The University of the State of New York

COMPONENT RETEST

IN

MATHEMATICS A

COMPONENT 7
MODULE 2

Monday, April 29, 2002 — 1:00 to 1:50 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.

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 two parts, with a total of nine 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 Part II 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.

DO NOT OPEN THIS TEST 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. [12]

Use this space for computations.

1 What is the solution for the following system of equations?

$$x + y = 1$$
$$x - y = 5$$

(1) (3,2)

(2) (3,–2)

(3) (2,–3)

(4) (2,–1)

2 Michelle opens a T-shirt store. She sells each shirt for $12. Her costs are $5 per shirt. She pays $14,000 per year for rent of the store. What is the minimum number of T-shirts that she must sell each year to pay her rent?

(1) 824

(2) 1,167

(3) 2,000

(4) 2,800

3 One root of the equation $2x^2 - x - 3 = 0$ is

Use this space for computations.

(1) 1

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

(3) 3

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

4 What is the slope of a line perpendicular to the line represented by the equation $y = 3x + 4$?

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

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

(3) 3

(4) –3

5 Danielle bought d dollars worth of stock. During the first year, the value of the stock doubled. The next year, the value of the stock decreased by $1,750.00. Which equation represents the value of the stock, V, in terms of d after two years?

Use this space for computations.

(1) $V = 2d + 1{,}750$

(2) $V = 2d - 1{,}750$

(3) $V = d + 1{,}750$

(4) $V = d - 1{,}750$

6 What is the solution of the inequality $2x - 1 < 0$?

(1) $x < 0$

(2) $x < \frac{1}{2}$

(3) $x > -1$

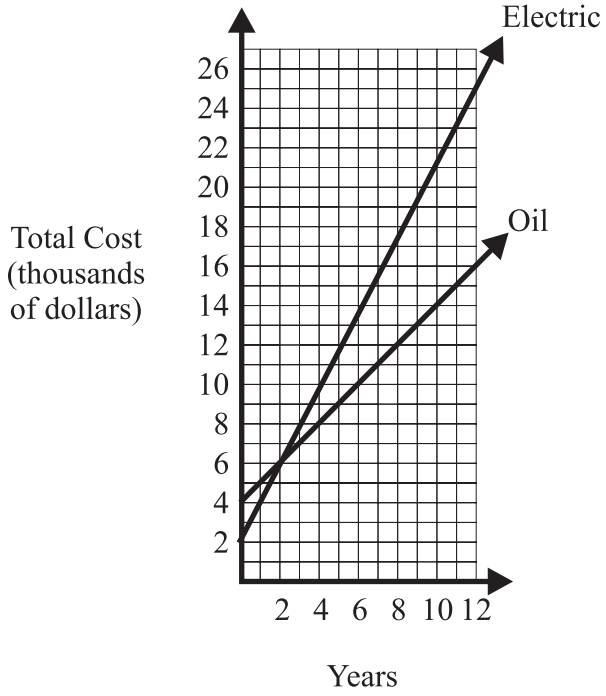
(4) $x > \frac{1}{2}$

Part II

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. [12]

7 Mr. Abernathy is planning to build a new apartment complex. He is considering two systems for heating his apartment complex, electric and oil. The accompanying graph shows the comparison of total costs of using electric and oil systems to heat his apartment complex.

Comparison of Home Heating Systems

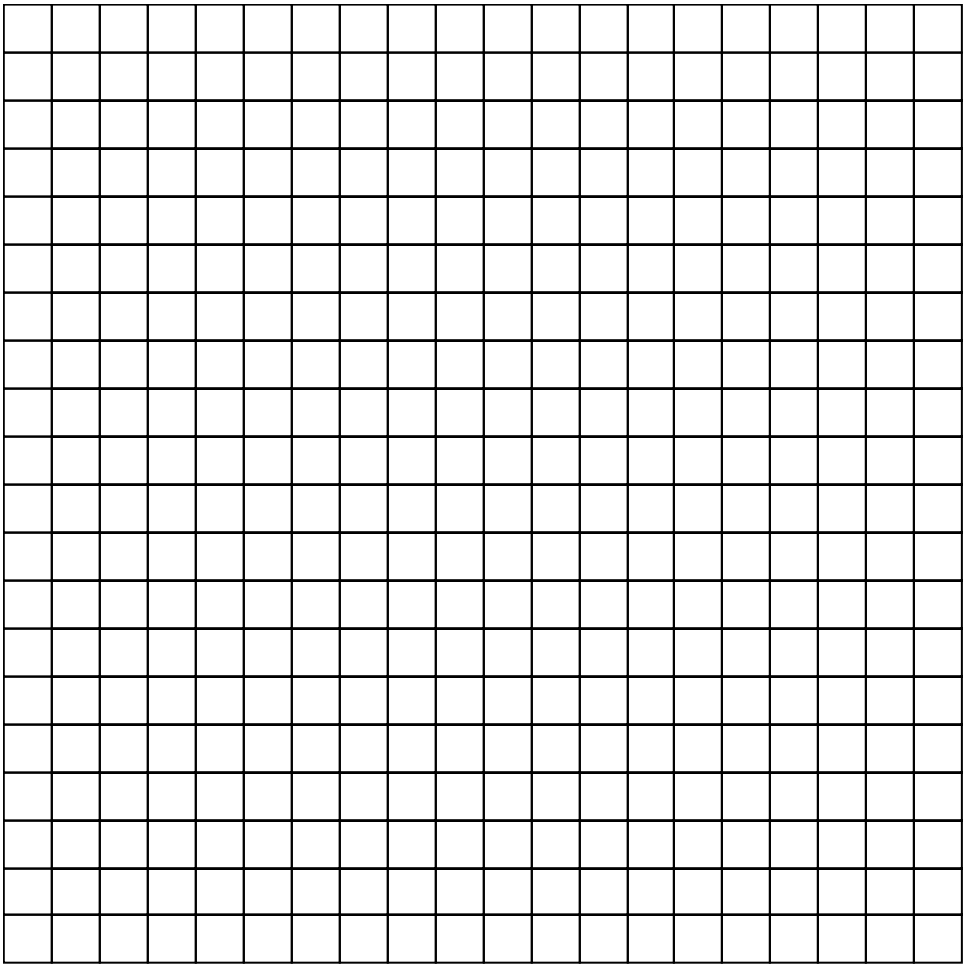


For which heating system does the cost increase at the greatest rate? Explain your answer.

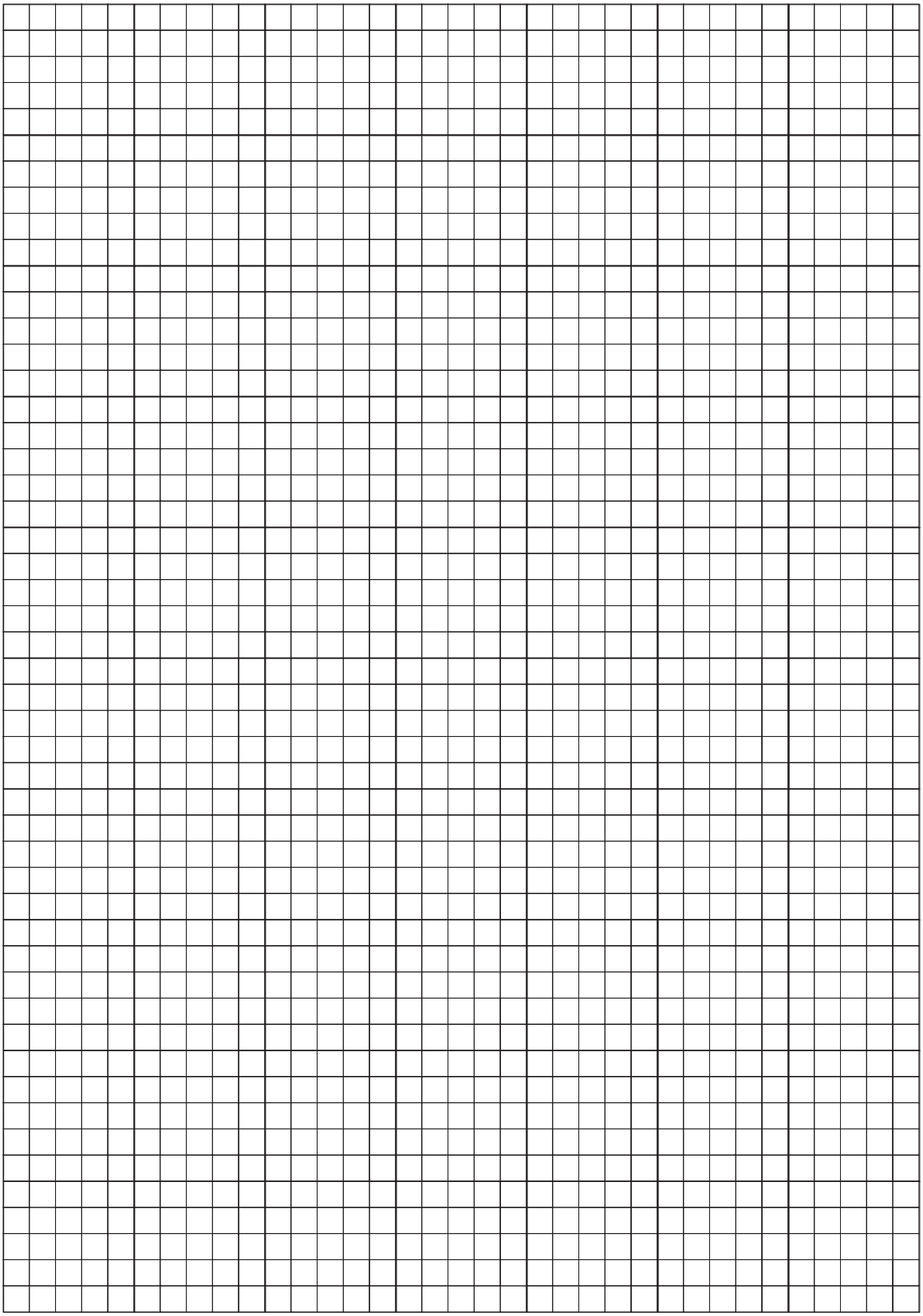
At one year, which system is cheaper, and by approximately how many thousands of dollars?

8 A fuel produces 10,000 joules of energy the first time it is used in a machine. The number of joules of energy it produces decreases by 20% every time the machine is used. How many times can the machine be used before it produces less than 3,000 joules of energy?

9 State the points of intersection of the line represented by the equation $y = -2x + 4$ and the parabola represented by the equation $y = x^2 - 4$.



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



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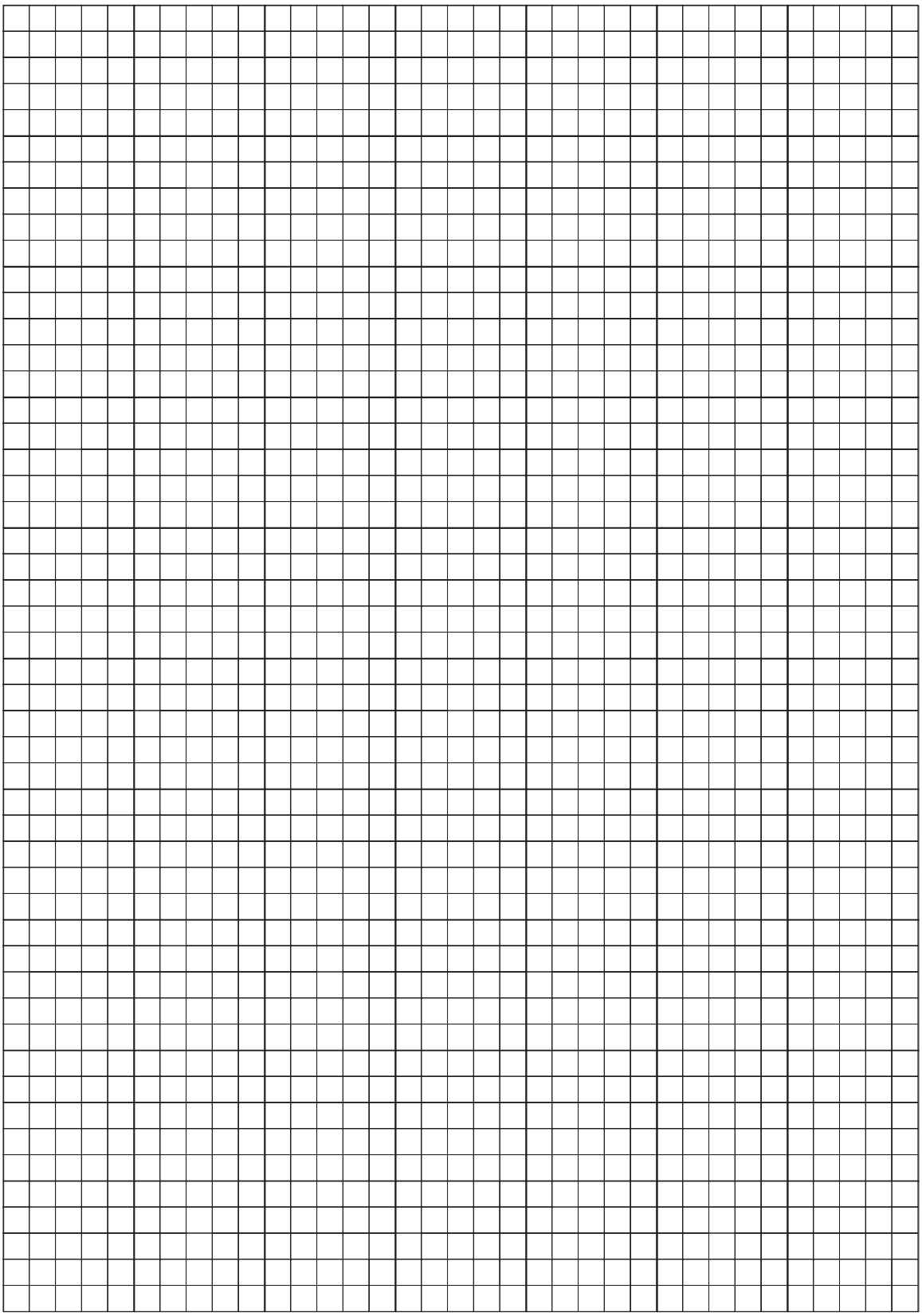

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COMPONENT 7 MODULE 2

Monday, April 29, 2002 — 1:00 to 1:50 p.m., only

_____

ANSWER SHEET

Student . . . . . Sex: ☐ Male ☐ Female

School . . . . . Teacher . . . . . .

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

Part I

Answer all 6 questions in this part.

1_____

2_____

3_____

4_____

5_____

6_____

Score: ☐

Your answers for Part II 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

MATHEMATICS A			
Question	**Maximum Credit**	**Credits Earned**	**Rater's/Scorer's Initials**
Part I 1-6	**12**		
Part II 7	**4**		
8	**4**		
9	**4**		
Maximum Total	**24**		
		Total Raw Score	**Checked By**

Rater's/Scorer's Name (minimum of three)

Module 1 Score	
Module 2 Score	
Component 7 Total Score	
Score Range for Component 7 (use conversion chart)	☐ score range 65 and above ☐ score range 55–64 ☐ score range below 55

Notes to raters . . .

- **Each paper should be scored by a minimum of three raters.**
- **The table for converting the total raw score to the scaled score is provided in the scoring key for this examination.**
- **The scaled score is the student's final examination score.**