

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

MATHEMATICS A

Friday, June 16, 2000 — 9:15 a.m. to 12:15 p.m., only

Print Your Name:

Print Your School's Name:

Print your name and the name of your school in the boxes above. Then turn to the last page of this booklet, which is the answer sheet for Part I. Fold the last page along the perforations and, slowly and carefully, tear off the answer sheet. Then fill in the heading of your answer sheet.

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. Any work done on this sheet of scrap graph paper will *not* be scored. All work should be written in pen, except graphs and drawings, which should be done in pencil.

This examination has four parts, with a total of 35 questions. You must answer all questions in this examination. Write your answers to the Part I multiple-choice questions on the separate answer sheet. Write your answers for the questions in Parts II, III, and IV directly in this booklet. Clearly indicate the necessary steps you take, including appropriate formula substitutions, diagrams, graphs, charts, etc.

When you have completed the examination, you must sign the statement printed at the end of the answer paper, 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 paper cannot be accepted if you fail to sign this declaration.

Notice...

A minimum of a scientific calculator, a straightedge (ruler), and a compass must be available for your use while taking this examination.

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

Part I

Answer all questions in this part. Each correct answer will receive 2 credits. No partial credit will be allowed. Record your answers in the spaces provided on the separate answer sheet. [40]

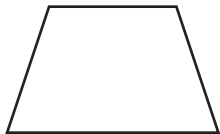
1 Which inequality is represented in the graph below?



- (1) $-4 < x < 2$ (3) $-4 < x \leq 2$
(2) $-4 \leq x < 2$ (4) $-4 \leq x \leq 2$

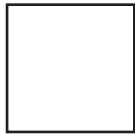
Use this space for
computations.

2 Which geometric figure has one and only one line of symmetry?



Isosceles trapezoid

(1)



Square

(3)



Rectangle

(2)



Rhombus

(4)

3 Which number is rational?

- (1) π (3) $\sqrt{7}$
(2) $\frac{5}{4}$ (4) $\sqrt{\frac{3}{2}}$

4 Two numbers are in the ratio 2:5. If 6 is subtracted from their sum, the result is 50. What is the larger number?

- (1) 55 (3) 40
(2) 45 (4) 35

5 The quotient of $-\frac{15x^8}{5x^2}$, $x \neq 0$, is

- (1) $-3x^4$ (3) $-3x^6$
(2) $-10x^4$ (4) $-10x^6$

**Use this space for
computations.**

6 What is the inverse of the statement “If it is sunny, I will play baseball”?

- (1) If I play baseball, then it is sunny.
- (2) If it is not sunny, I will not play baseball.
- (3) If I do not play baseball, then it is not sunny.
- (4) I will play baseball if and only if it is sunny.

7 Which ordered pair is the solution of the following system of equations?

$$\begin{aligned}3x + 2y &= 4 \\ -2x + 2y &= 24\end{aligned}$$

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

8 Which equation represents a circle whose center is (3,-2)?

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

9 The set of integers {3,4,5} is a Pythagorean triple. Another such set is

- (1) {6,7,8}
- (2) {6,8,12}
- (3) {6,12,13}
- (4) {8,15,17}

10 A truck travels 40 miles from point *A* to point *B* in exactly 1 hour. When the truck is halfway between point *A* and point *B*, a car starts from point *A* and travels at 50 miles per hour. How many miles has the car traveled when the truck reaches point *B*?

- (1) 25
- (2) 40
- (3) 50
- (4) 60

11 If $a \neq 0$ and the sum of x and $\frac{1}{a}$ is 0, then

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

18 The graphs of the equations $y = x^2 + 4x - 1$ and $y + 3 = x$ are drawn on the same set of axes. At which point do the graphs intersect?

- (1) (1,4) (3) (-2,1)
(2) (1,-2) (4) (-2,-5)

**Use this space for
computations.**

19 If $2x^2 - 4x + 6$ is subtracted from $5x^2 + 8x - 2$, the difference is

- (1) $3x^2 + 12x - 8$ (3) $3x^2 + 4x + 4$
(2) $-3x^2 - 12x + 8$ (4) $-3x^2 + 4x + 4$

20 What is the value of 3^{-2} ?

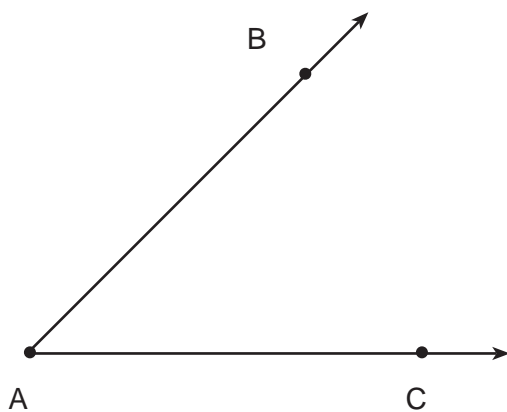
- (1) $\frac{1}{9}$ (3) 9
(2) $-\frac{1}{9}$ (4) -9
-

Part II

Answer all 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. [10]

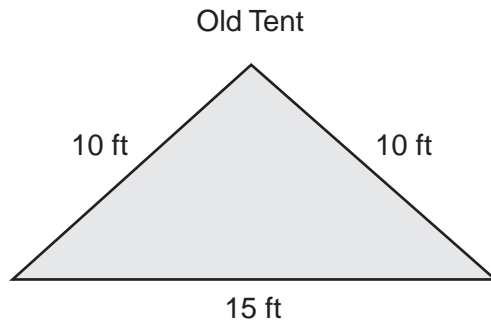
- 21 The formula for changing Celsius (C) temperature to Fahrenheit (F) temperature is $F = \frac{9}{5}C + 32$. Calculate, to the *nearest degree*, the Fahrenheit temperature when the Celsius temperature is -8 .

- 22 Using only a ruler and compass, construct the bisector of angle BAC in the accompanying diagram.



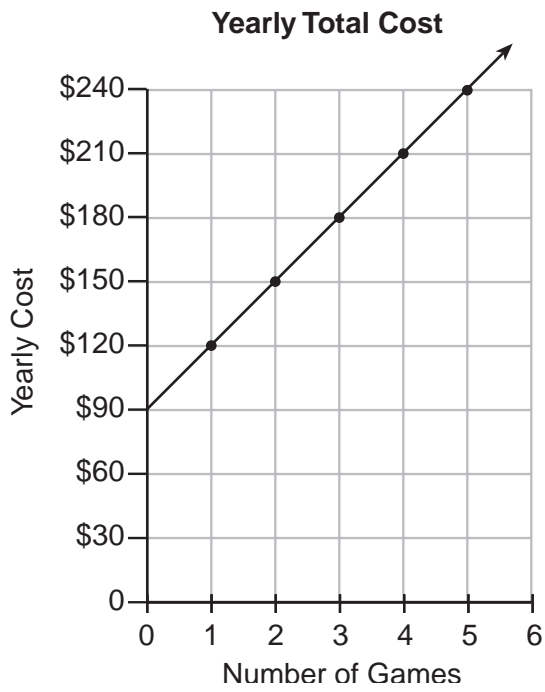
23 All seven-digit telephone numbers in a town begin with 245. How many telephone numbers may be assigned in the town if the last four digits do *not* begin or end in a zero?

24 The Rivera family bought a new tent for camping. Their old tent had equal sides of 10 feet and a floor width of 15 feet, as shown in the accompanying diagram.



If the new tent is similar in shape to the old tent and has equal sides of 16 feet, how wide is the floor of the new tent?

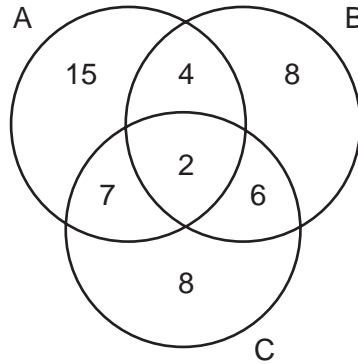
25 The accompanying graph represents the yearly cost of playing 0 to 5 games of golf at the Shadybrook Golf Course. What is the total cost of joining the club and playing 10 games during the year?



Part III

Answer all 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. [15]

26 The accompanying Venn diagram shows the number of students who take various courses. All students in circle A take mathematics. All in circle B take science. All in circle C take technology. What percentage of the students take mathematics or technology?

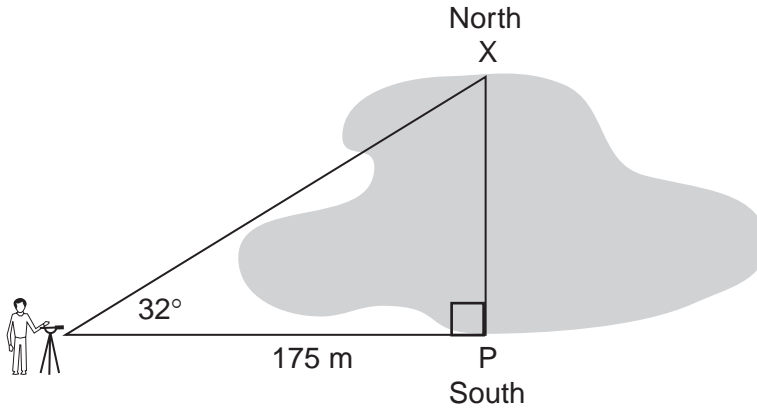


27 Hersch says if a triangle is an obtuse triangle, then it cannot also be an isosceles triangle. Using a diagram, show that Hersch is incorrect, and indicate the measures of all the angles and sides to justify your answer.

28 Tamika has a hard rubber ball whose circumference measures 13 inches. She wants to box it for a gift but can only find cube-shaped boxes of sides 3 inches, 4 inches, 5 inches, or 6 inches. What is the *smallest* box that the ball will fit into with the top on?

29 The distance from Earth to the imaginary planet Med is 1.7×10^7 miles. If a spaceship is capable of traveling 1,420 miles per hour, how many days will it take the spaceship to reach the planet Med? Round your answer to the *nearest day*.

- 30** A surveyor needs to determine the distance across the pond shown in the accompanying diagram. She determines that the distance from her position to point P on the south shore of the pond is 175 meters and the angle from her position to point X on the north shore is 32° . Determine the distance, PX , across the pond, rounded to the *nearest meter*.



Part IV

Answer all 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. [20]

- 31 The owner of a movie theater was counting the money from 1 day's ticket sales. He knew that a total of 150 tickets were sold. Adult tickets cost \$7.50 each and children's tickets cost \$4.75 each. If the total receipts for the day were \$891.25, how many of *each* kind of ticket were sold?

32 A treasure map shows a treasure hidden in a park near a tree and a statue. The map indicates that the tree and the statue are 10 feet apart. The treasure is buried 7 feet from the base of the tree and also 5 feet from the base of the statue. How many places are possible locations for the treasure to be buried? Draw a diagram of the treasure map, and indicate with an **X** *each* possible location of the treasure.

33 The scores on a mathematics test were 70, 55, 61, 80, 85, 72, 65, 40, 74, 68, and 84. Complete the accompanying table, and use the table to construct a frequency histogram for these scores.

Score	Tally	Frequency
40–49		
50–59		
60–69		
70–79		
80–89		

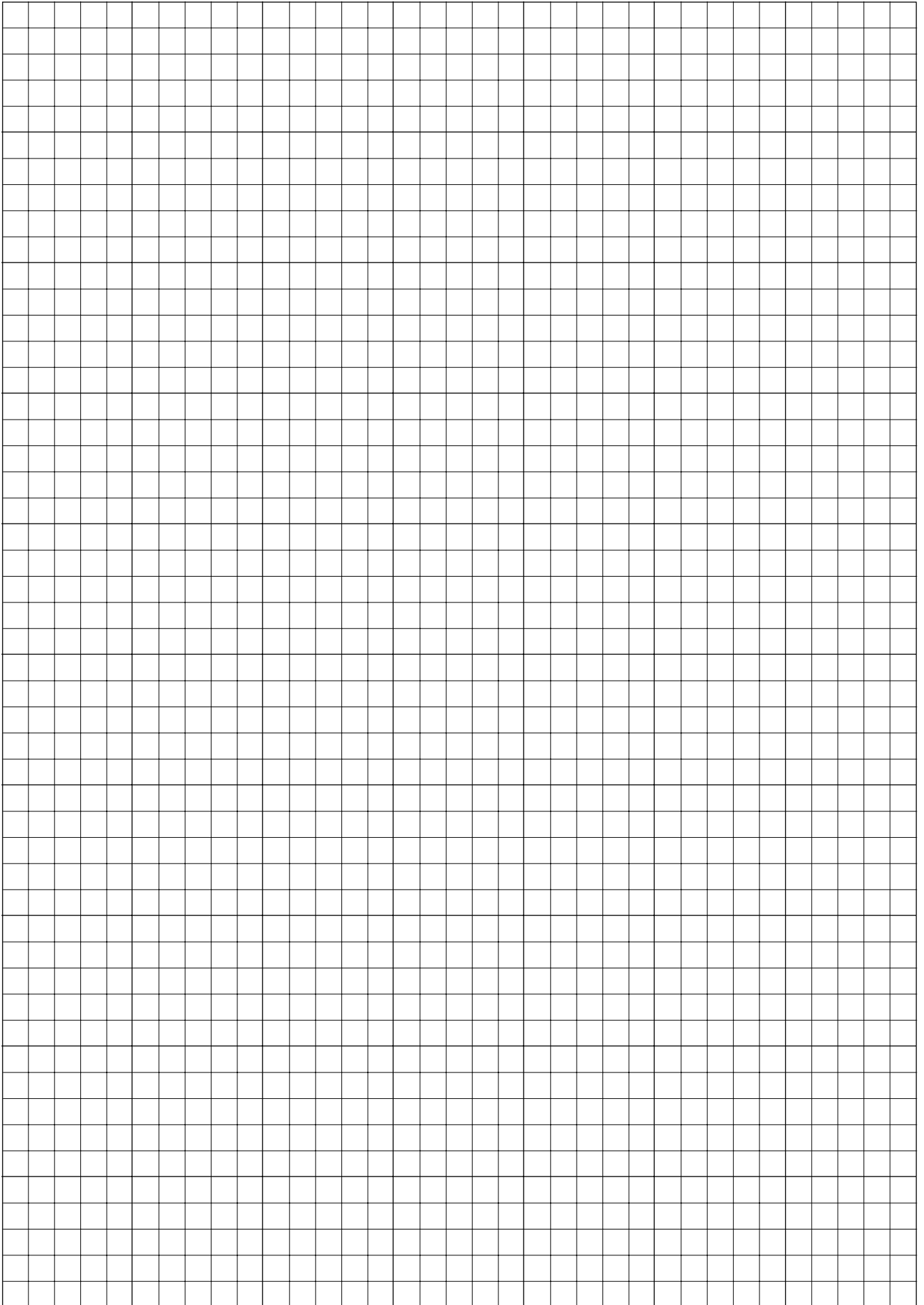
34 Paul orders a pizza. Chef Carl randomly chooses two different toppings to put on the pizza from the following: pepperoni, onion, sausage, mushrooms, and anchovies. If Paul will not eat pizza with mushrooms, determine the probability that Paul will *not* eat the pizza Chef Carl has made.

35 The area of the rectangular playground enclosure at South School is 500 square meters. The length of the playground is 5 meters longer than the width. Find the dimensions of the playground, in meters. [*Only an algebraic solution will be accepted.*]

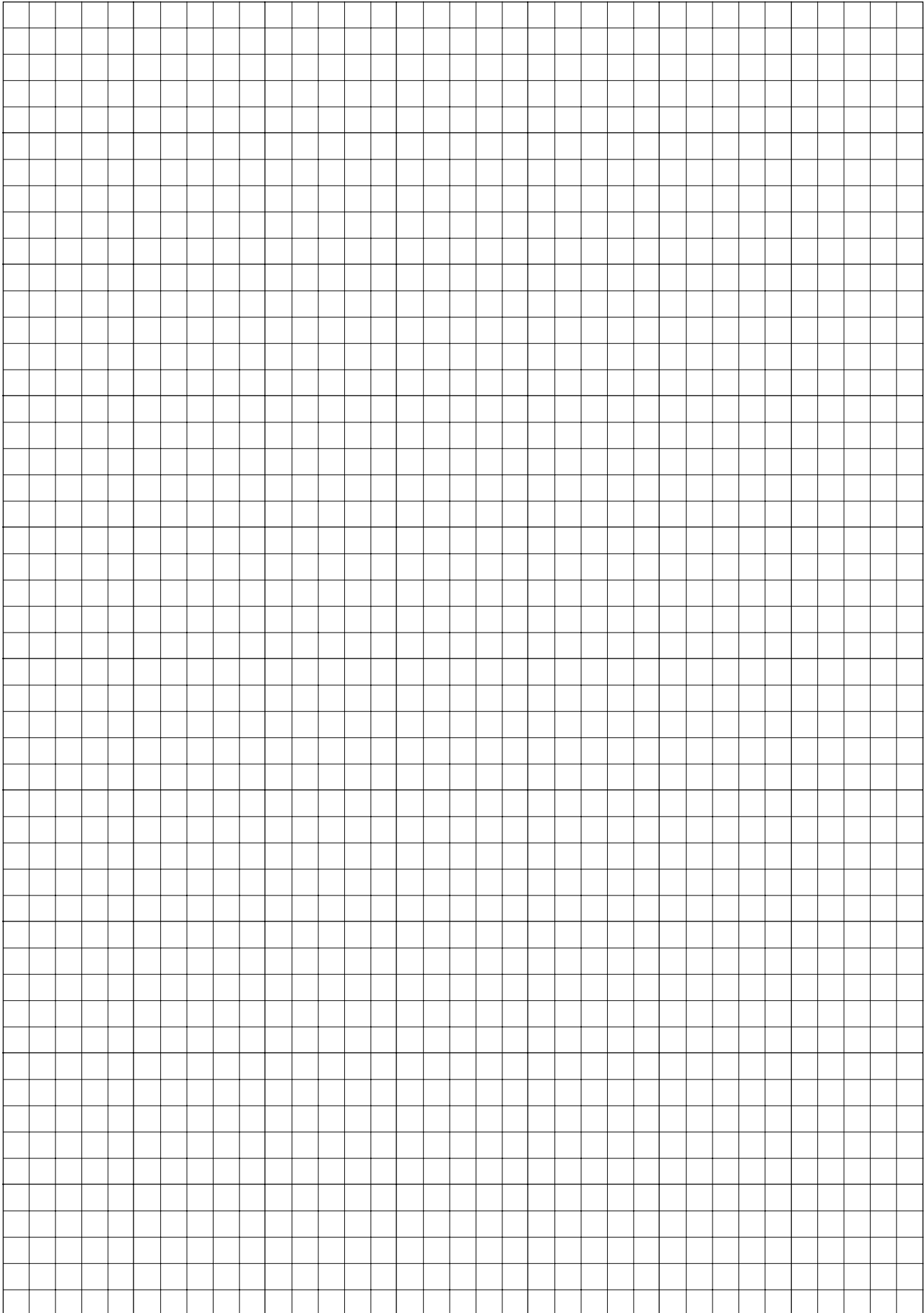
Scrap Graph Paper — This sheet will not be scored.

Tear Here

Tear Here



Scrap Graph Paper — This sheet will not be scored.



Tear Here

Tear Here

Tear Here

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

MATHEMATICS A

Friday, June 16, 2000 — 9:15 a.m. to 12:15 p.m., only

ANSWER SHEET

Pupil Sex: Male Female Grade

Teacher School

Your answers to Part I should be recorded on this answer sheet.

Part I

Answer all 20 questions in this part.

- 1 6 11 16
2 7 12 17
3 8 13 18
4 9 14 19
5 10 15 20

Your answers for Parts II, III, and IV should be written in the test booklet.

The declaration below should be signed when you have completed the examination.

I do hereby affirm, at the close of this examination, that I had no unlawful knowledge of the questions or answers prior to the examination and that I have neither given nor received assistance in answering any of the questions during the examination.

Signature

Tear Here

