specified, mathematically correct alternative solutions should be awarded appropriate credit.

(37) **[4]** 490 and 4385.50 and correct work is shown.

[3] Appropriate work is shown, but one computational is made or the answer is rounded. Appropriate answers are given.

or

[3] Appropriate work is shown to find 490, but no further correct work is shown.

[2] Appropriate work is shown, but two or more computational or rounding errors are made. Appropriate answers are given.

or

[2] Appropriate work is shown, but one conceptual error is made. Appropriate answers are given.

or

[2] Appropriate work is shown to find the areas of the rectangle and the circle, but no further correct work is shown.

[1] Appropriate work is shown, but one conceptual error and one computational or rounding error are made. Appropriate answers are given.

or

[1] Appropriate work is shown to find the area of the circle, but no further correct work is shown.

or

[1] 490 and 4385.50, but no work is shown.

[0] One conceptual error and two or more computational errors are made.

or

[0] 490 or 4385.50, but no work is shown.

or

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(38) **[4]** (2,−3) and (−6,−11) or equivalent, and correct algebraic work is shown.

[3] Appropriate work is shown, but one computational error is made.

or

[3] Appropriate work is shown, but only one correct ordered pair is found or only the correct value for x or for y is found.

[2] Appropriate work is shown, but two or more computational errors are made.

or

[2] Appropriate work is shown, but one conceptual error is made.

or

[2] $x^2 + 4x - 12 = 0$ is written, but the equation is not solved or is solved incorrectly.

or

[2] An appropriate system of equations is solved, but a method other than algebraic is used.

[1] Appropriate work is shown, but one conceptual error and one computational error are made.

or

[1] The equation $x^2 + 5x - 17 = x - 5$ is set up correctly, but no further correct work is shown.

or

[1] (2,−3) and (−6,−11), but no work is shown.

[0] (2,−3) or (−6,−11), but no work is shown.

or

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(39) **[4]** $\frac{25y^3}{x-y}$ and correct work is shown.

[3] Appropriate work is shown, but one computational, factoring, or simplification error is made.

[2] Appropriate work is shown, but two or more computational, factoring, or simplification errors are made.

or

[2] Appropriate work is shown, but one conceptual error is made.

or

[2] The expression is expressed as products, and all numerators and denominators are factored correctly, but no further correct work is shown.

[1] Appropriate work is shown, but one conceptual error and one computational, factoring, or simplification error are made.

or

[1] All numerators and denominators are factored correctly, but no further correct work is shown.

or

[1] $\frac{25y^3}{x-y}$, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

Map to Core Curriculum

Content Strands	Item Numbers
Number Sense and Operations	17, 23, 27, 32
Algebra	1, 2, 3, 7, 8, 10, 11, 13, 16, 18, 19, 20, 21, 24, 25, 26, 31, 34, 38, 39
Geometry	5, 6, 14, 29, 36, 37
Measurement	9, 22
Statistics and Probability	4, 12, 15, 28, 30, 33, 35

Regents Examination in Integrated Algebra
January 2015
Chart for Converting Total Test Raw Scores to Final Examination Scores (Scale Scores)

The *Chart for Determining the Final Examination Score for the January 2015 Regents Examination in Integrated Algebra* will be posted on the Department's web site at: http://www.p12.nysed.gov/assessment/ on Tuesday, January 27, 2015. Conversion charts provided for previous administrations of the Regents Examination in Integrated Algebra must NOT be used to determine students' final scores for this administration.

Online Submission of Teacher Evaluations of the Test to the Department

Suggestions and feedback from teachers provide an important contribution to the test development process. The Department provides an online evaluation form for State assessments. It contains spaces for teachers to respond to several specific questions and to make suggestions. Instructions for completing the evaluation form are as follows:

1. Go to http://www.forms2.nysed.gov/emsc/osa/exameval/reexameval.cfm.

2. Select the test title.

3. Complete the required demographic fields.

4. Complete each evaluation question and provide comments in the space provided.

5. Click the SUBMIT button at the bottom of the page to submit the completed form.

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

INTEGRATED ALGEBRA

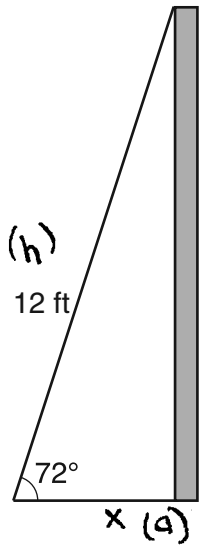
Tuesday, January 27, 2015 — 1:15 a.m. to 4:15 p.m., only

SAMPLE RESPONSE SET

Table of Contents

Question 31

31 As shown in the diagram below, a ladder 12 feet long leans against a wall and makes an angle of 72° with the ground.



Find, to the *nearest tenth of a foot,* the distance from the wall to the base of the ladder.

$$\frac{\cos 72}{1} = \frac{x}{12}$$

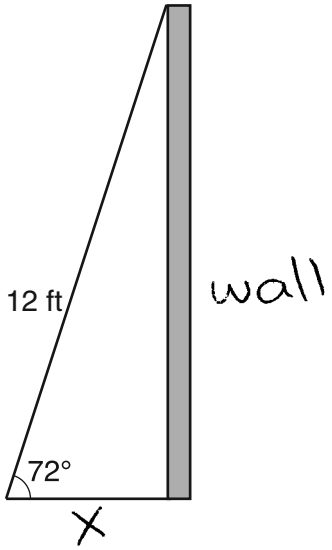
$$x = 12\cos 72$$

$$x = 3.7 \text{ ft}$$

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

Question 31

31 As shown in the diagram below, a ladder 12 feet long leans against a wall and makes an angle of 72° with the ground.



Find, to the *nearest tenth of a foot,* the distance from the wall to the base of the ladder.

$\sin 72 = \frac{w}{12}$

$w = 12 \times \sin 72 = 11.4$

$12^2 = x^2 + 11.4^2$

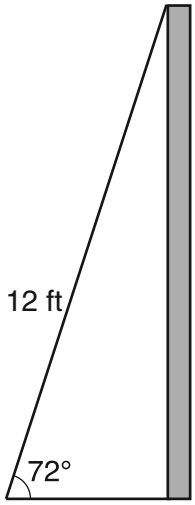
$x^2 = 144 - 129.96 = 14.04$

$x = \sqrt{14.04} = 3.7$

Score 2: The student used the correct trigonometric ratio to find the height of the wall. The student then used the Pythagorean Theorem to correctly find the distance from the wall.

Question 31

31 As shown in the diagram below, a ladder 12 feet long leans against a wall and makes an angle of 72° with the ground.



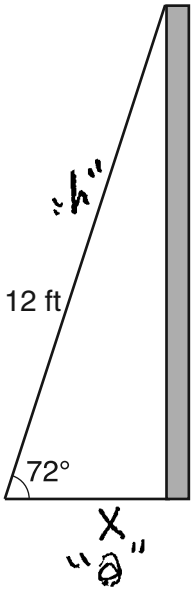
Find, to the *nearest tenth of a foot,* the distance from the wall to the base of the ladder.

$\cos(72) = \frac{x}{12}$

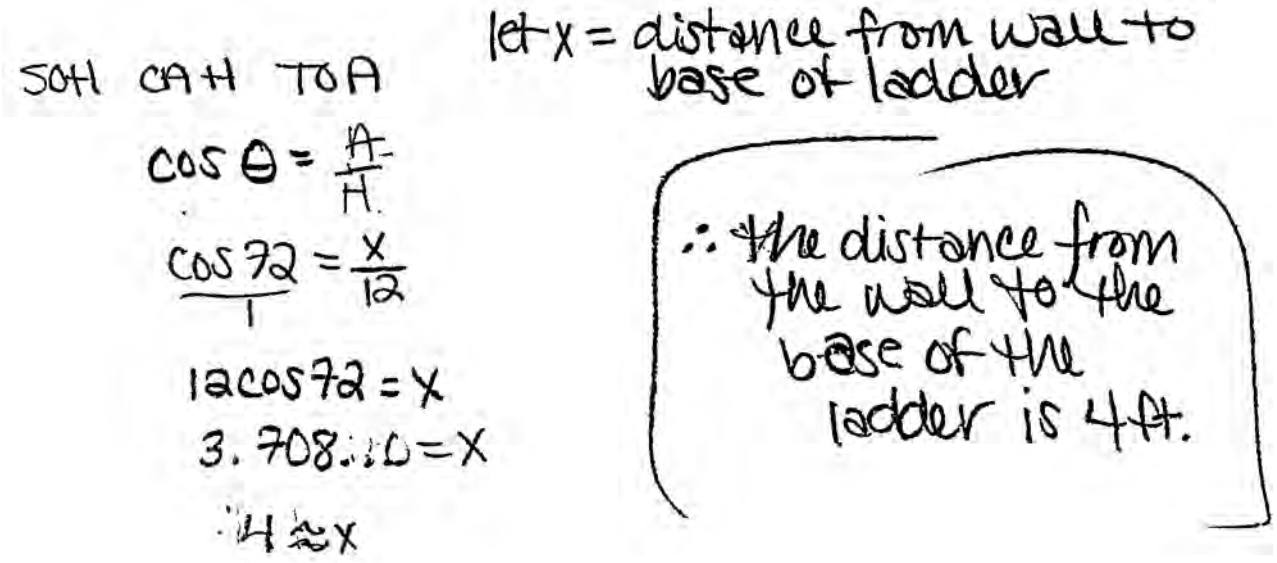
Score 1: The student wrote a correct trigonometric equation, but showed no further correct work.

Question 31

31 As shown in the diagram below, a ladder 12 feet long leans against a wall and makes an angle of 72° with the ground.



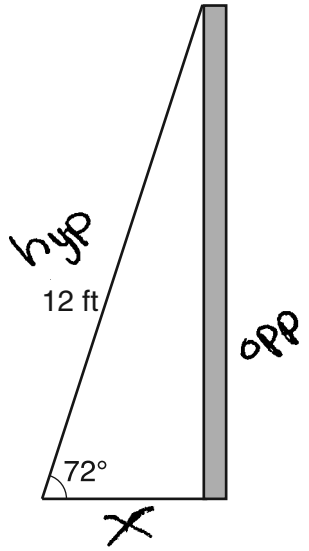
Find, to the *nearest tenth of a foot,* the distance from the wall to the base of the ladder.



Score 1: The student showed appropriate work, but made a rounding error by finding the answer to the nearest whole number instead of the nearest tenth.

Question 31

31 As shown in the diagram below, a ladder 12 feet long leans against a wall and makes an angle of 72° with the ground.



Find, to the *nearest tenth of a foot,* the distance from the wall to the base of the ladder.

$\sin 72 = \frac{x}{12}$

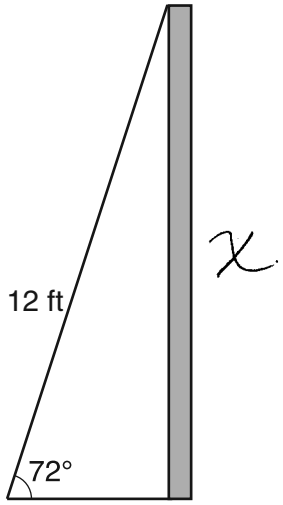
$\frac{.95}{1} = \frac{x}{12}$

$x = 11.4$

Score 1: The student used an incorrect trigonometric function.

Question 31

31 As shown in the diagram below, a ladder 12 feet long leans against a wall and makes an angle of 72° with the ground.



Find, to the *nearest tenth of a foot,* the distance from the wall to the base of the ladder.

$\sin 72 = \frac{x}{12}$

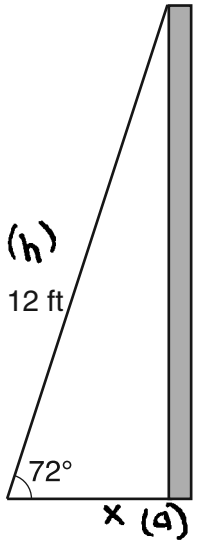
$x = 11.4126$

$x = 11.4$

Score 1: The student made a conceptual error by finding the height of the wall instead of the distance from the wall to the ladder.

Question 31

31 As shown in the diagram below, a ladder 12 feet long leans against a wall and makes an angle of 72° with the ground.



Find, to the *nearest tenth of a foot,* the distance from the wall to the base of the ladder.

$\frac{\cos 72}{1} = \frac{x}{12}$

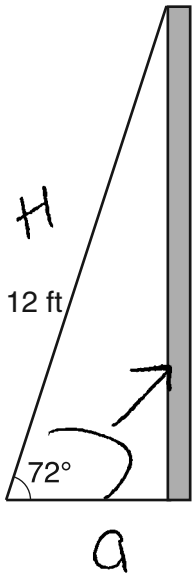
$12 \cos 72 = x$

$x = -11.6$

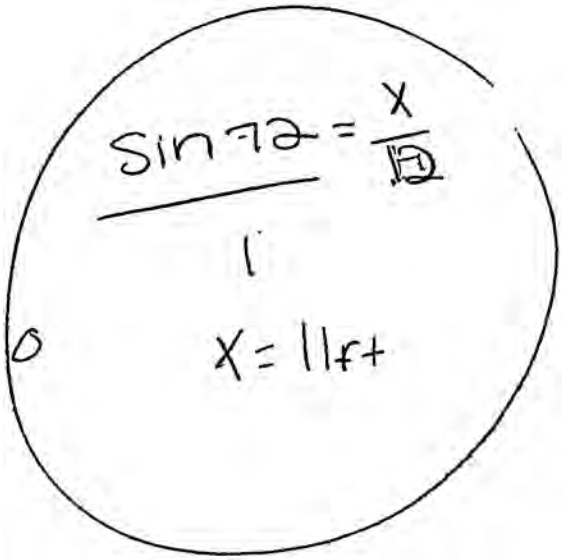
Score 1: The student made an error by using radian mode instead of degree mode in the calculator.

Question 31

31 As shown in the diagram below, a ladder 12 feet long leans against a wall and makes an angle of 72° with the ground.



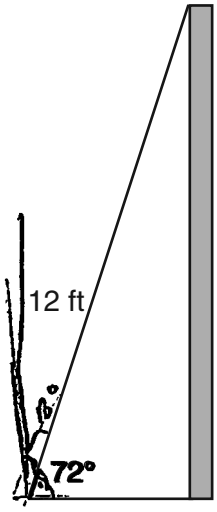
Find, to the *nearest tenth of a foot,* the distance from the wall to the base of the ladder.



Score 0: The student made two errors by finding the height of the wall and rounding to the nearest foot.

Question 31

31 As shown in the diagram below, a ladder 12 feet long leans against a wall and makes an angle of 72° with the ground.



Find, to the *nearest tenth of a foot,* the distance from the wall to the base of the ladder.

SOH CAH TOA

$\cos 72 = \frac{12}{x}$

Score 0: The student wrote the trigonometric ratio incorrectly and did not calculate the answer.

Question 32

32 Carla bought a dress at a sale for 20% off the original price. The sale price of the dress was $28.80. Find the original price of the dress, in dollars.

X = Original price

100% − 20% = 80%

So $0.80X = 28.80$

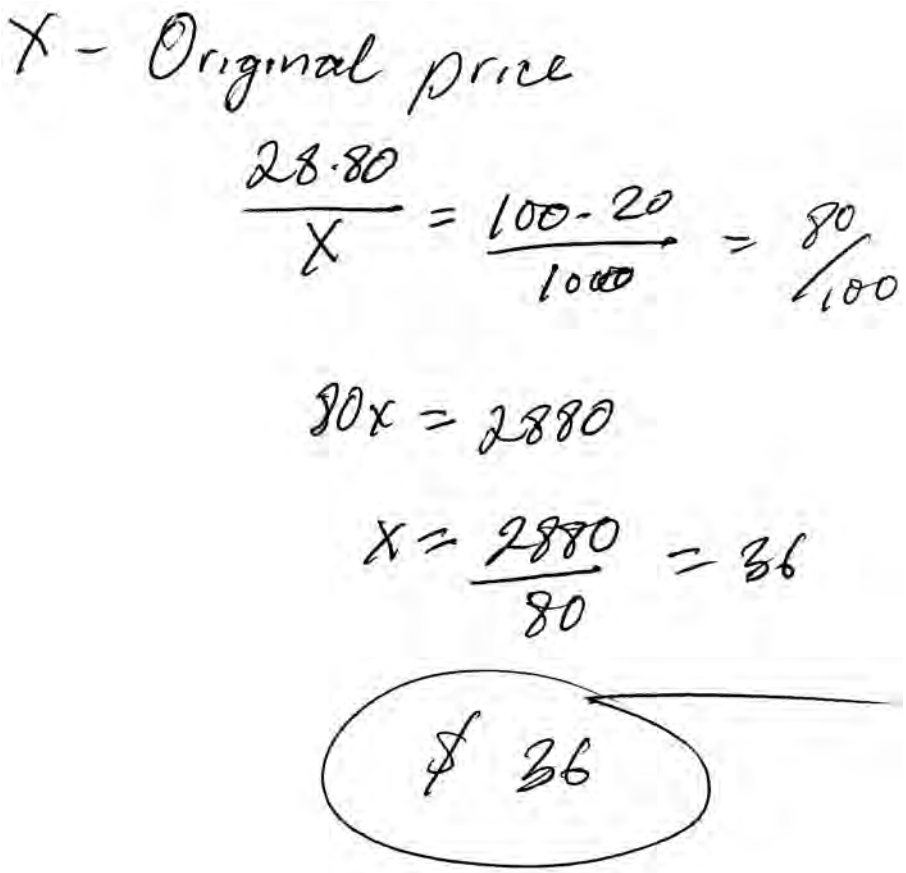
$x = \frac{28.80}{0.80} = 36$

Dress was $ 36.00

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

Question 32

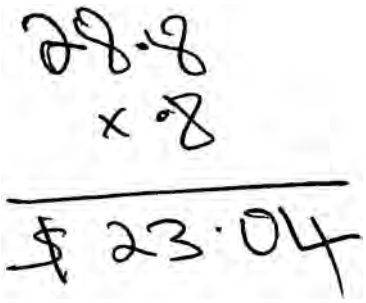
32 Carla bought a dress at a sale for 20% off the original price. The sale price of the dress was $28.80. Find the original price of the dress, in dollars.



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

Question 32

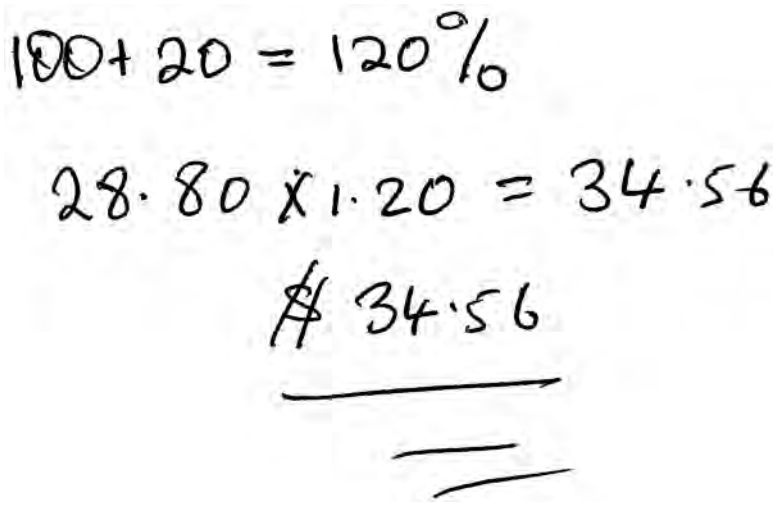
32 Carla bought a dress at a sale for 20% off the original price. The sale price of the dress was $28.80. Find the original price of the dress, in dollars.



Score: 1 The student made one conceptual error by taking 80% of $28.80.

Question 32

32 Carla bought a dress at a sale for 20% off the original price. The sale price of the dress was $28.80. Find the original price of the dress, in dollars.



Score: 1 The student made one conceptual error by taking 120% of $28.80.

Question 32

32 Carla bought a dress at a sale for 20% off the original price. The sale price of the dress was $28.80. Find the original price of the dress, in dollars.

$100x - 20x = 28.80$

$80x = 28.80$

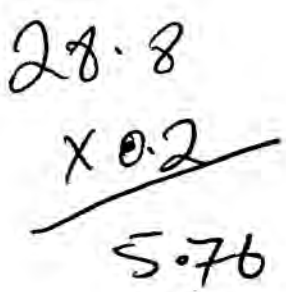
$x = \frac{28.80}{80} = 0.36$

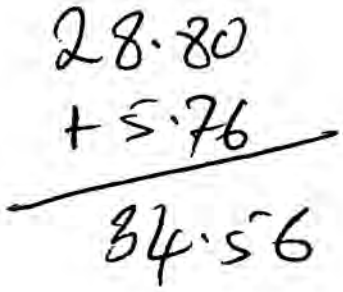
$\$ = 0.36$

Score: 1 The student made a conceptual error by not writing percentages as decimals.

Question 32

32 Carla bought a dress at a sale for 20% off the original price. The sale price of the dress was $28.80. Find the original price of the dress, in dollars.

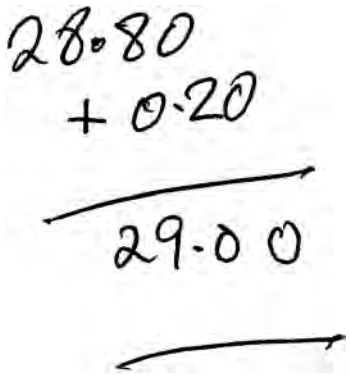




Score: 1 The student made one conceptual error by taking 120% of $28.80.

Question 32

32 Carla bought a dress at a sale for 20% off the original price. The sale price of the dress was $28.80. Find the original price of the dress, in dollars.



Score: 0 The student showed completely irrelevant work.

Question 32

32 Carla bought a dress at a sale for 20% off the original price. The sale price of the dress was $28.80. Find the original price of the dress, in dollars.

$\frac{28.8}{.2} = 144$

$144

Score: 0 The student showed completely irrelevant work.

Question 33

33 The probability that a student owns a dog is $\frac{1}{3}$. The probability that the same student owns a dog and a cat is $\frac{2}{15}$. Determine the probability that the student owns a cat.

prob. dog = $\frac{1}{3}$

prob. cat = x

$\frac{1}{3} \cdot x = \frac{2}{15}$

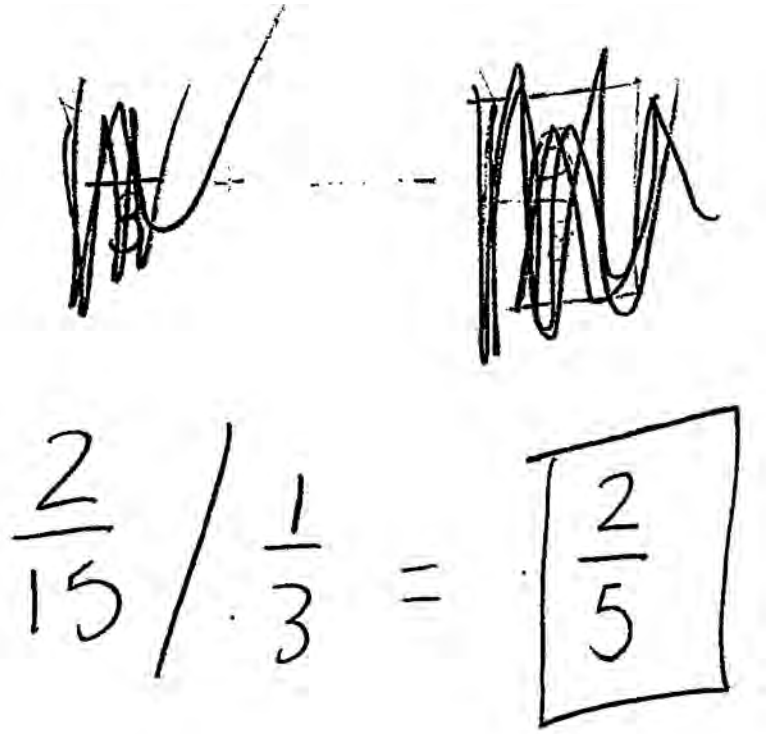
$\left(\frac{3}{1}\right)\frac{1}{3} \cdot x = \frac{2}{15}\left(\frac{3}{1}\right)$

$x = \frac{2}{5}$

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

Question 33

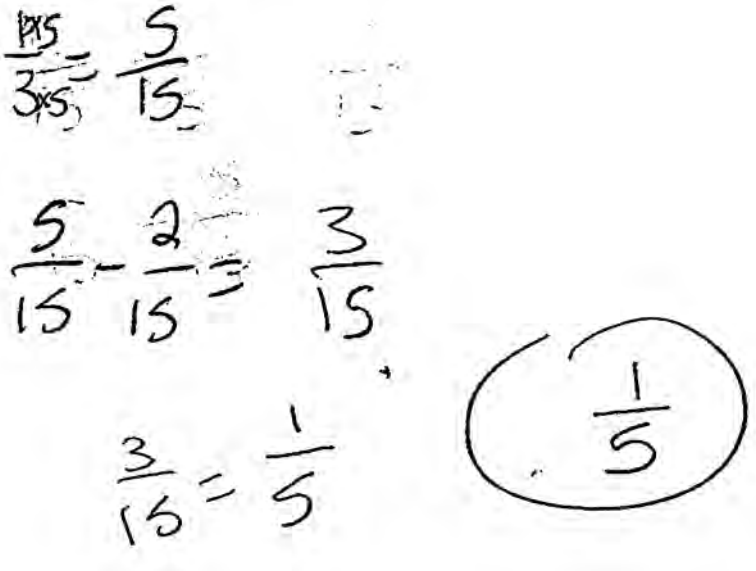
33 The probability that a student owns a dog is $\frac{1}{3}$. The probability that the same student owns a dog and a cat is $\frac{2}{15}$. Determine the probability that the student owns a cat.



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

Question 33

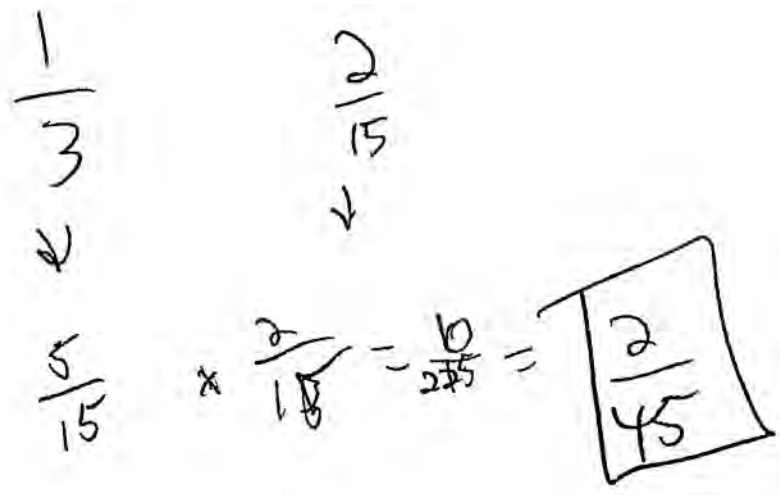
33 The probability that a student owns a dog is $\frac{1}{3}$. The probability that the same student owns a dog and a cat is $\frac{2}{15}$. Determine the probability that the student owns a cat.



Score: 1 The student made a conceptual error by subtracting rather than dividing.

Question 33

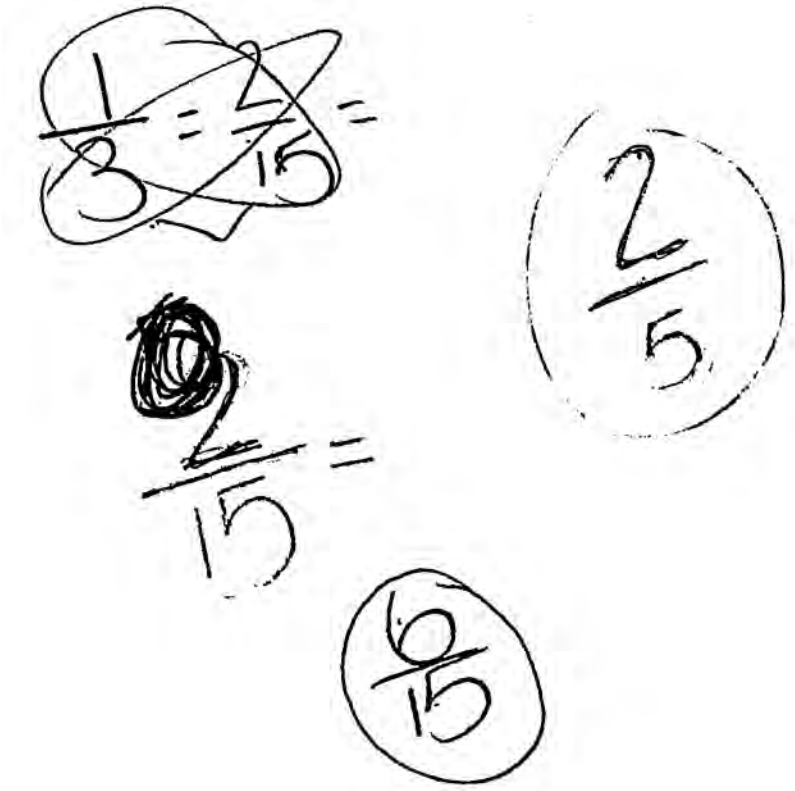
33 The probability that a student owns a dog is $\frac{1}{3}$. The probability that the same student owns a dog and a cat is $\frac{2}{15}$. Determine the probability that the student owns a cat.



Score: 1 The student made a conceptual error by multiplying instead of dividing.

Question 33

33 The probability that a student owns a dog is $\frac{1}{3}$. The probability that the same student owns a dog and a cat is $\frac{2}{15}$. Determine the probability that the student owns a cat.



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

Question 34

34 A DVD costs twice as much as a music CD. Jack buys 2 DVDs and 2 CDs and spends $45. Determine how much one CD costs, in dollars. [Only an algebraic solution can receive full credit.]

x = Cost of CD

$2x$ = Cost of DVD

$2(2x) + 2(x) = 45$

$4x + 2x = 6x = 45$

$x = 7.5$

Score: 3 The student has a complete and correct response.

Question 34

34 A DVD costs twice as much as a music CD. Jack buys 2 DVDs and 2 CDs and spends $45. Determine how much one CD costs, in dollars. [Only an algebraic solution can receive full credit.]

let x = Cost of music CD

let $2x$ = Cost of DVD

$2(2x) + 2x = 45$

$4x + 2x = 45$

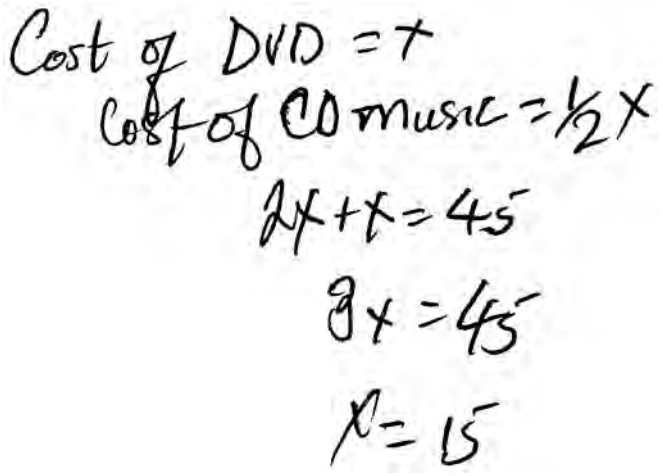
$\frac{6x}{6} = \frac{45}{6}$

$x = 7.50$

Score: 3 The student has a complete and correct response.

Question 34

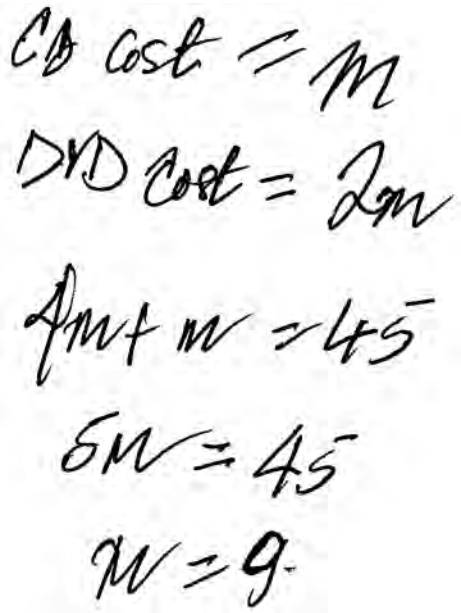
34 A DVD costs twice as much as a music CD. Jack buys 2 DVDs and 2 CDs and spends \$45. Determine how much one CD costs, in dollars. [Only an algebraic solution can receive full credit.]



Score: 2 The student showed a correct method, but calculated the cost of a DVD instead of a CD.

Question 34

34 A DVD costs twice as much as a music CD. Jack buys 2 DVDs and 2 CDs and spends $45. Determine how much one CD costs, in dollars. [Only an algebraic solution can receive full credit.]



Score: 2 The student made one error by not considering the purchase of two CDs.

Question 34

34 A DVD costs twice as much as a music CD. Jack buys 2 DVDs and 2 CDs and spends $45. Determine how much one CD costs, in dollars. [Only an algebraic solution can receive full credit.]

$2x + 2x = 45$

$4x = 45$

$x = 11.25$

$\$ = 11.25$

Score: 1 The student made one conceptual error in writing an equation where the cost of a DVD is equal to the cost of a CD.

Question 34

34 A DVD costs twice as much as a music CD. Jack buys 2 DVDs and 2 CDs and spends $45. Determine how much one CD costs, in dollars. [Only an algebraic solution can receive full credit.]

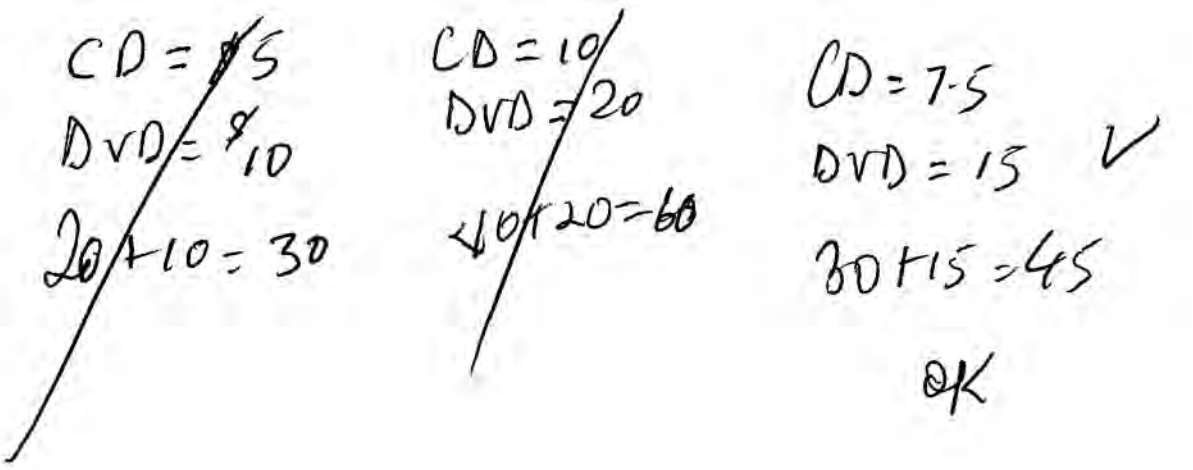
DVD = 2CD

2DVD + 2CD = 45

Score: 1 The student wrote a correct system of equations, but showed no further correct work.

Question 34

34 A DVD costs twice as much as a music CD. Jack buys 2 DVDs and 2 CDs and spends $45. Determine how much one CD costs, in dollars. [Only an algebraic solution can receive full credit.]



Score: 1 The student wrote the correct price of a CD, but used a method other than algebraic.

Question 34

34 A DVD costs twice as much as a music CD. Jack buys 2 DVDs and 2 CDs and spends $45. Determine how much one CD costs, in dollars. [Only an algebraic solution can receive full credit.]

Let x = cost of DVD
2x = cost of CD

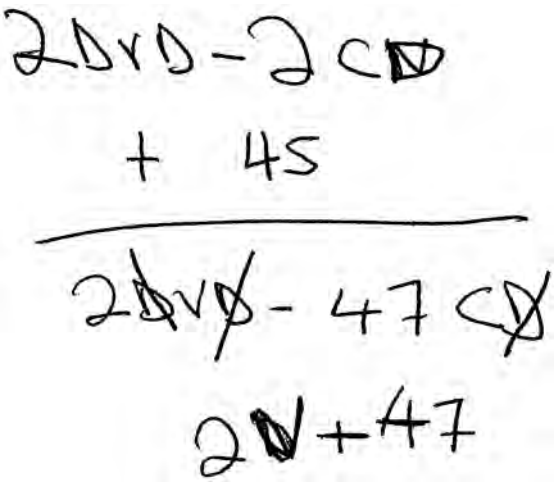
$2x + 4x = 45$
$6x = 45$
$x = 7.5$

Cost of CD = 2×7.5
$= 15$

Score: 1 The student made one conceptual error by assuming that the cost of a CD is twice the cost of a DVD.

Question 34

34 A DVD costs twice as much as a music CD. Jack buys 2 DVDs and 2 CDs and spends \$45. Determine how much one CD costs, in dollars. [Only an algebraic solution can receive full credit.]



Score: 0 The student showed completely incorrect work.

Question 34

34 A DVD costs twice as much as a music CD. Jack buys 2 DVDs and 2 CDs and spends $45. Determine how much one CD costs, in dollars. [Only an algebraic solution can receive full credit.]

$x = CD$

$2x = DVD$

$2x \cdot 4x = 45$

$2x = 45$

$x = 45/8 = 5.625$

Score: 0 The student made one conceptual error setting up the equation and a second error when solving the equation.

Question 35

35 Noj has the following test scores:

76, 84, 69, 74, 91

His teacher will allow him to retake the test on which he scored lowest. Noj wants an average of *at least* 82. Determine the *least* number of additional points Noj must score on the retest.

Average right now = 76 + 84 + 69 + 74 + 91 = 394

394 ÷ 5 = 78.8

82 x 5 = 410

410 - 76 - 84 - 74 - 91 = 85

85 points - 69 = 16

16 points more

Score: 3 The student has a complete and correct response.

Question 35

35 Noj has the following test scores:

76, 84, 69, 74, 91

His teacher will allow him to retake the test on which he scored lowest. Noj wants an average of *at least* 82. Determine the *least* number of additional points Noj must score on the retest.

$\frac{76+84+74+91+69+x}{5} \geq 82$

$\left(\frac{5}{1}\right)\frac{394+x}{5} \geq 82\left(\frac{5}{1}\right)$

$394+x \geq 410$

$-394 \quad -394$

$x \geq 16$

least # pts = 16

(lowest 69+x)

$\frac{76+84+74+91+x}{5} \geq 82$

$\left(\frac{5}{1}\right)\frac{325+x}{5} \geq 82\left(\frac{5}{1}\right)$

$325+x \geq 410$

$-325 \quad -325$

$x \geq 85$ (new test grade needed)

$85 - 69$

16 more pts needed

Score: 3 The student has a complete and correct response.

Question 35

35 Noj has the following test scores:

76, 84, 69, 74, 91

His teacher will allow him to retake the test on which he scored lowest. Noj wants an average of *at least* 82. Determine the *least* number of additional points Noj must score on the retest.

$76+84+67+74+91=392$

$392 \div 5 = 78.4$

$82 \cdot 5 = 410$

$76+84+x+74+91=410$

$x = 85$

$85-67=\boxed{18}$

Score: 2 The student made a transcription error by writing 67 instead of 69.

Question 35

35 Noj has the following test scores:

76, 84, 69, 74, 91

His teacher will allow him to retake the test on which he scored lowest. Noj wants an average of *at least* 82. Determine the *least* number of additional points Noj must score on the retest.

$$\frac{76+84+69+74+91}{5} = 78.8$$

69 = lowest score

$$\frac{76+84+X+74+91}{5} = 82$$

$X = 85$

must score 85 or higher

85

Score: 2 The student showed work to find the new grade of 85, but did not find the number of additional points needed.

Question 35

35 Noj has the following test scores:

76, 84, 69, 74, 91

His teacher will allow him to retake the test on which he scored lowest. Noj wants an average of *at least* 82. Determine the *least* number of additional points Noj must score on the retest.

69, 76, 74, 84, 91

69 + 76 + 74 + 84 + 91 = 394

394 ÷ 5 = 78.8

82 · 5 = 410

x + 76 + 74 + 84 + 91 = 410

x = 85

410 ÷ 5 = 82

82
- 69

13

means that Noj must score at least 13 more point to get an average of at least 82.

Score: 2 The student showed work to find the new grade of 85, but showed no futher correct work.

Question 35

35 Noj has the following test scores:

76, 84, 69, 74, 91

His teacher will allow him to retake the test on which he scored lowest. Noj wants an average of *at least* 82. Determine the *least* number of additional points Noj must score on the retest.

$$\frac{76+84+69+74+91}{5} = 78.8$$

$$82 - 78.8 = 3.2$$

Score: 1 The student made a conceptual error by subtracting the current average from the target average.

Question 35

35 Noj has the following test scores:

76, 84, 69, 74, 91

His teacher will allow him to retake the test on which he scored lowest. Noj wants an average of *at least* 82. Determine the *least* number of additional points Noj must score on the retest.

$76+84+69+74+91 = \frac{394}{5}$

78.8 average

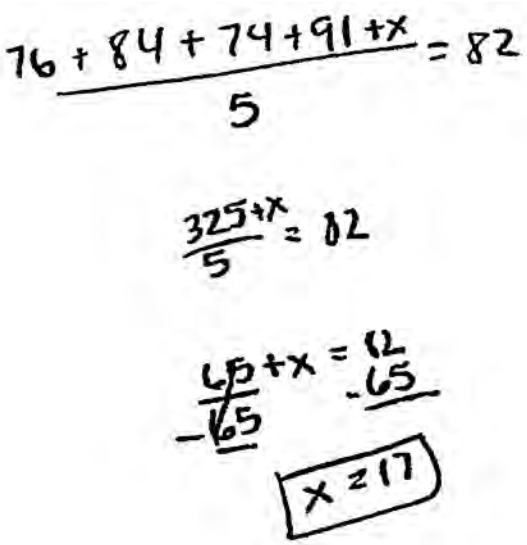
Score: 0 The student only found the average of the original test scores, which is insufficient to answer the question.

Question 35

35 Noj has the following test scores:

76, 84, 69, 74, 91

His teacher will allow him to retake the test on which he scored lowest. Noj wants an average of *at least* 82. Determine the *least* number of additional points Noj must score on the retest.



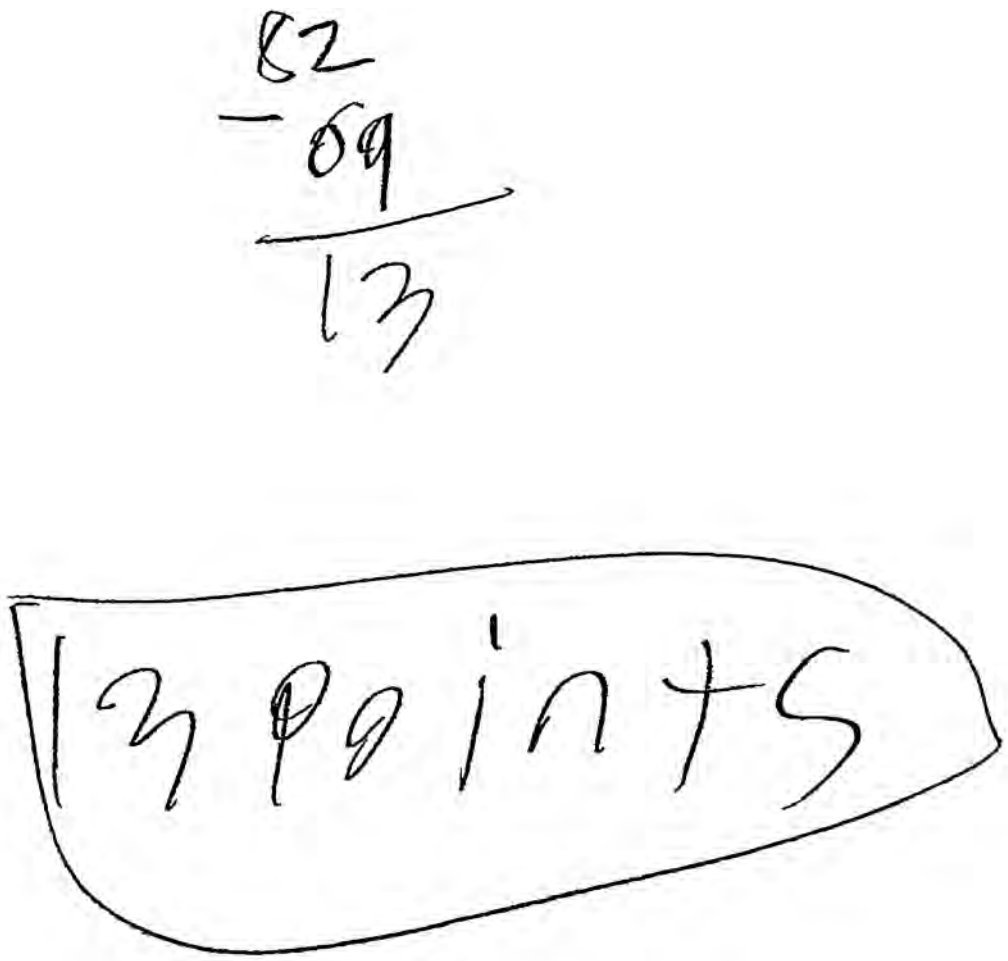
Score: 0 The student made a conceptual error when dividing 325 + x by 5. Then made a second conceptual error by using the new test score as the additional points needed.

Question 35

35 Noj has the following test scores:

76, 84, 69, 74, 91

His teacher will allow him to retake the test on which he scored lowest. Noj wants an average of *at least* 82. Determine the *least* number of additional points Noj must score on the retest.



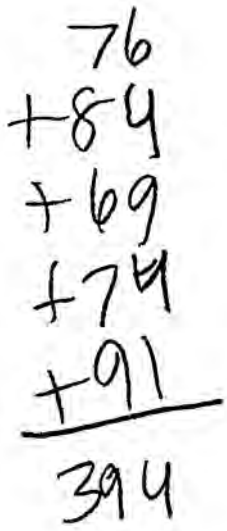
Score: 0 The student showed irrelevant work.

Question 35

35 Noj has the following test scores:

76, 84, 69, 74, 91

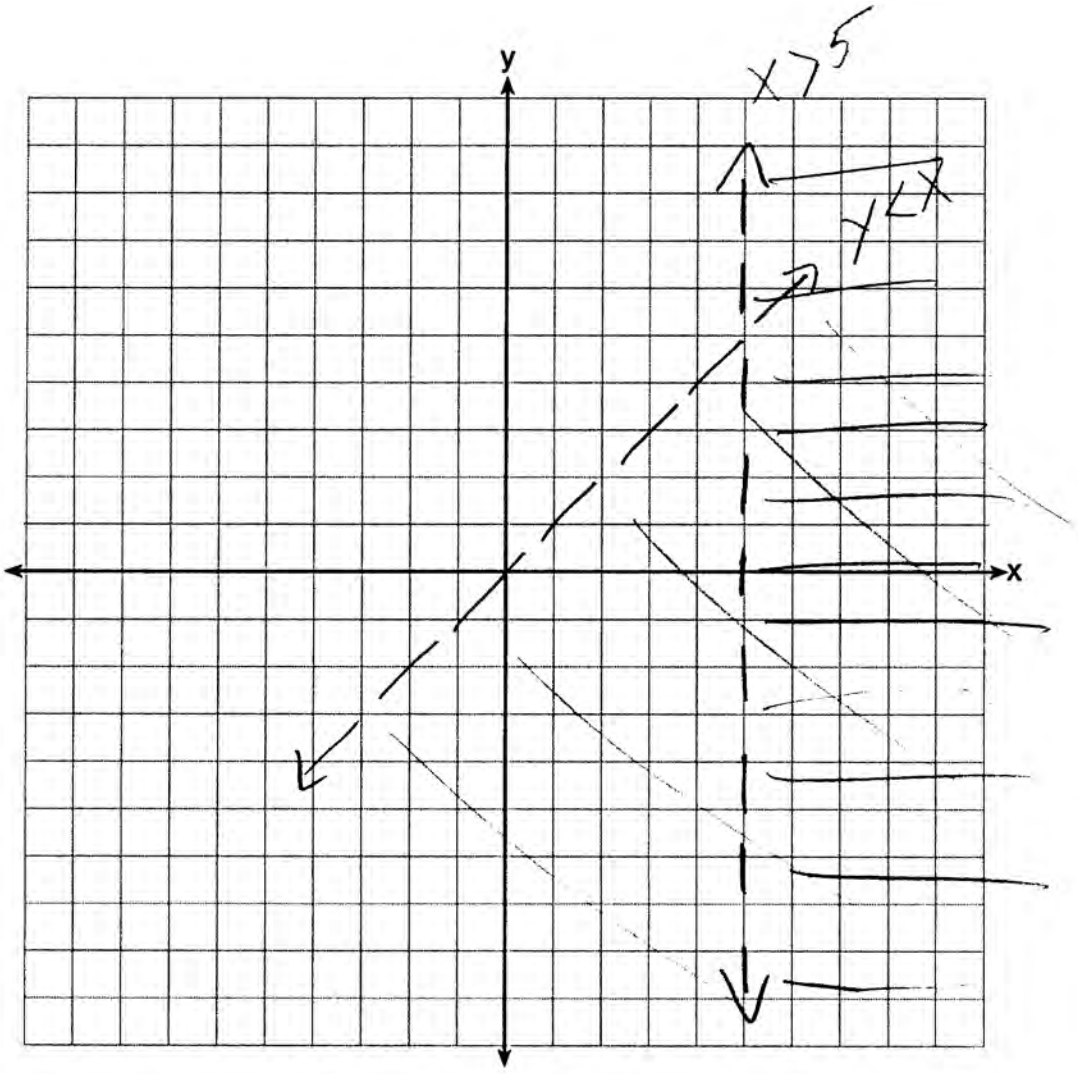
His teacher will allow him to retake the test on which he scored lowest. Noj wants an average of *at least* 82. Determine the *least* number of additional points Noj must score on the retest.



Score: 0 The correct work the student showed is insufficient.

Question 36

36 Graph $y < x$ and $x > 5$ on the axes below.



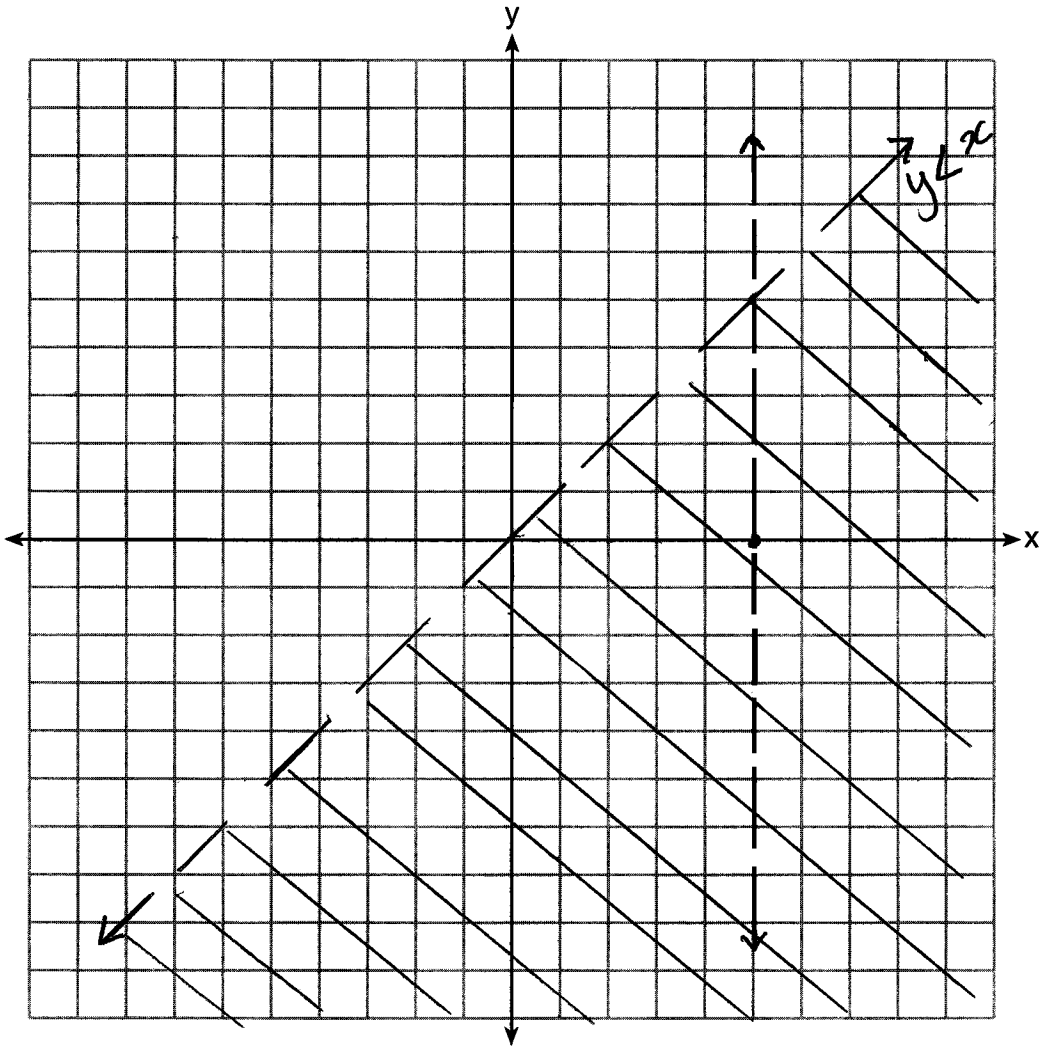
State the coordinates of a point in the solution set.

(7, 1)

Score: 3 The student has a complete and correct response.

Question 36

36 Graph $y < x$ and $x > 5$ on the axes below.

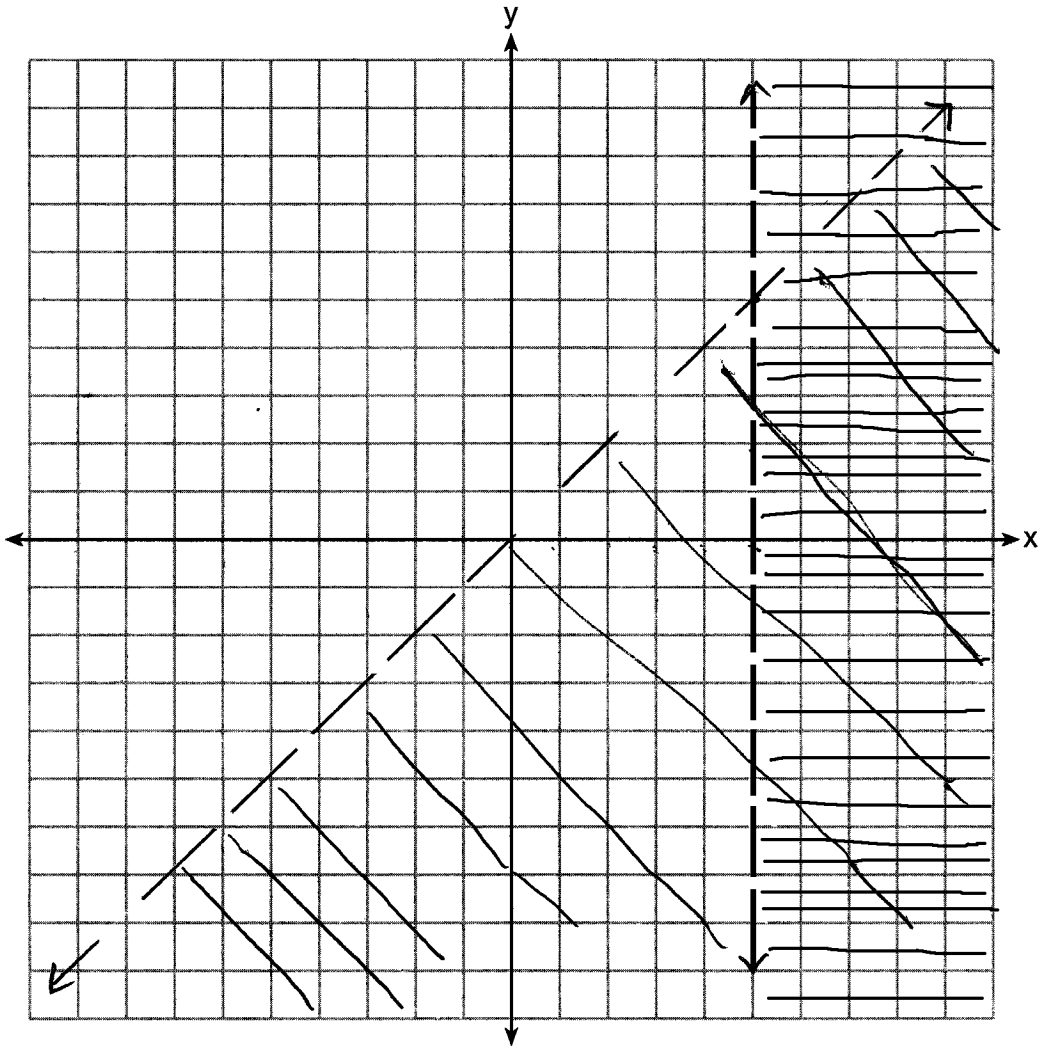


State the coordinates of a point in the solution set.

Score: 2 The student made one graphing error by not shading $x > 5$.

Question 36

36 Graph $y < x$ and $x > 5$ on the axes below.



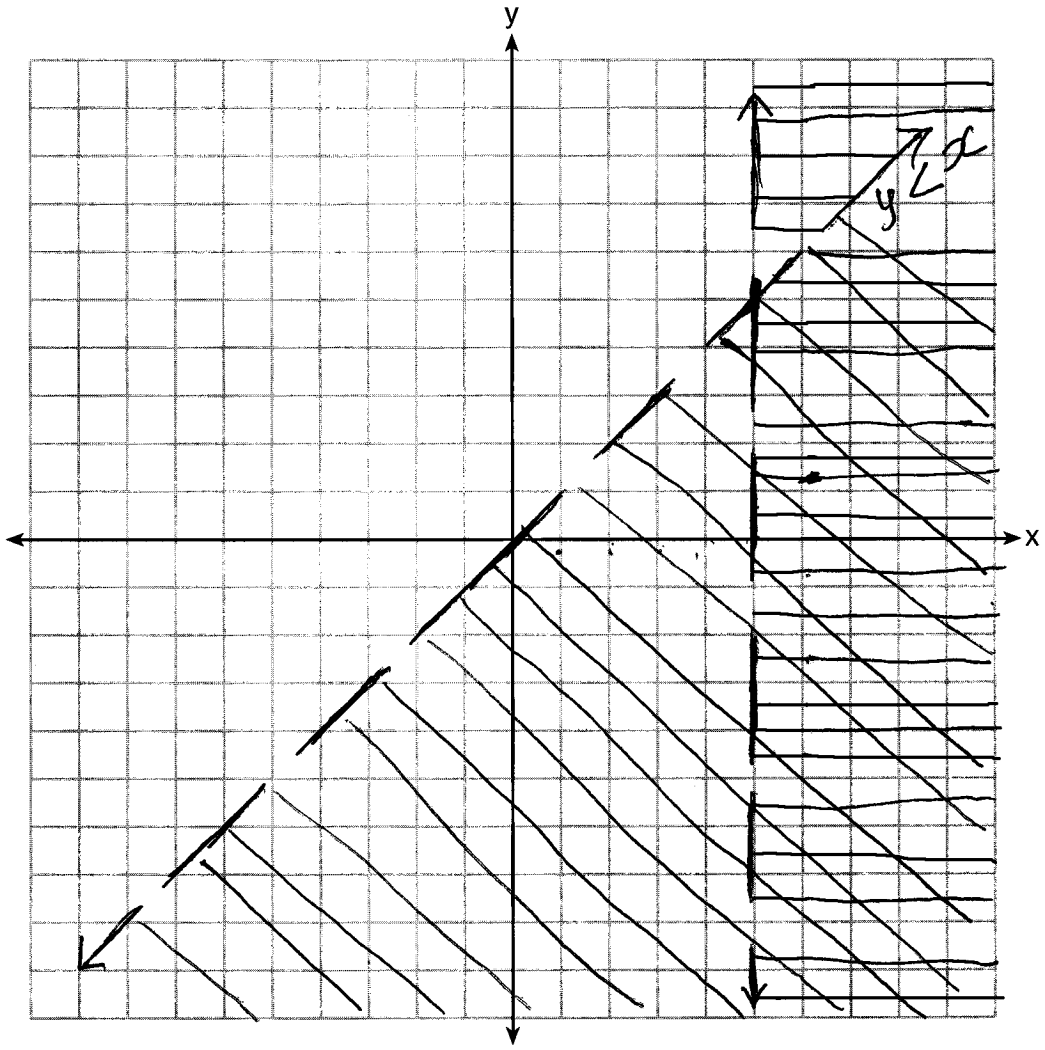
(6, 3)

State the coordinates of a point in the solution set.

Score: 2 The student graphed both inequalities correctly, but did not label at least one. The coordinates of a point within the solution set are stated.

Question 36

36 Graph $y < x$ and $x > 5$ on the axes below.

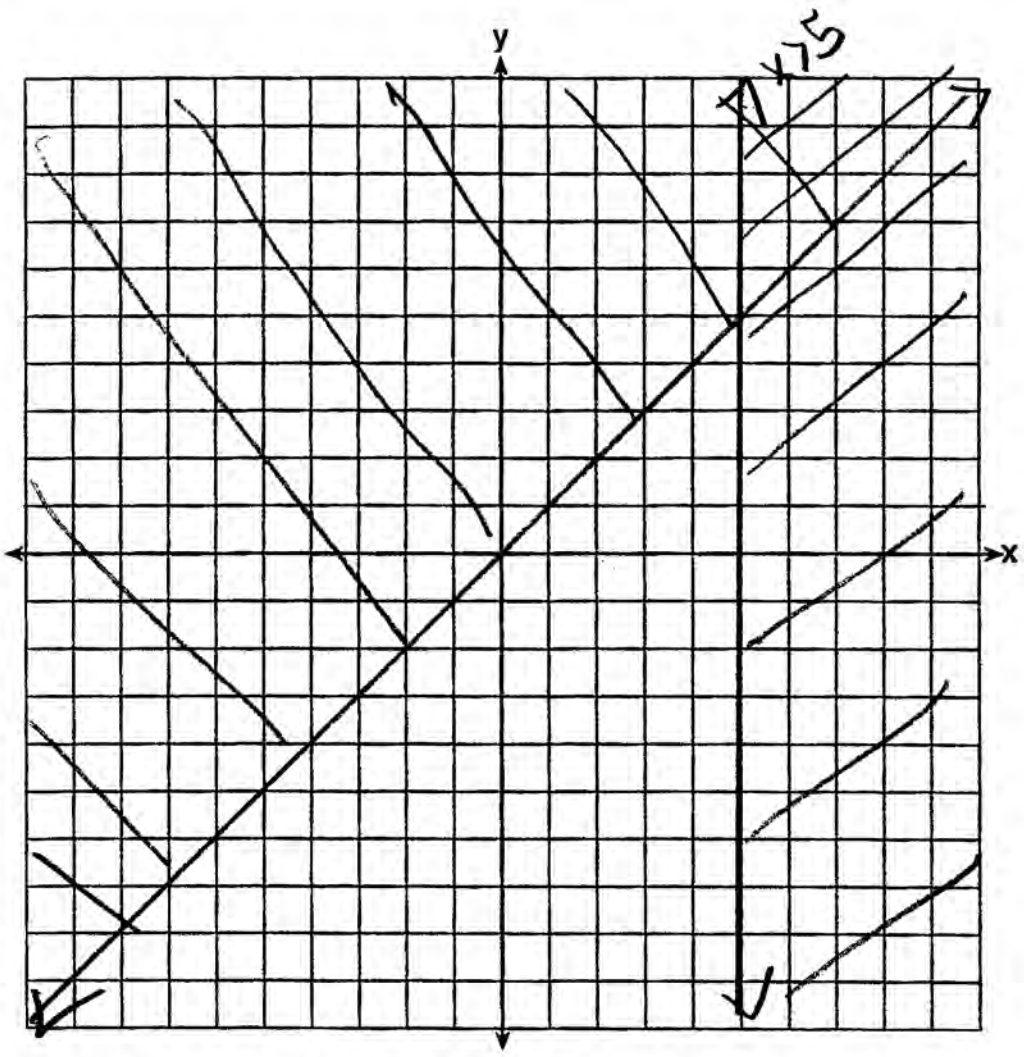


State the coordinates of a point in the solution set.

Score: 2 The student drew both graphs correctly and labeled one, but did not state a point in the solution set.

Question 36

36 Graph $y < x$ and $x > 5$ on the axes below.

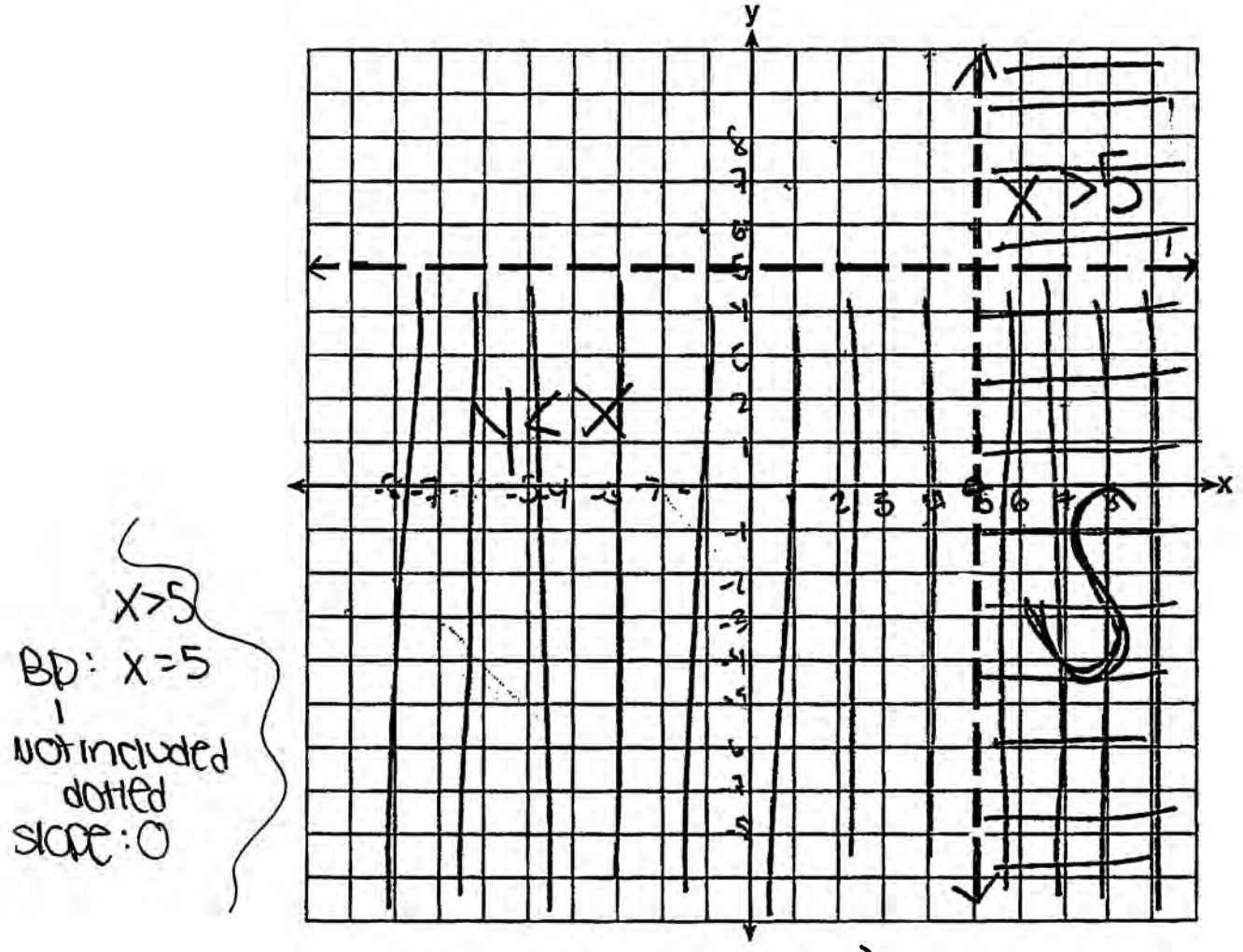


State the coordinates of a point in the solution set. (7, 9)

Score: 1 The student made two graphing errors, graphing solid boundary lines and shading $y < x$ incorrectly, but stated appropriate coordinates.

Question 36

36 Graph $y < x$ and $x > 5$ on the axes below.

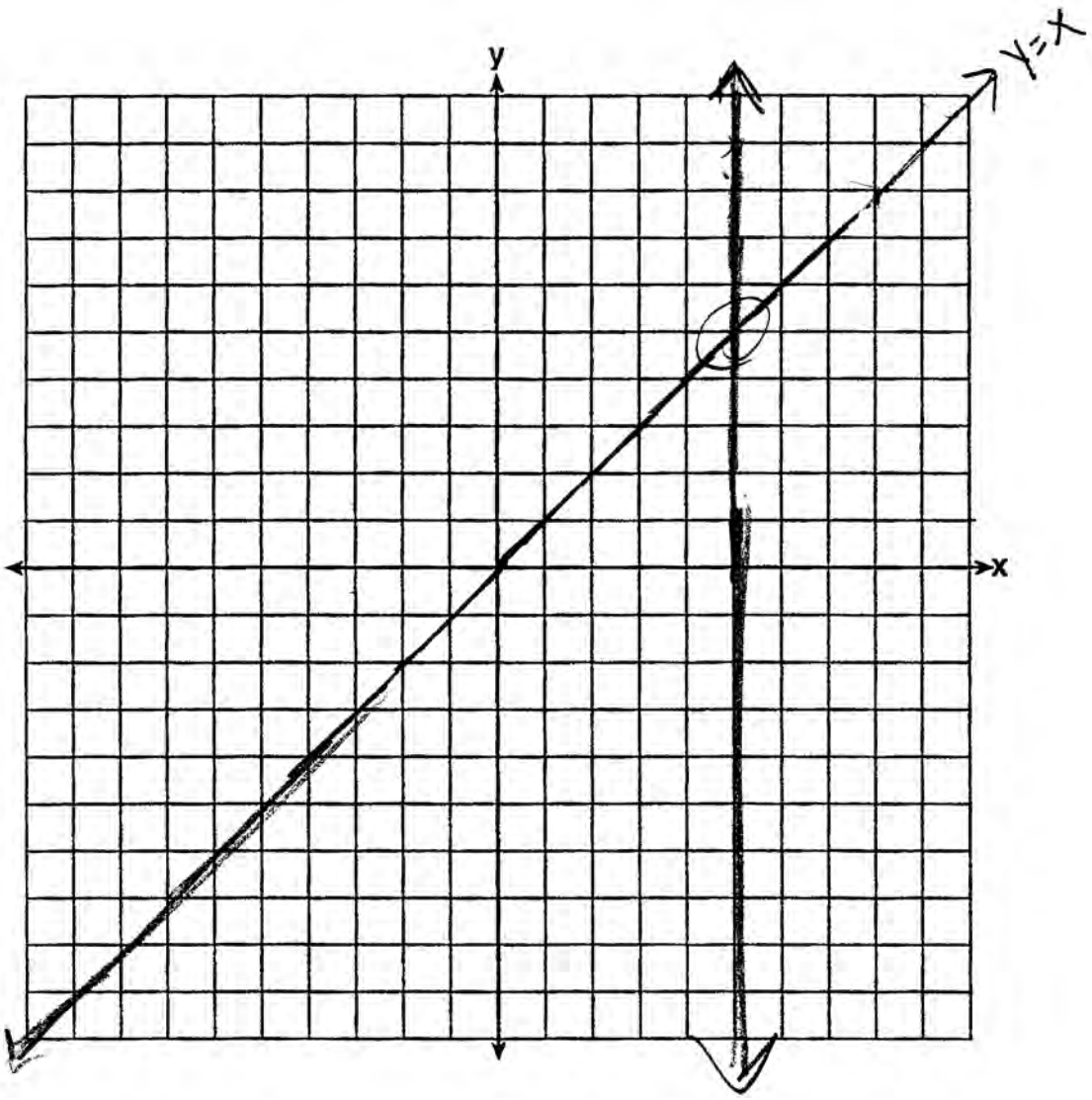


State the coordinates of a point in the solution set. (7,1) is in the solution set.

Score: 1 The student made one conceptual error by graphing $y < 5$ instead of $y < x$.

Question 36

36 Graph $y < x$ and $x > 5$ on the axes below.

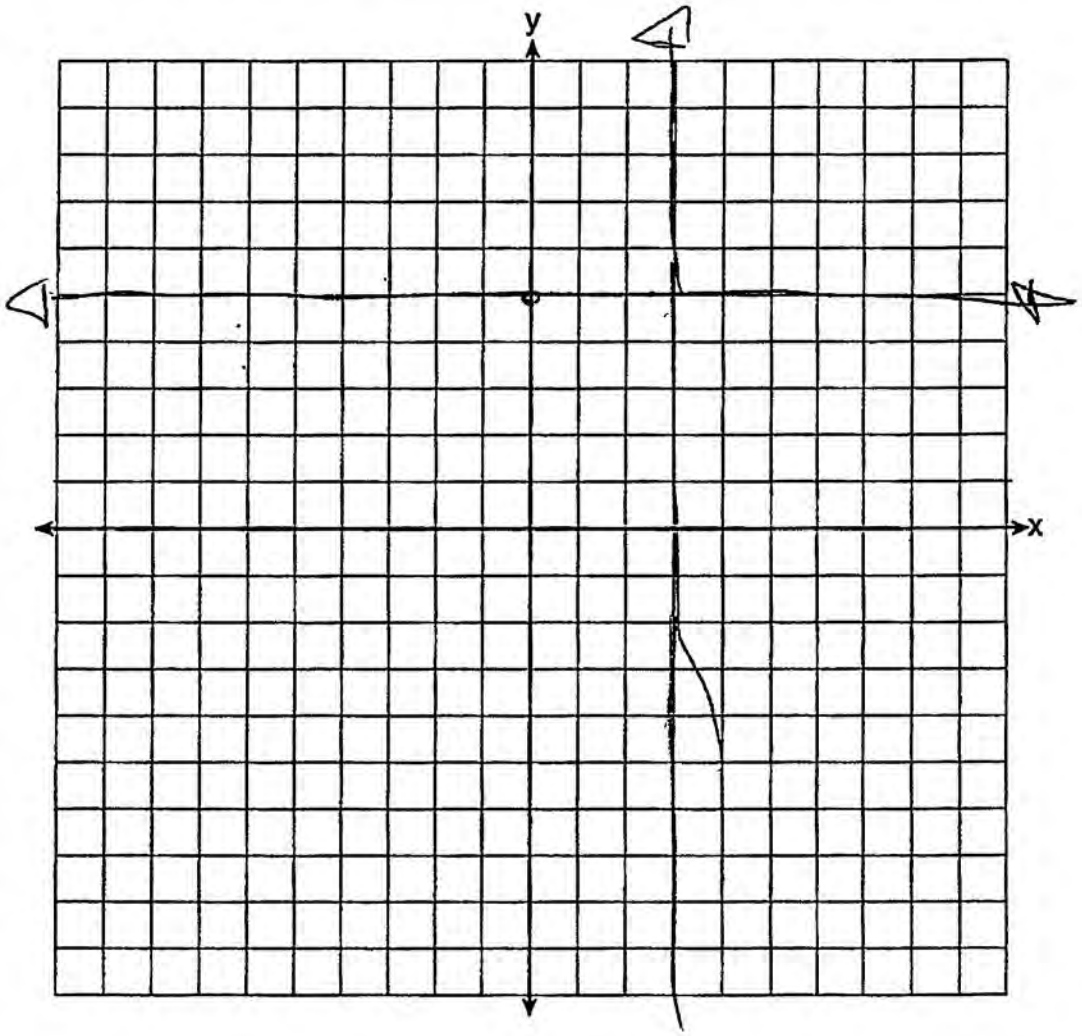


State the coordinates of a point in the solution set. (5, 5)

Score: 1 The student made a conceptual error by graphing equations instead of inequalities. The correct point of intersection was stated.

Question 36

36 Graph $y < x$ and $x > 5$ on the axes below.



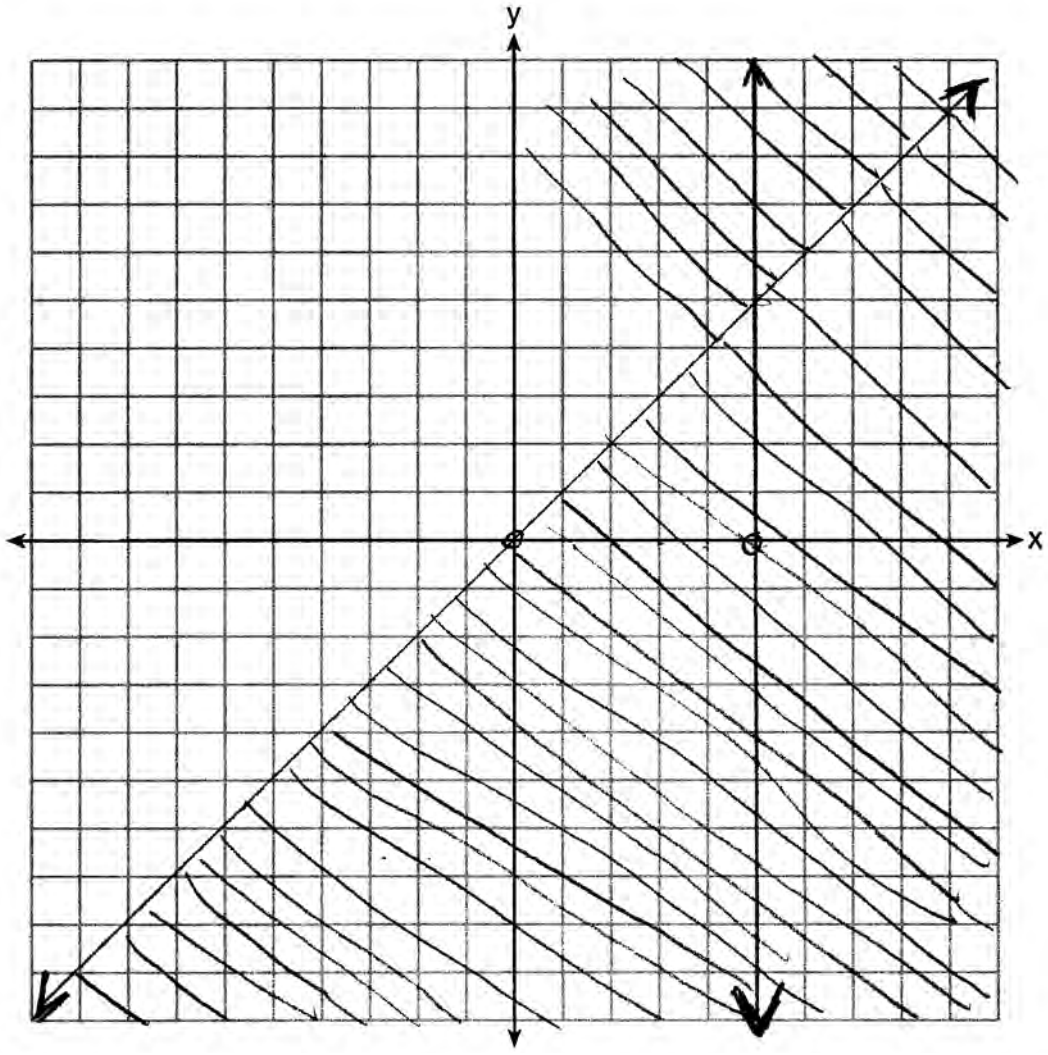
State the coordinates of a point in the solution set.

(3,5)

Score: 0 The student has a completely incorrect response.

Question 36

36 Graph $y < x$ and $x > 5$ on the axes below.

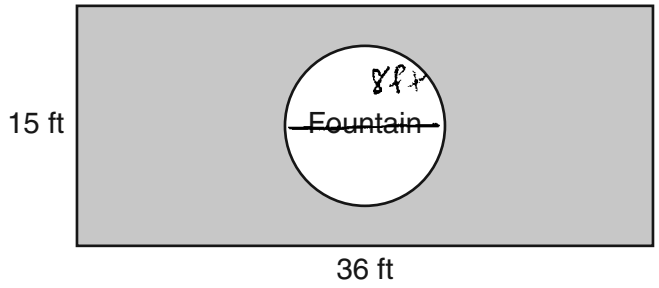


State the coordinates of a point in the solution set. (2, -5)

Score: 0 The student made a conceptional error graphing $y < x$ and graphed $x=5$.

Question 37

37 The Rock Solid Concrete Company has been asked to pave a rectangular area surrounding a circular fountain with a diameter of 8 feet, as shown in the diagram.



Find the area, to the *nearest square foot*, that must be paved.

$A = l \cdot w$
$A = 36 \cdot 15$
$A = 540$

$A = \pi r^2$
$A = \pi (4)^2$
$A = 50.26548$

$540 - 16\pi$

$A = 489.734$
$A = 489.8$
$A = 490$ sq. ft.

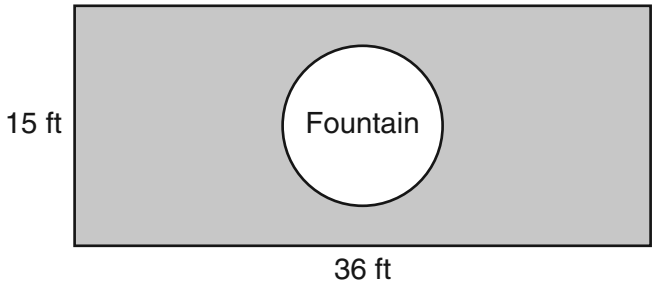
Find the cost, *in dollars*, of paving the area if the Rock Solid Concrete Company charges $8.95 per square foot.

$$\begin{array}{r} 490 \\ \times\ 8.95 \\ \hline \$\ 4385.5 \end{array}$$

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

Question 37

37 The Rock Solid Concrete Company has been asked to pave a rectangular area surrounding a circular fountain with a diameter of 8 feet, as shown in the diagram.



Find the area, to the *nearest square foot*, that must be paved.

Rectangle – fountain

$36 \cdot 15 - 16\pi = 489.7345175$

Area = 490

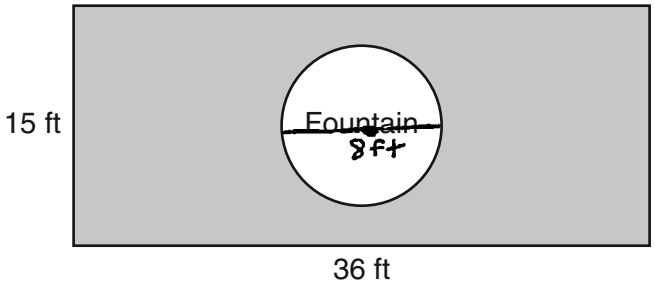
Find the cost, *in dollars*, of paving the area if the Rock Solid Concrete Company charges $8.95 per square foot.

$490 \cdot \$8.95 = \$4385.50$

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

Question 37

37 The Rock Solid Concrete Company has been asked to pave a rectangular area surrounding a circular fountain with a diameter of 8 feet, as shown in the diagram.



Find the area, to the *nearest square foot*, that must be paved.

$A = lw$
$= 36 \cdot 15$
$= 540 ft^2$

$A = \pi r^2$
$= \pi(4^2)$
$= 16\pi ft$
$= 50.26548246$

$540 - 50.26548246$
489.7345175

$490 ft^2$

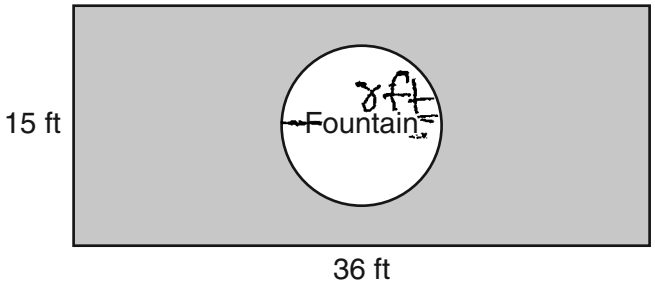
Find the cost, *in dollars*, of paving the area if the Rock Solid Concrete Company charges $8.95 per square foot.

$490(8.95) = \$4386$

Score: 3 The student rounded the cost to the nearest dollar.

Question 37

37 The Rock Solid Concrete Company has been asked to pave a rectangular area surrounding a circular fountain with a diameter of 8 feet, as shown in the diagram.



Find the area, to the *nearest square foot*, that must be paved.

$(15)(36)=540$

$A=\pi r^2$

$A=\pi 4^2$

$A=\pi 16$

$A=50.26$

$540-50.26=489.74ft^2$

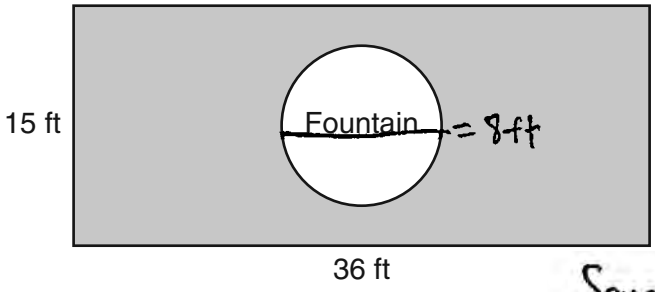
Find the cost, *in dollars*, of paving the area if the Rock Solid Concrete Company charges $8.95 per square foot.

$(\$8.95)(489.74)=\$4383.173=\$4383.17$

Score: 3 The student did not round to the nearest square foot.

Question 37

37 The Rock Solid Concrete Company has been asked to pave a rectangular area surrounding a circular fountain with a diameter of 8 feet, as shown in the diagram.



Square (A) = 540 ft²

Find the area, to the *nearest square foot*, that must be paved.

490 ft²

$A_O = \pi(4)^2$

$A_O = 16\pi$

$A_O = 50$

540 − 50 = 490

Find the cost, *in dollars*, of paving the area if the Rock Solid Concrete Company charges $8.95 per square foot.

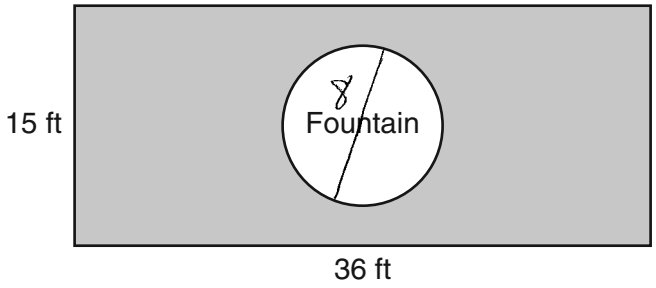
8.95 = 1ft

$\frac{490}{8.95} = \$54.75$

Score: 3 The student correctly found 490, but showed no further correct work.

Question 37

37 The Rock Solid Concrete Company has been asked to pave a rectangular area surrounding a circular fountain with a diameter of 8 feet, as shown in the diagram.



Find the area, to the *nearest square foot*, that must be paved.

$A = \pi \cdot 8^2$

$A = 201$

$A = 15 \cdot 36$

$A = 540$

$540 - 201 = 339$

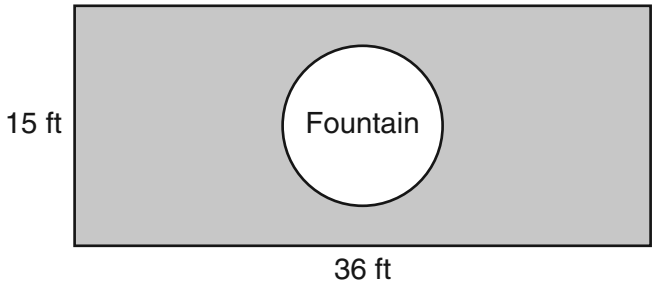
Find the cost, *in dollars*, of paving the area if the Rock Solid Concrete Company charges $8.95 per square foot.

$339 \cdot 8.95 = \$3034.05$

Score: 2 The student made a conceptual error by using 8, the diameter, for the radius.

Question 37

37 The Rock Solid Concrete Company has been asked to pave a rectangular area surrounding a circular fountain with a diameter of 8 feet, as shown in the diagram.



Find the area, to the *nearest square foot*, that must be paved.

36×15
540

$4^2\pi$
50.3

540
$- \ 50.3$
490.3

Find the cost, *in dollars*, of paving the area if the Rock Solid Concrete Company charges $8.95 per square foot.

490.3×8.95

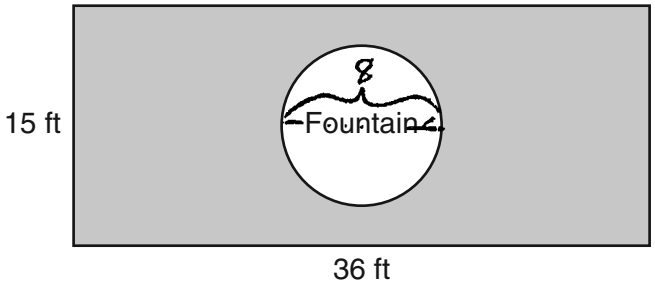
4388.185

$\$4388.19$

Score: 2 The student made a rounding error and a computational error.

Question 37

37 The Rock Solid Concrete Company has been asked to pave a rectangular area surrounding a circular fountain with a diameter of 8 feet, as shown in the diagram.



Find the area, to the *nearest square foot*, that must be paved.

$A = l \cdot w$

$A = 36\text{ft} \cdot 15\text{ft}$

$A = 540$

$A = 515$

$A = \frac{\pi r^2}{2}$ $\frac{A = \pi(4)^2}{2}$ $A = \frac{16\pi}{2}$ $A = 8\pi = 25$

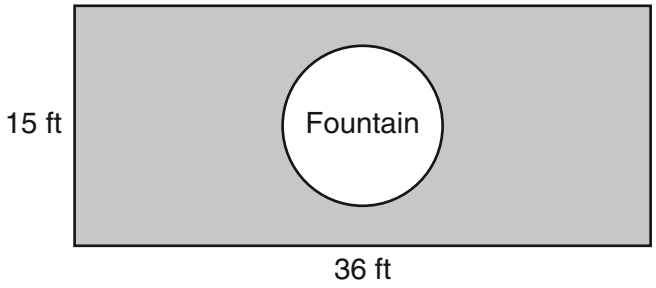
Find the cost, *in dollars*, of paving the area if the Rock Solid Concrete Company charges $8.95 per square foot.

515
× 8.95
$4609

Score: 1 The student made a conceptual error by using the wrong formula for the area of a circle. The student rounded the cost to the nearest dollar.

Question 37

37 The Rock Solid Concrete Company has been asked to pave a rectangular area surrounding a circular fountain with a diameter of 8 feet, as shown in the diagram.



Find the area, to the *nearest square foot*, that must be paved.

Area shaded = A□ − A⊙

$= 36 \times 15 - \frac{\pi r^2}{2}$

$= 540 - \frac{\pi(4)^2}{2}$

Area shaded $= 540 - 8\pi$

$= 540 - 8(3.14)$

$= 540 - 25.12$

$= 514.88$

Nearest square foot = 514.9

Find the cost, *in dollars*, of paving the area if the Rock Solid Concrete Company charges $8.95 per square foot.

$36 \times 15 = 540$

$540 \times 8.95 = 4833$

Answer: $4,833.00

Score: 0 The student used an incorrect formula to find the area of the circle, and did not round to the nearest square foot. The student used the area of the rectangle to find the cost.

Question 38

38 Solve the following system of equations algebraically:

$$y = x^2 + 5x - 17$$
$$y = x - 5$$

$x - 5 = x^2 + 5x - 17$

$0 = x^2 + 4x - 12$

$0 = (x+6)(x-2)$

$x = -6$

$x = 2$

$y = x - 5$

$y = -6 - 5 = -11$

$(-6, -11)$

$y = 2 - 5 = -3$

$(2, -3)$

$(2, -3)$ and $(-6, -11)$

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

Question 38

38 Solve the following system of equations algebraically:

$$y = x^2 + 5x - 17$$
$$y = x - 5$$

$x - 5 = x^2 + 5x - 17$

$-x \quad\quad -x$

$-5 = x^2 + 4x - 17$

$+5 \quad\quad +5$

$0 = x^2 + 4x - 12$

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

$a = 1$
$b = 4$
$c = -12$

$x = \dfrac{-4 \pm \sqrt{(4)^2 - 4(1)(-12)}}{2(1)}$

$x = \dfrac{-4 \pm \sqrt{16 + 48}}{2}$

$x = \dfrac{-4 \pm \sqrt{64}}{2}$

$x = \dfrac{-4 \pm 8}{2}$

$x = \dfrac{4}{2} = 2$

$y = x - 5$
$y = 2 - 5$
$y = -3$

$x = \dfrac{-12}{2} = -6$

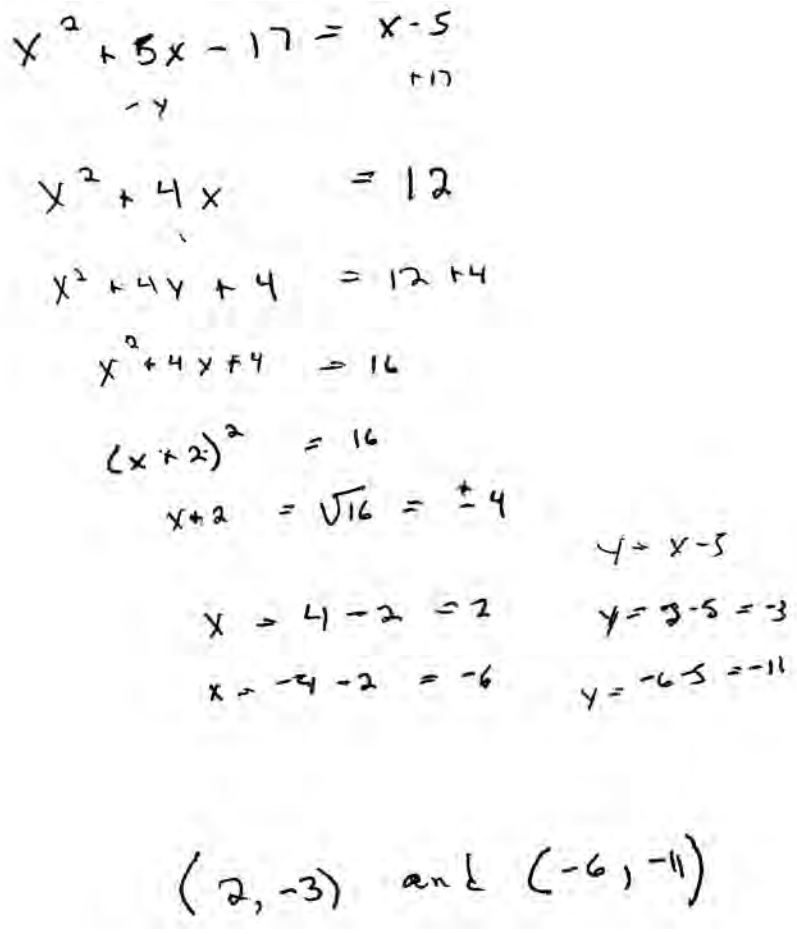
$y = x - 5$
$y = -6 - 5$
$y = -11$

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

Question 38

38 Solve the following system of equations algebraically:

$$y = x^2 + 5x - 17$$
$$y = x - 5$$

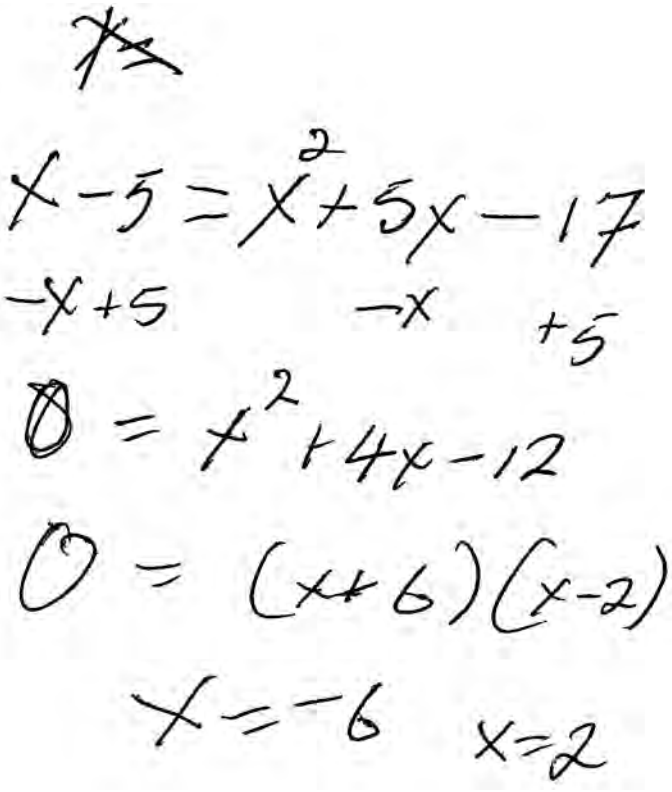


Score: 4 The student has a complete and correct response.

Question 38

38 Solve the following system of equations algebraically:

$$y = x^2 + 5x - 17$$
$$y = x - 5$$



Score: 3 The student showed correct work, but only found the correct values of x.

Question 38

38 Solve the following system of equations algebraically:

$$y = x^2 + 5x - 17$$
$$y = x - 5$$

$x^2 + 5x - 17 = x - 5$

$x^2 + 4x - 12 = 0$

$(x+6)(x-2) = 0$

$x = -6$

$x = 2$

$y = x + 5$

$y = -6 + 5 = -1$

$y = 2 + 5 = 7$

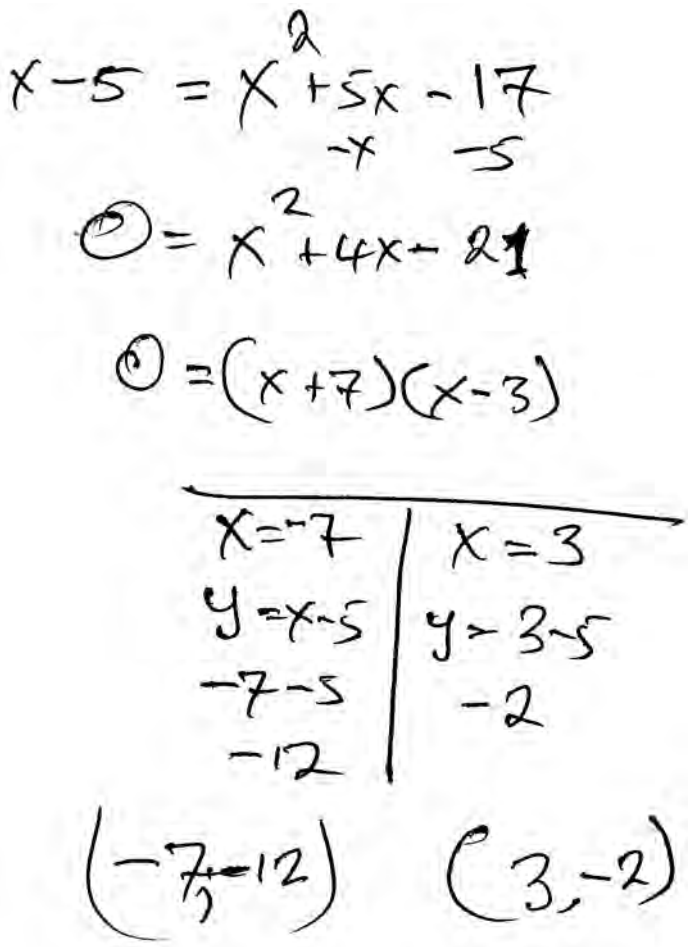
So $x = -6, y = -1$ or $x = 2, y = 7$

Score: 3 The student found correct values of x, but used an incorrect equation to find the values of y.

Question 38

38 Solve the following system of equations algebraically:

$$y = x^2 + 5x - 17$$
$$y = x - 5$$



Score: 2 The student added −5 instead of +5 to both sides, and added −17 and −5 incorrectly.

Question 38

38 Solve the following system of equations algebraically:

$$y = x^2 + 5x - 17$$
$$y = x - 5$$

(2, -3) (-6, -11)

I used my calculator.

X	Y_1	Y_2
-6	-11	-11
2	-3	-3

Score: 2 The student used a method other than algebraic.

Question 38

38 Solve the following system of equations algebraically:

$$y = x^2 + 5x - 17$$
$$y = x - 5$$

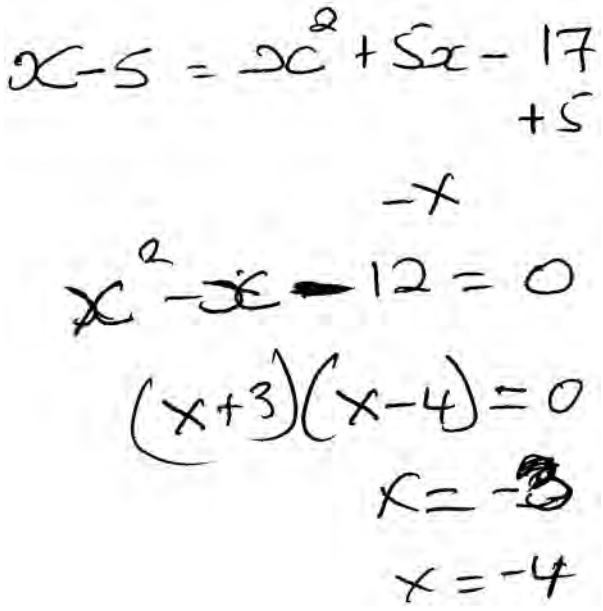
(2, -3) (-6, -11)

Score: 1 The student wrote correct points, but showed no work.

Question 38

38 Solve the following system of equations algebraically:

$$y = x^2 + 5x - 17$$
$$y = x - 5$$



Score: 1 The student wrote $x^2 + 5x - 17 = x - 5$, but showed no further correct work.

Question 38

38 Solve the following system of equations algebraically:

$$y = x^2 + 5x - 17$$
$$y = x - 5$$

$x = -6$

Score: 0 The student showed only one correct value of x, but showed no further correct work.

Question 39

39 Perform the indicated operations and express the result in simplest form:

$$\left(\frac{10x^2y}{x^2+xy}\right)\cdot\left(\frac{(x+y)^2}{2x}\right)\div\left(\frac{x^2-y^2}{5y^2}\right)$$

$$\frac{\overset{5}{\cancel{10}}x^{\overset{1}{\cancel{2}}}y}{\cancel{x(x+y)}_{1}}\cdot\frac{\overset{1}{\cancel{(x+y)(x+y)}}}{\cancel{2x}_{1}}\cdot\frac{5y^2}{(x-y)\cancel{(x+y)}}$$

$$\frac{5\cdot1\cdot y\cdot1\cdot5\cdot y^2}{1\cdot1\cdot(x-y)}=\frac{25y^3}{(x-y)}$$

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

Question 39

39 Perform the indicated operations and express the result in simplest form:

$$\left(\frac{10x^2y}{x^2+xy}\right)\cdot\left(\frac{(x+y)^2}{2x}\right)\div\left(\frac{x^2-y^2}{5y^2}\right)$$

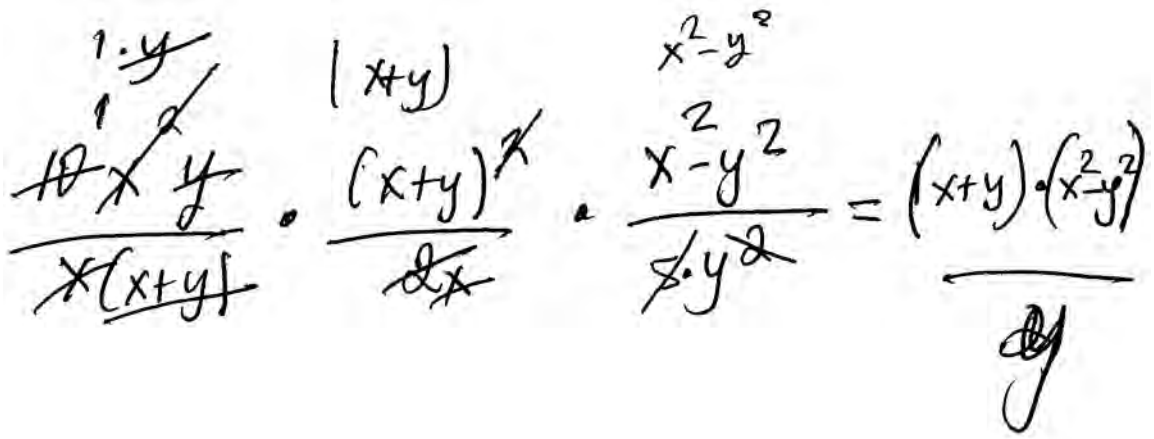
$$\frac{10x^2y\cdot(x+y)(x+y)\cdot 5y^2}{x(x+y)\cdot 2x\cdot(x-y)(x+y)} = \frac{25y}{x-y}$$

Score: 3 The student made a simplification error in the numerator.

Question 39

39 Perform the indicated operations and express the result in simplest form:

$$\left(\frac{10x^2y}{x^2+xy}\right)\cdot\left(\frac{(x+y)^2}{2x}\right)\div\left(\frac{x^2-y^2}{5y^2}\right)$$



Score: 2 The student made one conceptual error by not multiplying by the reciprical.

Question 39

39 Perform the indicated operations and express the result in simplest form:

$$\left(\frac{10x^2y}{x^2+xy}\right)\cdot\left(\frac{(x+y)^2}{2x}\right)\div\left(\frac{x^2-y^2}{5y^2}\right)$$

$$\frac{10x^2y}{x(x+y)}\cdot\frac{(x+y)(x+y)}{2x}\cdot\frac{(x-y)(x+y)}{5y^2}=\frac{x-y}{y}$$

Score: 1 The student made one conceptual error (didn't multiply by the recriprocal) and one simplification error in the numerator.

Question 39

39 Perform the indicated operations and express the result in simplest form:

$$\left(\frac{10x^2y}{x^2+xy}\right)\cdot\left(\frac{(x+y)^2}{2x}\right)\div\left(\frac{x^2-y^2}{5y^2}\right)$$

x

$$\frac{5xy}{x}\cdot(x+y)\cdot\frac{x^2-1}{1}=y(x+y)(x^2-1)$$

1

Score: 0 The student has a completely incorrect response.

Regents Examination in Integrated Algebra – January 2015

Chart for Converting Total Test Raw Scores to Final Examination Scores (Scale Scores)

Raw Score	Scale Score	Raw Score	Scale Score	Raw Score	Scale Score	Raw Score	Scale Score
87	**100**	65	**85**	43	**76**	21	**53**
86	**99**	64	**84**	42	**75**	20	**51**
85	**97**	63	**84**	41	**74**	19	**49**
84	**96**	62	**83**	40	**74**	18	**48**
83	**95**	61	**83**	39	**73**	17	**46**
82	**94**	60	**83**	38	**72**	16	**44**
81	**93**	59	**82**	37	**72**	15	**42**
80	**93**	58	**82**	36	**71**	14	**40**
79	**92**	57	**82**	35	**70**	13	**38**
78	**91**	56	**81**	34	**69**	12	**36**
77	**91**	55	**81**	33	**68**	11	**33**
76	**90**	54	**81**	32	**67**	10	**31**
75	**89**	53	**80**	31	**66**	9	**28**
74	**89**	52	**80**	30	**65**	8	**26**
73	**88**	51	**80**	29	**64**	7	**23**
72	**88**	50	**79**	28	**62**	6	**20**
71	**87**	49	**79**	27	**61**	5	**17**
70	**87**	48	**78**	26	**60**	4	**14**
69	**86**	47	**78**	25	**59**	3	**11**
68	**86**	46	**77**	24	**57**	2	**8**
67	**86**	45	**77**	23	**56**	1	**4**
66	**86**	44	**76**	22	**54**	0	**0**

To determine the student's final examination score, find the student's total test raw score in the column labeled "Raw Score" and then locate the scale score that corresponds to that raw score. The scale score is the student's final examination score. Enter this score in the space labeled "Scale Score" on the student's answer sheet.

Schools are not permitted to rescore any of the open-ended questions on this exam after each question has been rated once, regardless of the final exam score. Schools are required to ensure that the raw scores have been added correctly and that the resulting scale score has been determined accurately.

Because scale scores corresponding to raw scores in the conversion chart change from one administration to another, it is crucial that for each administration the conversion chart provided for that administration be used to determine the student's final score. The chart above is usable only for this administration of the Regents Examination in Integrated Algebra.