

# INTEGRATED ALGEBRA

Tuesday, January 24, 2012 — 9:15 a.m. to 12:15 p.m., only

Student Name: \_\_\_\_\_

School Name: \_\_\_\_\_

Print your name and the name of your school on the lines above.

A separate answer sheet for Part I has been provided to you. Follow the instructions from the proctor for completing the student information on your answer sheet.

This examination has four parts, with a total of 39 questions. You must answer all questions in this examination. Record your answers to the Part I multiple-choice questions on the separate answer sheet. Write your answers to the questions in Parts II, III, and IV directly in this booklet. All work should be written in pen, except graphs and drawings, which should be done in pencil. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. The formulas that you may need to answer some questions in this examination are found at the end of the examination. This sheet is perforated so you may remove it from this booklet.

Scrap paper is not permitted for any part of this examination, but you may use the blank spaces in this booklet as scrap paper. A perforated sheet of scrap graph paper is provided at the end of this booklet for any question for which graphing may be helpful but is not required. You may remove this sheet from this booklet. Any work done on this sheet of scrap graph paper will *not* be scored.

When you have completed the examination, you must sign the statement printed at the end of the answer sheet, indicating that you had no unlawful knowledge of the questions or answers prior to the examination and that you have neither given nor received assistance in answering any of the questions during the examination. Your answer sheet cannot be accepted if you fail to sign this declaration.

Notice...

A graphing calculator and a straightedge (ruler) must be available for you to use while taking this examination.

The use of any communications device is strictly prohibited when taking this examination. If you use any communications device, no matter how briefly, your examination will be invalidated and no score will be calculated for you.

**DO NOT OPEN THIS EXAMINATION BOOKLET UNTIL THE SIGNAL IS GIVEN.**

## Part I

Answer all 30 questions in this part. Each correct answer will receive 2 credits. No partial credit will be allowed. For each question, write on the separate answer sheet the numeral preceding the word or expression that best completes the statement or answers the question. [60]

Use this space for  
computations.

1 Which expression is equivalent to  $64 - x^2$ ?

(1)  $(8 - x)(8 - x)$

(3)  $(x - 8)(x - 8)$

(2)  $(8 - x)(8 + x)$

(4)  $(x - 8)(x + 8)$

2 Mr. Smith invested \$2,500 in a savings account that earns 3% interest compounded annually. He made no additional deposits or withdrawals. Which expression can be used to determine the number of dollars in this account at the end of 4 years?

(1)  $2500(1 + 0.03)^4$

(3)  $2500(1 + 0.04)^3$

(2)  $2500(1 + 0.3)^4$

(4)  $2500(1 + 0.4)^3$

3 What is  $2\sqrt{45}$  expressed in simplest radical form?

(1)  $3\sqrt{5}$

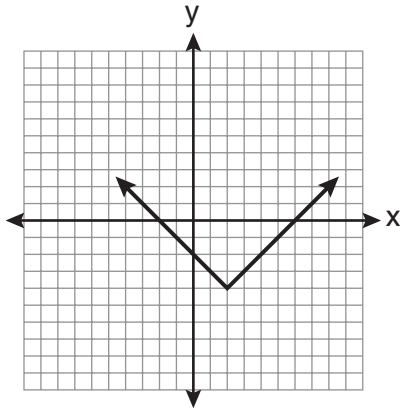
(3)  $6\sqrt{5}$

(2)  $5\sqrt{5}$

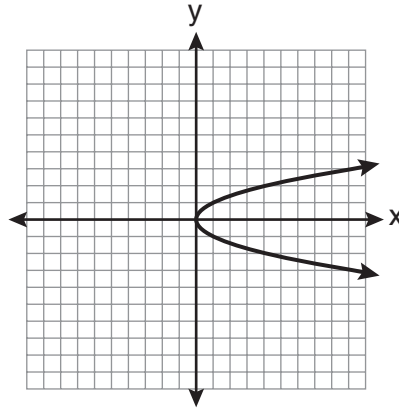
(4)  $18\sqrt{5}$

Use this space for computations.

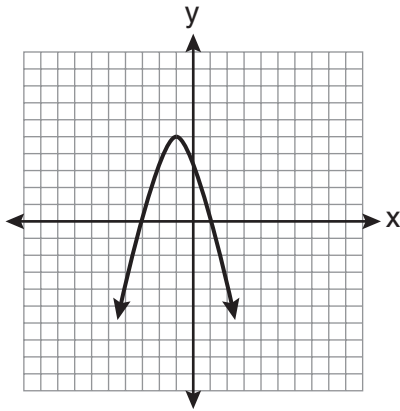
4 Which graph does *not* represent a function?



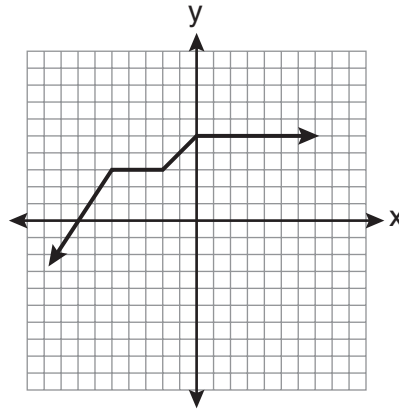
(1)



(3)



(2)



(4)

5 Timmy bought a skateboard and two helmets for a total of  $d$  dollars. If each helmet cost  $h$  dollars, the cost of the skateboard could be represented by

(1)  $2dh$

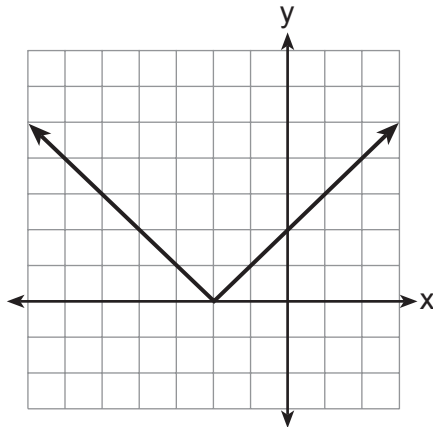
(3)  $d - 2h$

(2)  $\frac{dh}{2}$

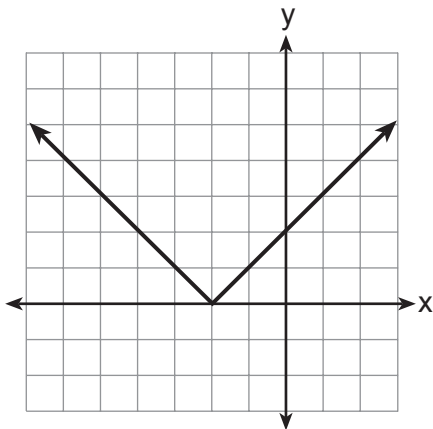
(4)  $d - \frac{h}{2}$

Use this space for computations.

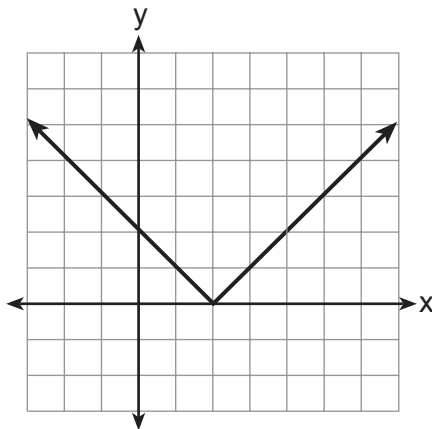
6 The graph of  $y = |x + 2|$  is shown below.



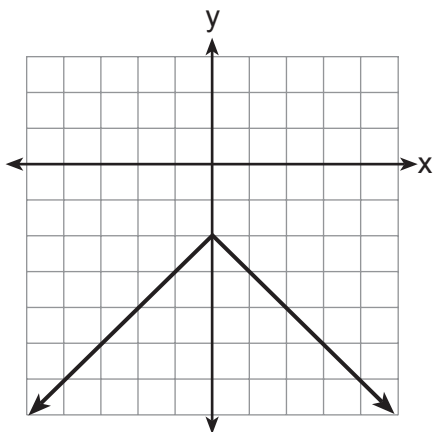
Which graph represents  $y = -|x + 2|$ ?



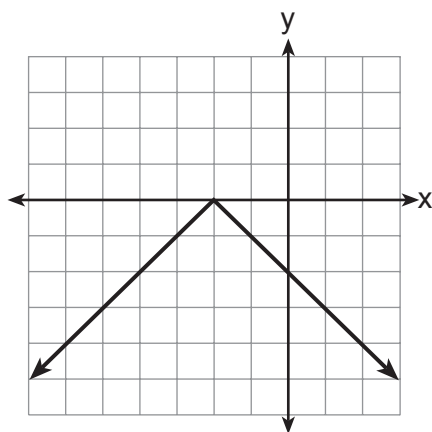
(1)



(3)



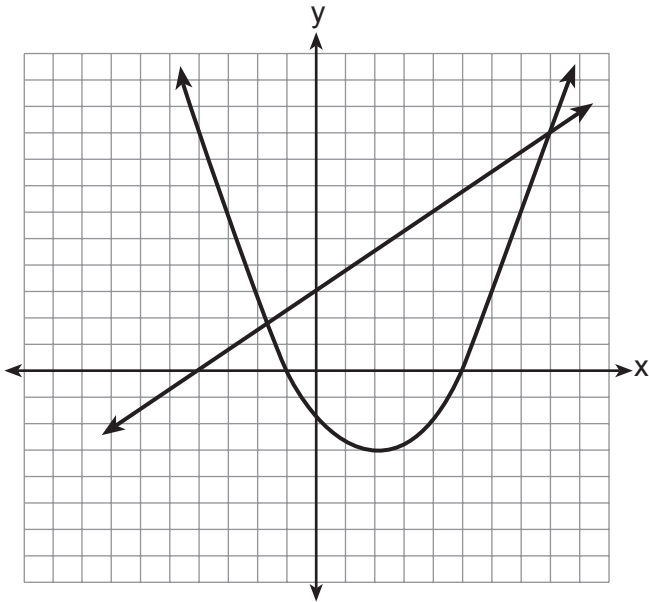
(2)



(4)

**Use this space for  
computations.**

**7** Two equations were graphed on the set of axes below.



Which point is a solution of the system of equations shown on the graph?

- (1) (8,9)
- (2) (5,0)
- (3) (0,3)
- (4) (2,-3)

**8** Byron is 3 years older than Doug. The product of their ages is 40. How old is Doug?

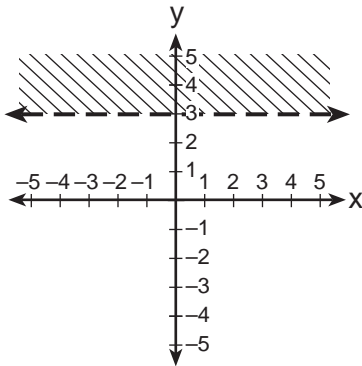
- (1) 10
- (2) 8
- (3) 5
- (4) 4

Use this space for computations.

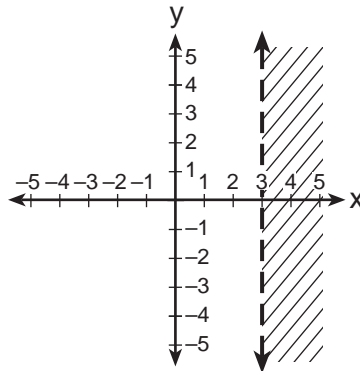
9 The actual dimensions of a rectangle are 2.6 cm by 6.9 cm. Andy measures the sides as 2.5 cm by 6.8 cm. In calculating the area, what is the relative error, to the *nearest thousandth*?

- (1) 0.055
- (2) 0.052
- (3) 0.022
- (4) 0.021

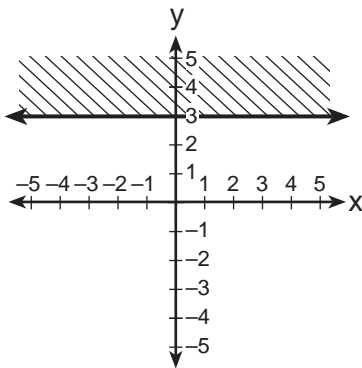
10 Which graph represents the inequality  $y > 3$ ?



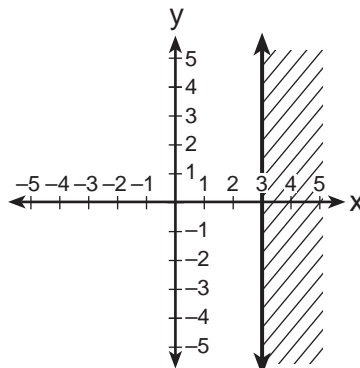
(1)



(3)



(2)



(4)

**Use this space for  
computations.**

**11** Which set of data can be classified as quantitative?

- (1) first names of students in a chess club
- (2) ages of students in a government class
- (3) hair colors of students in a debate club
- (4) favorite sports of students in a gym class

**12** Three fair coins are tossed. What is the probability that two heads and one tail appear?

- (1)  $\frac{1}{8}$
- (2)  $\frac{3}{8}$
- (3)  $\frac{3}{6}$
- (4)  $\frac{2}{3}$

**13** What is the sum of  $-3x^2 - 7x + 9$  and  $-5x^2 + 6x - 4$ ?

- (1)  $-8x^2 - x + 5$
- (2)  $-8x^4 - x + 5$
- (3)  $-8x^2 - 13x + 13$
- (4)  $-8x^4 - 13x^2 + 13$

**14** For which values of  $x$  is the fraction  $\frac{x^2 + x - 6}{x^2 + 5x - 6}$  undefined?

- (1) 1 and  $-6$
- (2) 2 and  $-3$
- (3) 3 and  $-2$
- (4) 6 and  $-1$

**Use this space for computations.**

**15** What is the slope of the line that passes through the points  $(2, -3)$  and  $(5, 1)$ ?

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

(3)  $-\frac{4}{3}$

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

(4)  $\frac{4}{3}$

**16** The expression  $\frac{(4x^3)^2}{2x}$  is equivalent to

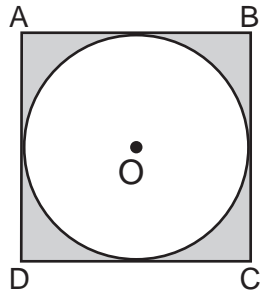
(1)  $4x^4$

(3)  $8x^4$

(2)  $4x^5$

(4)  $8x^5$

**17** In the diagram below, circle  $O$  is inscribed in square  $ABCD$ . The square has an area of 36.



What is the area of the circle?

(1)  $9\pi$

(3)  $3\pi$

(2)  $6\pi$

(4)  $36\pi$

**18** Which point lies on the graph represented by the equation  $3y + 2x = 8$ ?

(1)  $(-2, 7)$

(3)  $(2, 4)$

(2)  $(0, 4)$

(4)  $(7, -2)$

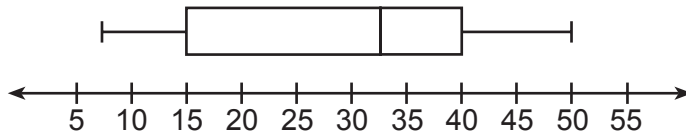


Use this space for computations.

19 The equation of the axis of symmetry of the graph of  $y = 2x^2 - 3x + 7$  is

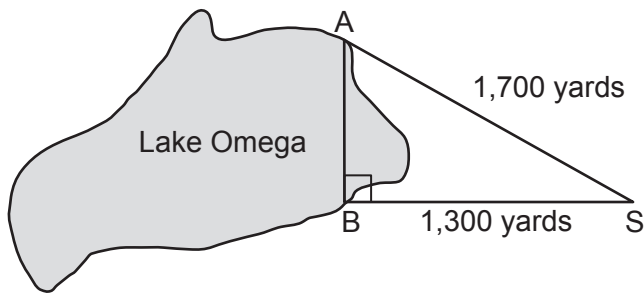
- (1)  $x = \frac{3}{4}$                                       (3)  $x = \frac{3}{2}$   
(2)  $y = \frac{3}{4}$                                       (4)  $y = \frac{3}{2}$

20 The box-and-whisker plot below represents the ages of 12 people.



What percent of these people are age 15 or older?

- (1) 25    (3) 75  
(2) 35    (4) 85
- 21 Campsite  $A$  and campsite  $B$  are located directly opposite each other on the shores of Lake Omega, as shown in the diagram below. The two campsites form a right triangle with Sam's position,  $S$ . The distance from campsite  $B$  to Sam's position is 1,300 yards, and campsite  $A$  is 1,700 yards from his position.



What is the distance from campsite  $A$  to campsite  $B$ , to the nearest yard?

- (1) 1,095                                      (3) 2,140  
(2) 1,096                                      (4) 2,141

**Use this space for  
computations.**

**22** Which set builder notation represents  $\{-2, -1, 0, 1, 2, 3\}$ ?

- (1)  $\{x \mid -3 \leq x \leq 3, \text{ where } x \text{ is an integer}\}$
- (2)  $\{x \mid -3 < x \leq 4, \text{ where } x \text{ is an integer}\}$
- (3)  $\{x \mid -2 < x < 3, \text{ where } x \text{ is an integer}\}$
- (4)  $\{x \mid -2 \leq x < 4, \text{ where } x \text{ is an integer}\}$

**23** The roots of the equation  $3x^2 - 27x = 0$  are

- (1) 0 and 9
- (2) 0 and  $-9$
- (3) 0 and 3
- (4) 0 and  $-3$

**24** Which equation is an example of the use of the associative property of addition?

- (1)  $x + 7 = 7 + x$
- (2)  $3(x + y) = 3x + 3y$
- (3)  $(x + y) + 3 = x + (y + 3)$
- (4)  $3 + (x + y) = (x + y) + 3$

**25** Given:

$$A = \{2, 4, 5, 7, 8\}$$

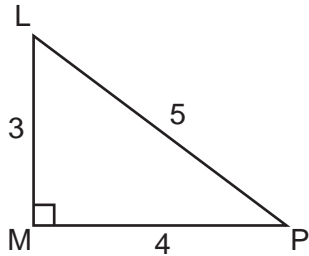
$$B = \{3, 5, 8, 9\}$$

What is  $A \cup B$ ?

- (1)  $\{5\}$
- (2)  $\{5, 8\}$
- (3)  $\{2, 3, 4, 7, 9\}$
- (4)  $\{2, 3, 4, 5, 7, 8, 9\}$

Use this space for  
computations.

26 The diagram below shows right triangle  $LMP$ .



Which ratio represents the tangent of  $\angle PLM$ ?

(1)  $\frac{3}{4}$

(3)  $\frac{4}{3}$

(2)  $\frac{3}{5}$

(4)  $\frac{5}{4}$

27 Mr. Stanton asked his students to write an algebraic expression on a piece of paper. He chose four students to go to the board and write their expression.

Robert wrote:  $4(2x + 5) \geq 17$

Meredith wrote:  $3y - 7 + 11z$

Steven wrote:  $9w + 2 = 20$

Cynthia wrote:  $8 + 10 - 4 = 14$

Which student wrote an algebraic expression?

(1) Robert

(3) Steven

(2) Meredith

(4) Cynthia

28 If  $s = \frac{2x + t}{r}$ , then  $x$  equals

(1)  $\frac{rs - t}{2}$

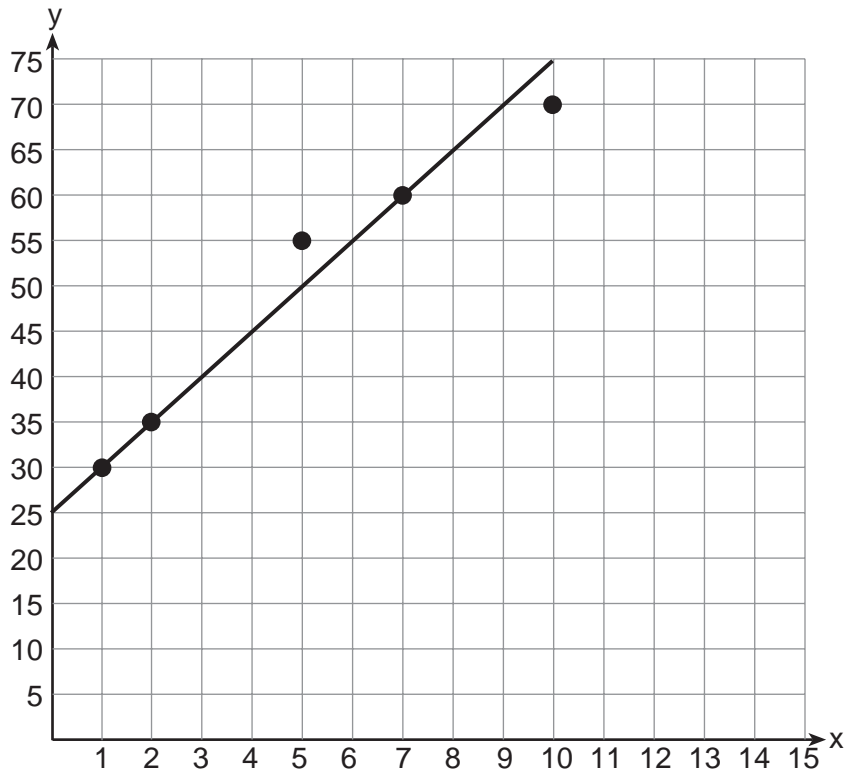
(3)  $2rs - t$

(2)  $\frac{rs + 1}{2}$

(4)  $rs - 2t$

Use this space for computations.

29 A scatter plot was constructed on the graph below and a line of best fit was drawn.



What is the equation of this line of best fit?

- (1)  $y = x + 5$                       (3)  $y = 5x + 5$   
(2)  $y = x + 25$                     (4)  $y = 5x + 25$

30 What is the sum of  $\frac{2y}{y+5}$  and  $\frac{10}{y+5}$  expressed in simplest form?

- (1) 1                                      (3)  $\frac{12y}{y+5}$   
(2) 2                                      (4)  $\frac{2y+10}{y+5}$
-

## Part II

Answer all 3 questions in this part. Each correct answer will receive 2 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [6]

31 The length and width of the base of a rectangular prism are 5.5 cm and 3 cm. The height of the prism is 6.75 cm. Find the *exact* value of the surface area of the prism, in square centimeters.

**32** Casey purchased a pack of assorted flower seeds and planted them in her garden. When the first 25 flowers bloomed, 11 were white, 5 were red, 3 were blue, and the rest were yellow. Find the empirical probability that a flower that blooms will be yellow.

**33** Express in simplest form:  $\frac{x^2 - 1}{x^2 + 3x + 2}$

### Part III

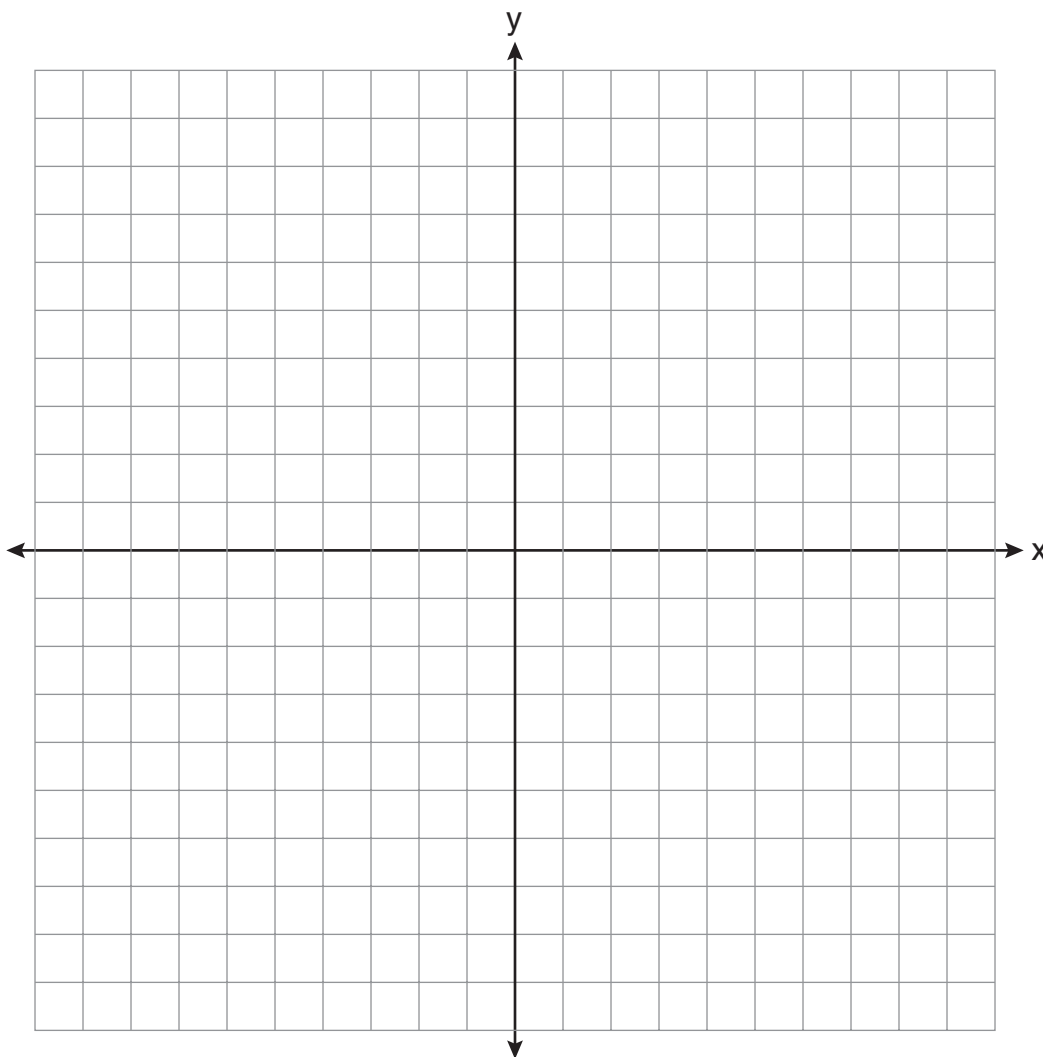
Answer all 3 questions in this part. Each correct answer will receive 3 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [9]

34 Solve algebraically for  $x$ :  $2(x - 4) \geq \frac{1}{2}(5 - 3x)$

**35** On the set of axes below, solve the following system of equations graphically. State the coordinates of the solution.

$$y = 4x - 1$$

$$2x + y = 5$$





**36** A turtle and a rabbit are in a race to see who is first to reach a point 100 feet away. The turtle travels at a constant speed of 20 feet per minute for the entire 100 feet. The rabbit travels at a constant speed of 40 feet per minute for the first 50 feet, stops for 3 minutes, and then continues at a constant speed of 40 feet per minute for the last 50 feet.

Determine which animal won the race and by how much time.

#### Part IV

Answer all 3 questions in this part. Each correct answer will receive 4 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [12]

37 The sum of three consecutive odd integers is 18 less than five times the middle number. Find the three integers. [Only an algebraic solution can receive full credit.]

**38** A sandwich consists of one type of bread, one type of meat, and one type of cheese. The possible choices are listed below.

Bread: white, rye

Meat: ham, turkey, beef

Cheese: American, Swiss

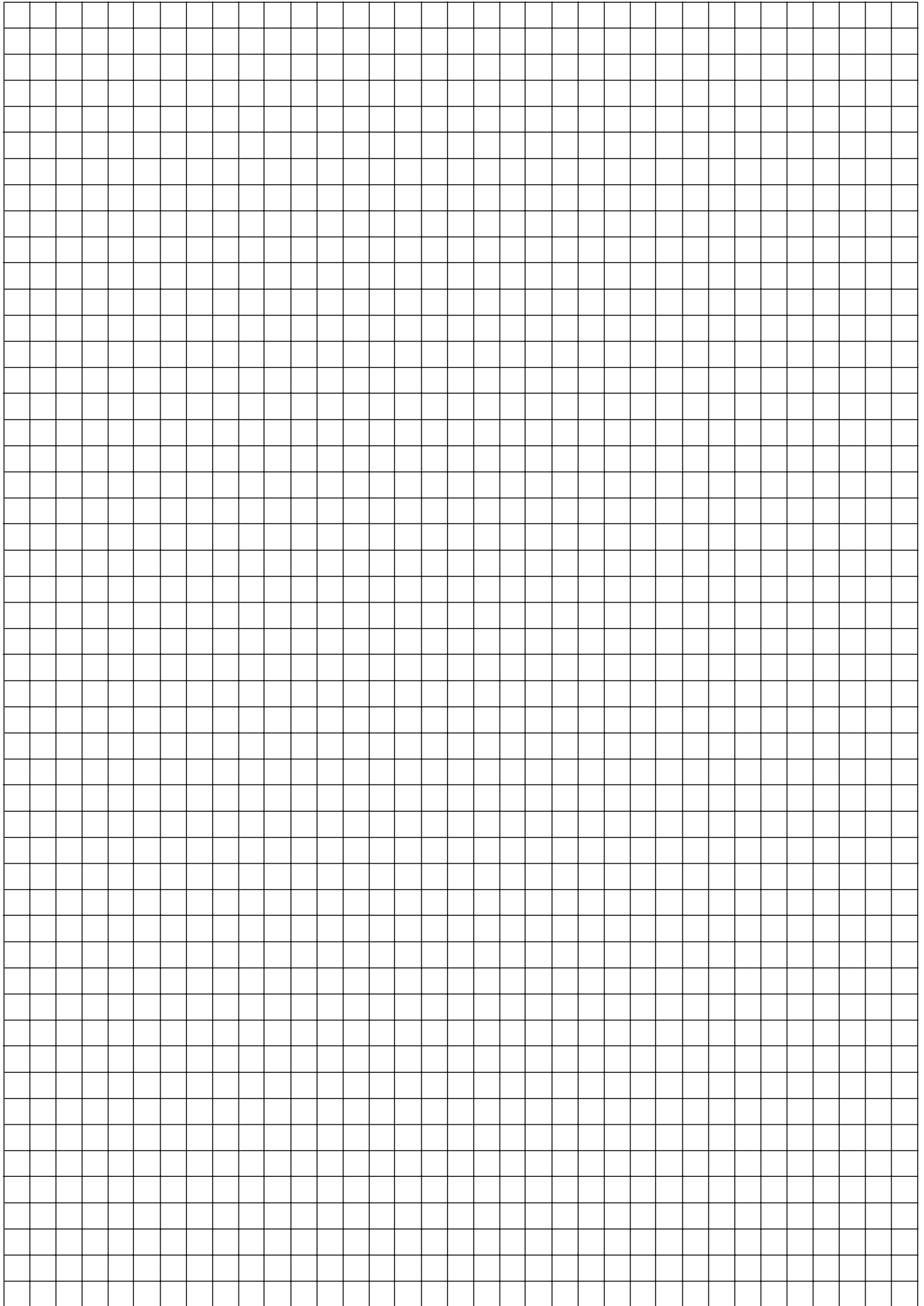
Draw a tree diagram or list a sample space of all the possible different sandwiches consisting of one type of bread, one type of meat, and one type of cheese.

Determine the number of sandwiches that will *not* include turkey.

Determine the number of sandwiches that will include rye bread and Swiss cheese.

**39** Shana wants to buy a new bicycle that has a retail price of \$259.99. She knows that it will be on sale next week for 30% off the retail price. If the tax rate is 7%, find the total amount, to the *nearest cent*, that she will save by waiting until next week.

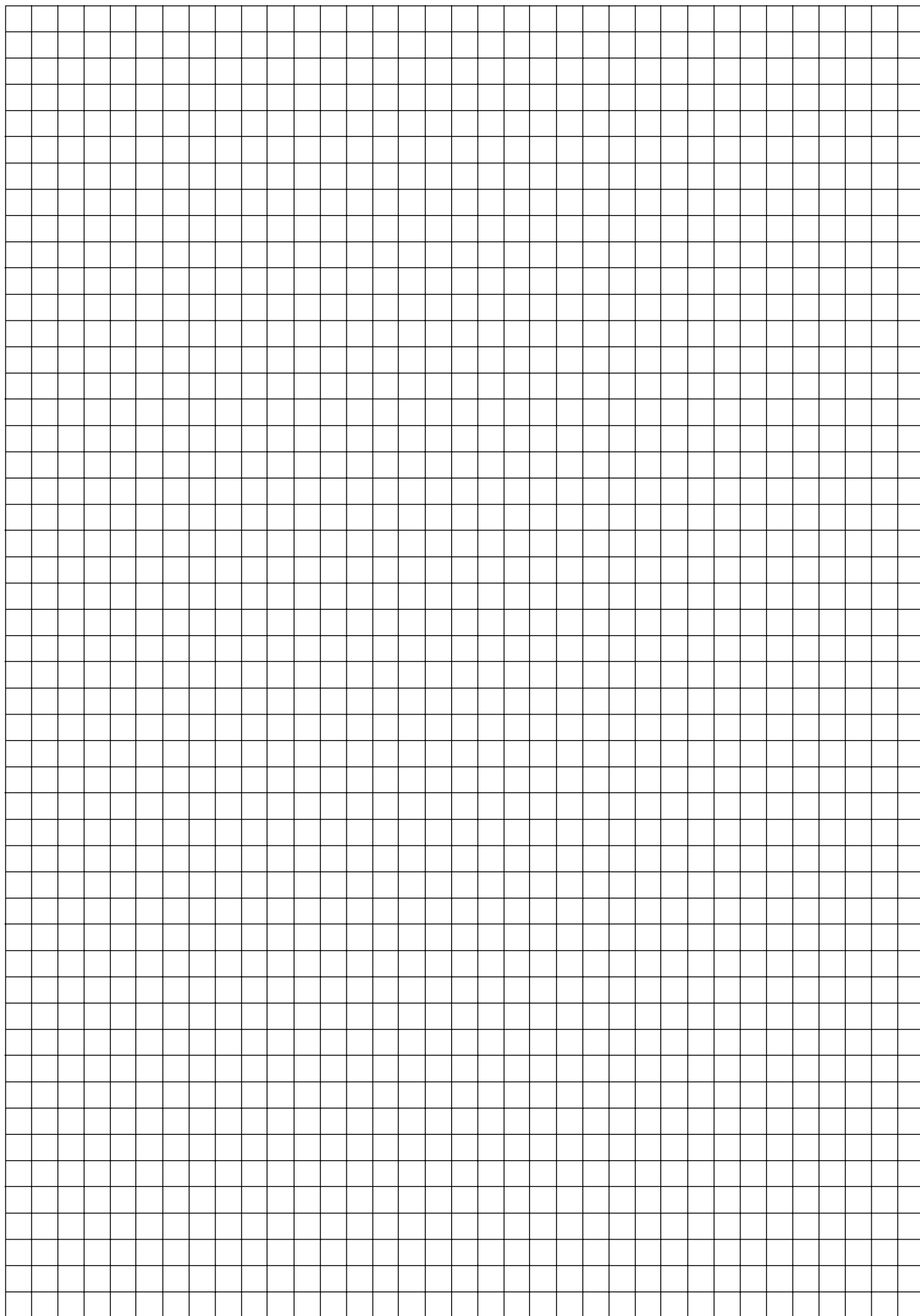
Scrap Graph Paper — This sheet will *not* be scored.



Tear Here

Tear Here

Scrap Graph Paper — This sheet will *not* be scored.



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## Reference Sheet

Trigonometric Ratios

$$\sin A = \frac{\textit{opposite}}{\textit{hypotenuse}}$$

$$\cos A = \frac{\textit{adjacent}}{\textit{hypotenuse}}$$

$$\tan A = \frac{\textit{opposite}}{\textit{adjacent}}$$

Area

trapezoid  $A = \frac{1}{2}h(b_1 + b_2)$

Volume

cylinder  $V = \pi r^2 h$

Surface Area

rectangular prism  $SA = 2lw + 2hw + 2lh$

cylinder  $SA = 2\pi r^2 + 2\pi rh$

Coordinate Geometry

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

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Tear Here

# FOR TEACHERS ONLY

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

## INTEGRATED ALGEBRA

Tuesday, January 24, 2012 — 9:15 a.m. to 12:15 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. 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 stray marks on the answer sheet that might later interfere with the accuracy of the scanning.

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. 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/apda/> on Tuesday, January 24, 2012. 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.



## Part I

Allow a total of 60 credits, 2 credits for each of the following. Allow credit if the student has written the correct answer instead of the numeral 1, 2, 3, or 4.

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

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/apda/> 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.

## 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] 147.75, and appropriate work is shown.

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

*or*

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

*or*

[1] 147.75, 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]  $\frac{6}{25}$ , and appropriate 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, such as finding 6, the number of yellow flowers.

*or*

[1]  $\frac{6}{25}$ , 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]  $\frac{x-1}{x+2}$ , and appropriate work is shown.

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

*or*

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

*or*

[1] Either the numerator or the denominator is factored correctly, but no further correct work is shown.

*or*

[1]  $\frac{x-1}{x+2}$ , 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.

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### 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]  $x \geq 3$  or an equivalent answer, and appropriate work is shown.
- [2] Appropriate work is shown, but one computational error is made.
- [1] Appropriate work is shown, but two or more computational errors are made.
- or*
- [1] Appropriate work is shown, but one conceptual error is made.
- or*
- [1]  $x \geq 3$  or an equivalent answer, 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] Correct graphs are drawn, and at least one is labeled, and  $(1,3)$  or  $x = 1, y = 3$  is stated.
- [2] Appropriate work is shown, but one computational, graphing, or labeling error is made.
- or*
- [2] Correct graphs are drawn, and at least one is labeled, but the solution is not stated or is stated incorrectly.
- [1] Appropriate work is shown, but two or more computational, graphing, or labeling errors are made.
- or*
- [1] Appropriate work is shown, but one conceptual error is made.
- or*
- [1]  $(1,3)$  or  $x = 1, y = 3$ , but a method other than graphic is used.
- or*
- [1] One equation is graphed and labeled correctly, but no further correct work is shown.
- or*
- [1]  $(1,3)$  or  $x = 1, y = 3$ , 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.

- (36) [3] Turtle and 0.5 or an equivalent answer with appropriate units, and appropriate work is shown.
- [2] Appropriate work is shown, but one computational error is made, but an appropriate determination and time are found.
- or*
- [2] Appropriate work is shown to find 5, the correct time of the turtle, and 5.5, the correct time of the rabbit, and the turtle is stated as the winner, but the time difference is not found or is found incorrectly.
- [1] Appropriate work is shown, but two or more computational errors are made, but an appropriate determination and time are found.
- or*
- [1] Appropriate work is shown, but one conceptual error is made, but an appropriate determination and time are found.
- or*
- [1] Appropriate work is shown to find the correct times of both the turtle and the rabbit, but no further correct work is shown.
- [0] Turtle, 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.
-

## 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] 7, 9, and 11, and appropriate algebraic work is shown.
- [3] Appropriate work is shown, but one computational error is made.
- or*
- [3] Appropriate work is shown to find one correct value, but no further correct work is shown.
- [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, such as finding three consecutive integers.
- or*
- [2] 7, 9, and 11, 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] A correct equation is written, but no further correct work is shown.
- or*
- [1] 7, 9, and 11, but no work is shown.
- [0] 7 or 9 or 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.

- (38) [4] A correct tree diagram or sample space is shown, and 8 and 3 are stated.
- [3] Appropriate work is shown, but one computational error is made.
- or*
- [3] A correct tree diagram or sample space is shown, but only 8 or 3 is stated.
- or*
- [3] A correct tree diagram or sample space is shown, but the appropriate numbers of outcomes are stated as probabilities.
- [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] A correct tree diagram or sample space is shown, but no further correct work is shown.
- or*
- [2] An incomplete tree diagram or sample space that shows an understanding of the problem is written, but appropriate numbers of sandwiches are stated.
- [1] Appropriate work is shown, but one conceptual error and one computational error are made.
- or*
- [1] An incomplete tree diagram or sample space that shows an understanding of the problem is written, but only one appropriate number of sandwiches is stated.
- or*
- [1] 8 and 3, but no work is shown.
- [0] 8 or 3, 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] 83.46, and appropriate work is shown.
- [3] Appropriate work is shown, but one computational or rounding error is made.
- or*
- [3] Appropriate work is shown to find 194.73, the sale price including tax, and 278.19, the retail price including tax, but the difference is not found or is found incorrectly.
- [2] Appropriate work is shown, but two or more computational or rounding errors are made.
- or*
- [2] Appropriate work is shown, but one conceptual error is made.
- or*
- [2] Appropriate work is shown to find 194.73, the sale price including tax, but no further correct work is shown.
- [1] Appropriate work is shown, but one conceptual error and one computational or rounding error are made.
- or*
- [1] Appropriate work is shown to find 278.19, the retail price including tax, but no further correct work is shown.
- or*
- [1] Appropriate work is shown to find 181.99, the sale price not including tax, but no further correct work is shown.
- or*
- [1] 83.46, 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.
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## Map to Core Curriculum

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

### Regents Examination in Integrated Algebra

January 2012

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

**The Chart for Determining the Final Examination Score for the January 2012 Regents Examination in Integrated Algebra will be posted on the Department's web site at: <http://www.p12.nysed.gov/apda/> on Tuesday, January 24, 2012. 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.

## Regents Examination in Integrated Algebra – January 2012

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