

# FOR TEACHERS ONLY

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

## MATHEMATICS A

Tuesday, June 22, 1999 — 9:15 a.m. to 12:15 p.m., only

### SCORING KEY

#### Mechanics of Rating

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

Use only *red* ink or *red* pencil in rating Regents papers. Do not attempt to *correct* the student's work by making insertions or changes of any kind. Use checkmarks 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. On the back of the student's detachable answer sheet, raters must enter their initials in the boxes next to the questions they have scored and also write their name in the box under the heading "Rater/Scorer's Name."

Raters should record the student's scores for all questions and the total raw score on the student's detachable answer sheet. Then the student's total raw score should be converted to a scaled score by using the conversion chart printed at the end of this key. The student's scaled score should be entered in the box provided on the student's detachable answer sheet. The scaled score is the student's final examination score.

#### Part I

Allow a total of 40 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) 4	(6) 2	(11) 1	(16) 3
(2) 3	(7) 1	(12) 2	(17) 3
(3) 3	(8) 2	(13) 2	(18) 1
(4) 1	(9) 3	(14) 4	(19) 2
(5) 2	(10) 4	(15) 4	(20) 1

**Part II**

For each question, use the specific criteria to award a maximum of two credits.

- (21) **[2]** Both correct lines of symmetry are drawn: one horizontal, one vertical.  
**[1]** Only one correct line is drawn.  
*or*  
**[1]** Two correct and one or two incorrect lines, such as the diagonals, are drawn.  
**[0]** More than two incorrect lines are drawn.  
*or*  
**[0]** A zero response is completely incorrect, irrelevant, or incoherent *or* is a correct response that was obtained by an obviously incorrect procedure.
- (22) a **[1]**  $\frac{S + 24}{3}$  *or*  $\frac{S}{3} + 8$   
 b **[1]** 11.5  
*or*  
**[1]** Correct substitution into an incorrect part *a* is shown, and the answer is given to the nearest tenth of an inch.  
*a and b*  
**[0]** A zero response is completely incorrect, irrelevant, or incoherent *or* is a correct response that was obtained by an obviously incorrect procedure.
- (23) **[2]**  $\sqrt{20}$  and an appropriate explanation is given, such as the number cannot be written as a repeating or terminating decimal or it cannot be written as a fraction or it is not a perfect square.  
**[1]**  $\sqrt{20}$  and an inappropriate explanation *or* no explanation is given.  
*or*  
**[1]**  $\sqrt{20}$  and a correct explanation is given, but one other number is also identified as irrational.  
**[0]** All three numbers are identified as irrational.  
*or*  
**[0]** A zero response is completely incorrect, irrelevant, or incoherent *or* is a correct response that was obtained by an obviously incorrect procedure.
- (24) **[2]**  $\frac{3x}{3x + 5y}$   
**[1]** One correct factoring is shown, either  $3x(3x - 5y)$  *or*  $(3x - 5y)(3x + 5y)$ .  
**[0]** A zero response is completely incorrect, irrelevant, or incoherent *or* is a correct response that was obtained by an obviously incorrect procedure.

- (25) **[2]** 38 and an appropriate method is shown, such as  $36.64 - (21 + 6.14) = 9.50$  and  $\frac{9.50}{.25} = 38$  or an equation such as  $21 + .25c + 6.14 = 36.64$ .

**[1]** 38 and no work is shown.

***or***

**[1]** An appropriate method or equation is shown, but one computational mistake is made.

***or***

**[1]** The answer of \$9.50 for local calls is found but is not divided by .25.

**[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 three credits.

- (26) **[3]** 4 and an appropriate method is shown, such as calculating *A* at 6 mph and *B* at 2 mph through arithmetic, formula, or extending the graph to 60 minutes.

**[2]** The speeds of 6 and 2 are found but not their difference.

***or***

**[2]** Their difference is found but not in miles per hour.

**[1]** Only distances of 4.5 miles and 1.5 miles are found.

***or***

**[1]** The speeds found are incorrect but then are subtracted appropriately.

***or***

**[1]** 3 times as fast and no appropriate explanation is given.

***or***

**[1]** 4 and no appropriate explanation is given.

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

- (27) **[3]** 27 and an appropriate method or explanation is shown, such as  $\left(\frac{1}{6}\right)\left(\frac{1}{3}\right)\left(\frac{2}{3}\right) = \frac{1}{27}$  of a cubic foot, thus 27 bricks needed or, in inches,  $\frac{1728}{64} = 27$ . A labeled drawing is an acceptable explanation.
- [2]** An appropriate method for finding volume is shown, but one computational mistake is made.
- [1]** Correct conversion into feet is shown.
- or***
- [1]** The volume of 64 cubic inches is found.
- or***
- [1]** 27 and no explanation is given.
- [0]** A zero response is completely incorrect, irrelevant, or incoherent *or* is a correct response that was obtained by an obviously incorrect procedure.
- (28) **[3]** 15 and an appropriate method or explanation is shown, such as trial and error or the inequality  $6x + 15 \leq 100$ .
- [2]** An appropriate method is shown, but it stops at 14.
- [1]** An appropriate method is shown, but no answer is found.
- or***
- [1]** 15 and no explanation is given.
- [0]** A zero response is completely incorrect, irrelevant, or incoherent *or* is a correct response that was obtained by an obviously incorrect procedure.
- (29) **[3]** 34 and an appropriate explanation is given, such as  $38 = \frac{46 + 2x}{3}$ .
- [2]** An appropriate method or equation is shown, but one computational mistake is made.
- or***
- [2]** The student does not take into consideration two dogs of equal weight and gives an answer of 68.
- [1]** The student understands weighted average in that three dogs averaging 38 pounds must have a total weight of 114 pounds but does not subtract the known weight.
- or***
- [1]** 34 and no explanation is given.
- [0]** A zero response is completely incorrect, irrelevant, or incoherent *or* is a correct response that was obtained by an obviously incorrect procedure.

- (30) **[3]** 135 and appropriate work is shown.
- [2]** The two correct angles of  $65^\circ$  and  $70^\circ$  are found, but their sum is not identified as the answer to the question.
- or***
- [2]**  $65^\circ$  *or*  $70^\circ$  and an appropriate sum is found.
- [1]** Either the  $65^\circ$  *or* the  $70^\circ$  is correctly identified.
- or***
- [1]** Two incorrect angle measures are found, but they are added correctly.
- or***
- [1]** 135 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.
-

**Part IV**

For each question, use the specific criteria to award a maximum of four credits.

(31) *a* **[2]** 125.6 *or* 125.7 (correct for the value of  $\pi$  used) and appropriate work is shown.

**[1]** The area is left as 40 *or* the answer is not rounded correctly.

***or***

**[1]** An appropriate method is shown, but one computational mistake is made.

***or***

**[1]** The correct areas of both circles are found, but the two areas are not subtracted.

***or***

**[1]** The circumference formula is used correctly for both circles and the circumferences are subtracted for an answer of 25.1.

***or***

**[1]** 125.6 *or* 125.7 and no work is shown.

*b* **[2]** 49 and an appropriate explanation is given.

***or***

**[2]** An appropriate percent for an incorrect part *a* is found and supported by area formulas.

**[1]** The answer is left as  $\frac{40}{81}$ .

***or***

**[1]** An appropriate fraction for an incorrect part *a* is found but not given as a percent.

***or***

**[1]** An appropriate percent for an incorrect part *a* is found and is supported by circumference formulas.

***or***

**[1]** 49 and no work is shown.

**[0]**  $\frac{4}{9}$  *or* 44% and no work is shown.

***or***

**[0]** 4 is found by subtracting the radii.

***or***

*a* and *b*

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

(32) a [2]  $\frac{30}{72}$  or an equivalent value is found and an appropriate explanation is given.

[1] An acceptable method is used correctly, such as a tree diagram, sample space, or combinations, but the correct answer is not given.

**or**

[1] Replacement is used, and an answer of  $\frac{36}{81}$  or an equivalent is found.

**or**

[1]  $\frac{30}{72}$  and no work is shown.

b [2]  $\frac{36}{72}$  or an equivalent value is found and an appropriate explanation is given.

**or**

[2] An appropriate probability for an incorrect denominator for part *a* is found.

[1] An appropriate method is shown, but one computational mistake is made.

**or**

[1] Replacement is shown, and the answer  $\frac{36}{81}$  or an equivalent is found.

**or**

[1] The student does not take into account both orders and answers  $\frac{18}{72}$  or an equivalent.

**or**

[1]  $\frac{36}{72}$  and no work is shown.

**or**

*a* and *b*

[1] An error in method is made but the erroneous answer is interpreted correctly in either part *a* or *b* or both.

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

- (33) **[4]** 12 and an appropriate method is shown, such as  $(AB)^2 = 9^2 + 8^2$ .
- [3]** An incorrect length is found for  $AE$ , but then it is used to correctly complete the problem.
- or***
- [3]** An appropriate method is shown, but one computational mistake is made.
- or***
- [3]** An appropriate method is shown, but the answer is not given to the nearest foot, such as  $\sqrt{145}$ .
- [2]**  $AE = 8$  and one computational mistake is made using the Pythagorean theorem.
- or***
- [2]** An incorrect length is found for  $AE$ , but then it is used to complete the problem correctly, but the answer is not rounded.
- [1]**  $AE = 8$  is found, but the Pythagorean theorem is not used.
- or***
- [1]** 12 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.



- (34) **[4]** 116 and an appropriate method is shown.
- [3]** An appropriate method is shown, but the answer is left in an inappropriate form, such as 116.2.
- or***
- [3]** An appropriate method is shown, but 3 feet is not added, and the answer is left 113.
- or***
- [3]** Tangent function is used, but computational mistakes are made, but 3 feet is added to the incorrect value and the answer is found correctly.
- [2]** An incorrect trigonometric function is used, 3 feet is added, and the answer is rounded correctly.
- or***
- [2]** Tangent function is used, but computational mistakes are made, and 3 feet is not added to an incorrect answer.
- [1]** 116 and no work is shown.
- or***
- [1]** An incorrect trigonometric function is used, and 3 feet is added to the incorrect answer, but the answer is rounded incorrectly.
- [0]** A zero response is completely incorrect, irrelevant, or incoherent *or* is a correct response that was obtained by an obviously incorrect procedure.

- (35) **[4]** (3,14) and (-2,-1) and either an algebraic *or* a graphic solution is shown.
- [3]** An appropriate method is shown, but only one correct ordered pair is identified.
- or***
- [3]** An appropriate method is shown, but one computational mistake is made.
- or***
- [3]** An appropriate method is shown, but values are given only for  $x$ .
- [2]** The substitution is correct, but the quadratic produced is not factored correctly.
- or***
- [2]** Both equations are graphed correctly, but neither ordered pair is identified.
- [1]** Only one equation is graphed correctly.
- or***
- [1]** The substitution is incorrect, but it produces a linear equation that is solved correctly.
- or***
- [1]** Only the substitution is correct.
- [0]** A zero response is completely incorrect, irrelevant, or incoherent *or* is a correct response that was obtained by an obviously incorrect procedure.
-