

MATHEMATICS A**Thursday, June 16, 2005 — 1:15 to 4:15 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 39 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 to the questions in Parts II, III, and IV directly in this booklet. Clearly indicate the necessary steps, 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 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 minimum of a scientific calculator, a straightedge (ruler), and a compass must be available for your 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.

6 When $3x^2 - 6x$ is divided by $3x$, the result is

(1) $-2x$

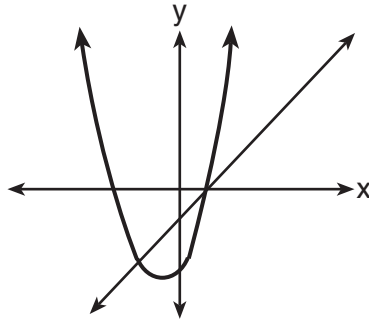
(3) $x + 2$

(2) $2x$

(4) $x - 2$

Use this space for computations.

7 The accompanying diagram shows the graphs of a linear equation and a quadratic equation.



How many solutions are there to this system of equations?

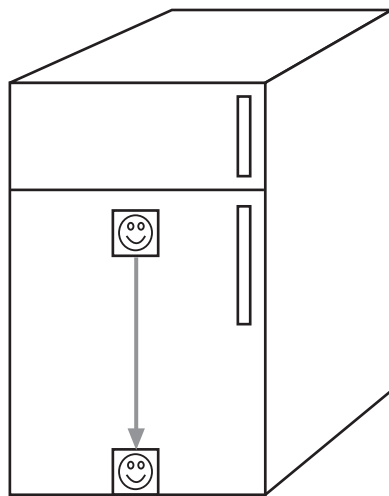
(1) 1

(3) 3

(2) 2

(4) 0

8 A picture held by a magnet to a refrigerator slides to the bottom of the refrigerator, as shown in the accompanying diagram.



This change of position is an example of a

(1) translation

(3) rotation

(2) dilation

(4) reflection

9 Jorge made the accompanying stem-and-leaf plot of the weights, in pounds, of each member of the wrestling team he was coaching.

Use this space for computations.

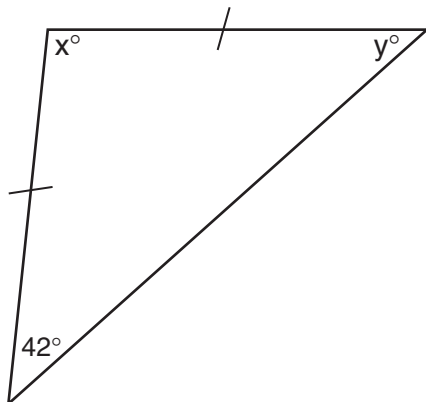
Stem	Leaf
10	9
11	
12	3 8
13	2 4 4 6 8
14	1 3 5 5 9
15	2 3 7 7 9
16	1 3 7 8 8 8 9
17	3 8

Key: 16 | 1 = 161

What is the mode of the weights?

- (1) 145 (3) 152
 (2) 150 (4) 168

10 Tina wants to sew a piece of fabric into a scarf in the shape of an isosceles triangle, as shown in the accompanying diagram.



What are the values of x and y ?

- (1) $x = 42$ and $y = 96$ (3) $x = 90$ and $y = 48$
 (2) $x = 69$ and $y = 69$ (4) $x = 96$ and $y = 42$

11 The expression $(x^2 - 5x - 2) - (-6x^2 - 7x - 3)$ is equivalent to

- (1) $7x^2 - 12x - 5$ (3) $7x^2 + 2x + 1$
 (2) $7x^2 - 2x + 1$ (4) $7x^2 + 2x - 5$

Use this space for
computations.

12 The expression $\sqrt{50} + \sqrt{32}$ is equivalent to

- (1) $9\sqrt{2}$ (3) 6
(2) $\sqrt{82}$ (4) 18

13 If $7x + 2a = 3x + 5a$, then x is equivalent to

- (1) $\frac{7a}{10}$ (3) $\frac{3a}{10}$
(2) $\frac{7a}{4}$ (4) $\frac{3a}{4}$

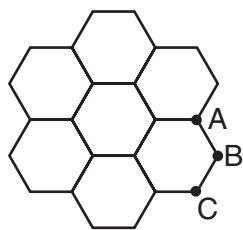
14 What is the solution set of the equation $x^2 + 11x + 28 = 0$?

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

15 Which set could *not* represent the lengths of the sides of a triangle?

- (1) $\{3, 4, 5\}$ (3) $\{5, 10, 12\}$
(2) $\{2, 5, 9\}$ (4) $\{7, 9, 11\}$

16 The accompanying figure represents a section of bathroom floor tiles shaped like regular hexagons.



What is the measure of angle ABC ?

- (1) 60° (3) 120°
(2) 90° (4) 150°

Use this space for computations.

17 The statement “If x is prime, then it is odd” is *false* when x equals

- (1) 1
- (2) 2
- (3) 3
- (4) 4

18 If $x \neq 0$, then $\frac{(x^2)^3}{x^5} \cdot 1000$ is equivalent to

- (1) $1000x$
- (2) $1000 + x$
- (3) 1000
- (4) 0

19 If $-2x + 3 = 7$ and $3x + 1 = 5 + y$, the value of y is

- (1) 1
- (2) 0
- (3) -10
- (4) 10

20 What is the converse of the statement “If it is Sunday, then I do not go to school”?

- (1) If I do not go to school, then it is Sunday.
- (2) If it is not Sunday, then I do not go to school.
- (3) If I go to school, then it is not Sunday.
- (4) If it is not Sunday, then I go to school.

21 If point $(-1,0)$ is on the line whose equation is $y = 2x + b$, what is the value of b ?

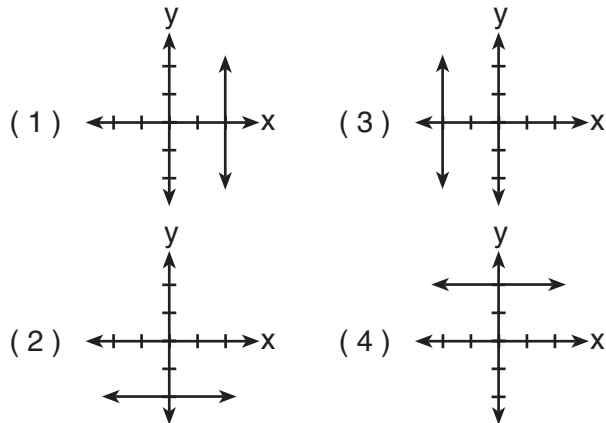
- (1) 1
- (2) 2
- (3) 3
- (4) 0

22 If $r = 2$ and $s = -7$, what is the value of $|r| - |s|$?

- (1) 5
- (2) -5
- (3) 9
- (4) -9

Use this space for computations.

23 Which graph represents the equation $x = 2$?



24 On a scale drawing of a new school playground, a triangular area has sides with lengths of 8 centimeters, 15 centimeters, and 17 centimeters. If the triangular area located on the playground has a perimeter of 120 meters, what is the length of its longest side?

- (1) 24 m
- (2) 40 m
- (3) 45 m
- (4) 51 m

25 If a and b are both odd integers, which expression must always equal an odd integer?

- (1) $a + b$
- (2) $a - b$
- (3) $a \cdot b$
- (4) $\frac{a}{b}$

26 Which quadrilateral must have diagonals that are congruent and perpendicular?

- (1) rhombus
- (2) square
- (3) trapezoid
- (4) parallelogram

Use this space for computations.

27 The length of a side of a square window in Jessica's bedroom is represented by $2x - 1$. Which expression represents the area of the window?

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

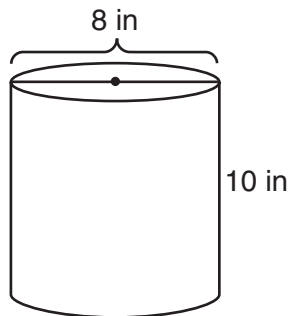
28 Which equation represents a line that is perpendicular to the line whose equation is $-2y = 3x + 7$?

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

29 The probability that the Cubs win their first game is $\frac{1}{3}$. The probability that the Cubs win their second game is $\frac{3}{7}$. What is the probability that the Cubs win both games?

- (1) $\frac{16}{21}$ (3) $\frac{6}{7}$
(2) $\frac{1}{7}$ (4) $\frac{2}{5}$

30 A storage container in the shape of a right circular cylinder is shown in the accompanying diagram.



What is the volume of this container, to the *nearest hundredth*?

- (1) 56.55 in^3 (3) 251.33 in^3
(2) 125.66 in^3 (4) 502.65 in^3
-

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]

- 31 A ribbon 56 centimeters long is cut into two pieces. One of the pieces is three times longer than the other. Find the lengths, in centimeters, of *both* pieces of ribbon.

32 The manufacturer of Ron's car recommends that the tire pressure be at least 26 pounds per square inch and less than 35 pounds per square inch. On the accompanying number line, graph the inequality that represents the recommended tire pressure.



33 In a survey of 400 teenage shoppers at a large mall, 240 said they shopped at Abernathy's, 210 said they shopped at Bongo Republic, and 90 said they shopped at both stores. How many of the teenage shoppers surveyed did not shop at either store?

34 An algebra class of 21 students must send 5 students to meet with the principal. How many different groups of 5 students could be formed from this class?

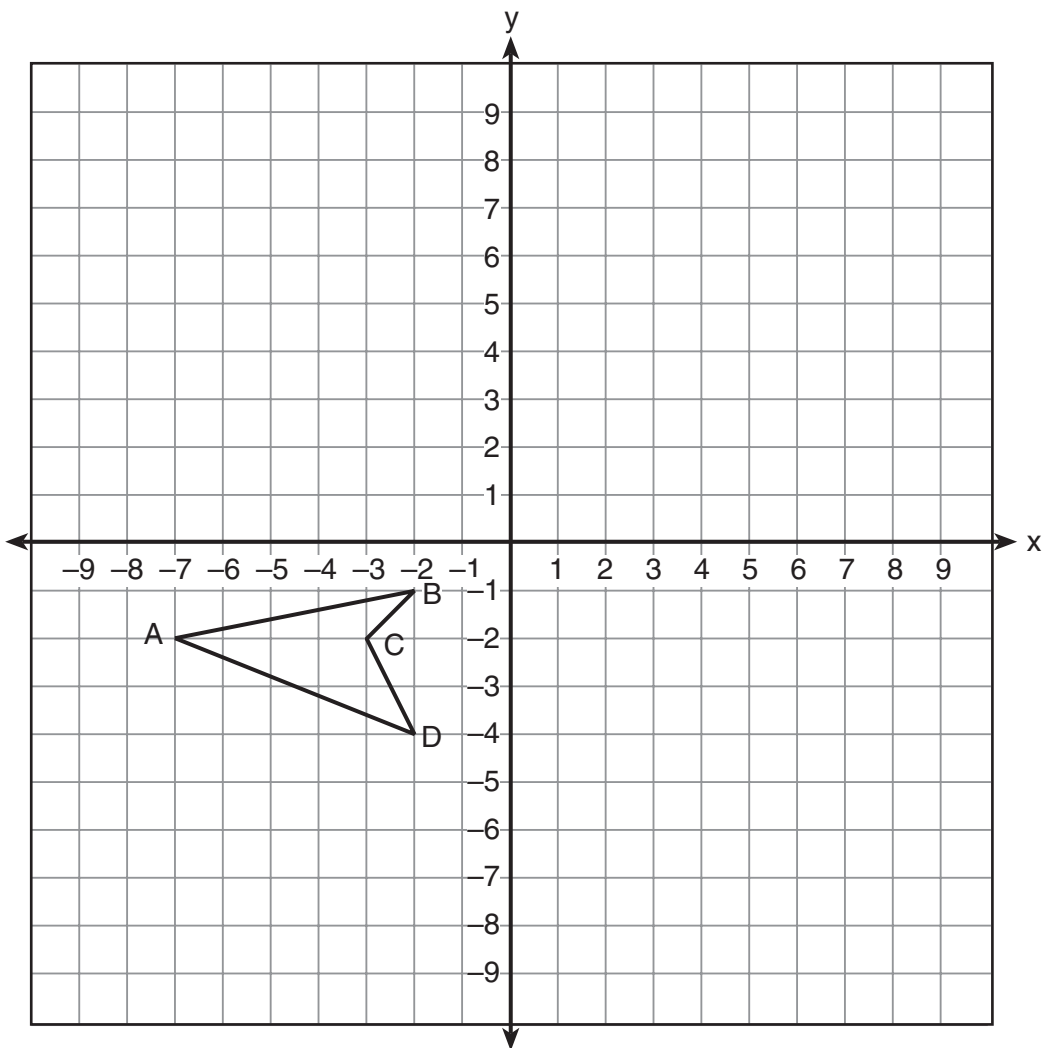
35 Factor completely: $3x^2 + 15x - 42$

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. [6]

36 Mr. James wanted to plant a garden that would be in the shape of a rectangle. He was given 80 feet of fencing to enclose his garden. He wants the length to be 10 feet more than twice the width. What are the dimensions, in feet, for a rectangular garden that will use exactly 80 feet of fencing?

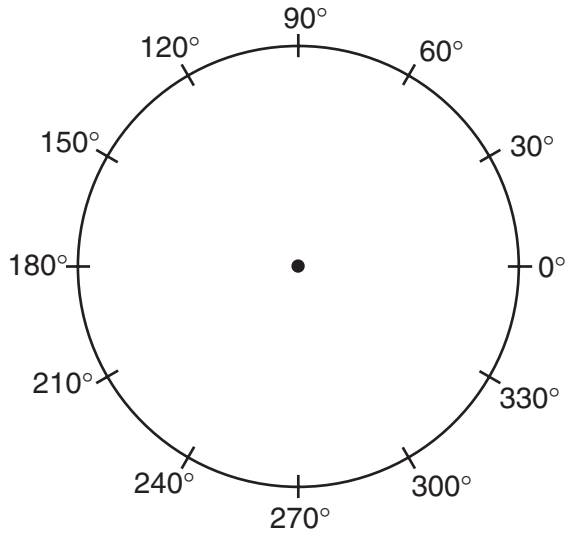
37 On the accompanying set of axes, draw the reflection of $ABCD$ in the y -axis. Label and state the coordinates of the reflected figure.



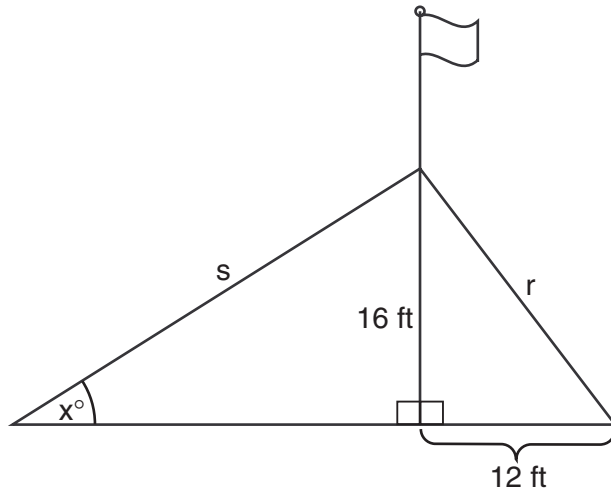
Part IV

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. [8]

- 38 In a class of 24 students, 10 have brown hair, 8 have black hair, 4 have blond hair, and 2 have red hair. On the accompanying diagram, construct a circle graph to show the students' hair color.



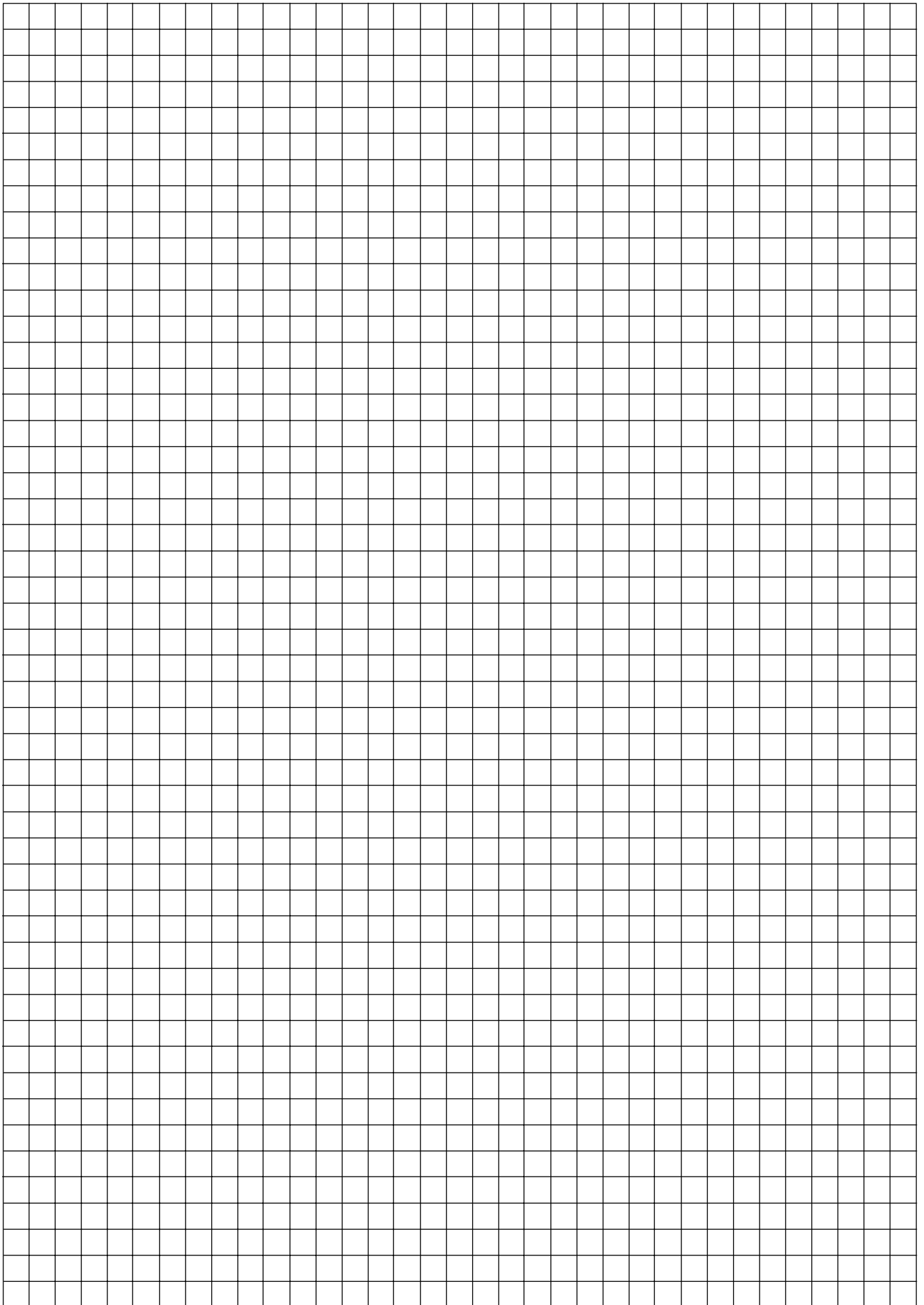
- 39 The accompanying diagram shows a flagpole that stands on level ground. Two cables, r and s , are attached to the pole at a point 16 feet above the ground. The combined length of the two cables is 50 feet. If cable r is attached to the ground 12 feet from the base of the pole, what is the measure of the angle, x , to the *nearest degree*, that cable s makes with the ground?



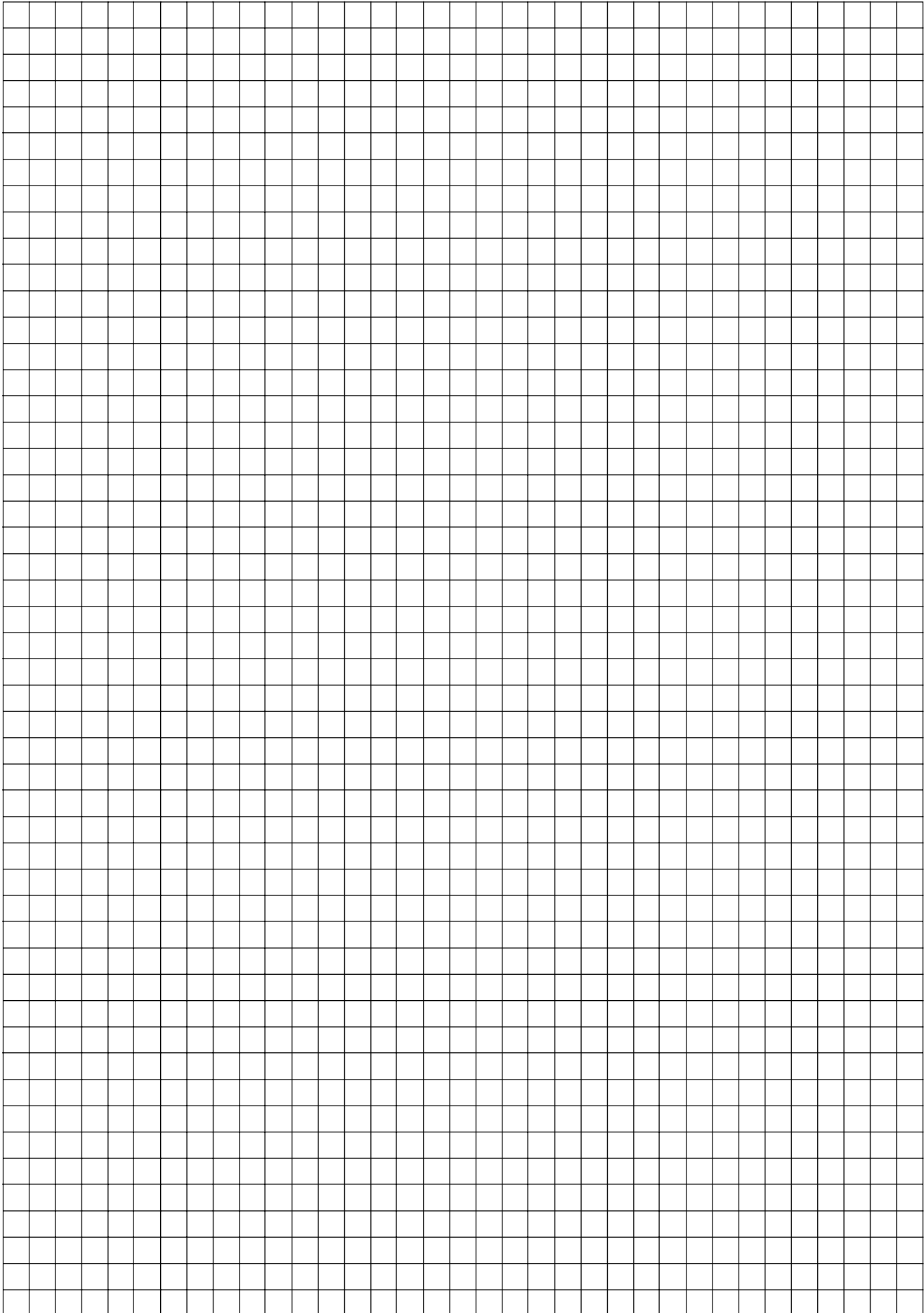
Scrap Graph Paper — This sheet will *not* be scored.

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The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

MATHEMATICS A

Thursday, June 16, 2005 — 1:15 to 4:15 p.m., only

ANSWER SHEET

Student Sex: Male Female Grade

Teacher School

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

Part I

Answer all 30 questions in this part.

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

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

