A HANDBOOK FOR GED MATH TEACHERS,

MASTER'S PROJECT

Submitted to the School of Education,
University of Dayton, in Partial Fulfillment
of the Requirements for the Degree
Master of Science in Education

by

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Approved by:
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Finally, thank you, Dr. Lutz, for your friendship and guidance.
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An alternative avenue to getting a high school education emerged. People are completing the requirement for high school completion through the Tests of General Educational Development. The tests form the test known as the GED. The examination covers the general skills in the areas of writing, reading, social studies, science, and mathematics. In a study by the Carnegie Foundation for the Advancement of Teaching, the number of GED tests increased by 247.3% from 1967 to 1987 (Change, 1989). In Ohio, 3,843 people received the GED in 1972 which represented 25% of all high school graduates. During the year of 1987, 13,999 persons received their GED which represented 10.3% of high school graduates (Change, 1989, p. 38). This article supported the assumptions that the number of persons receiving GEDs increases tremendously in the United States.

The writer has worked with delinquent young ladies from ages 12 to 21 for several years. Mathematics classes for grades 7 to 12 have been taught. The classes included General Math, Pre-Algebra, Consumer Math, Algebra I, and Geometry. The writer has now been involved with the GED program for two years. The classes in GED were added because a large percent of our students do not complete their high school education. During the two years, the writer has seen a need for an extensive program to assist the students with skills to be successful on the GED test.
Statement of the Problem

The purpose of this project was to develop for GED math teachers a handbook of resources to supplement the regular program.

Procedure

Subjects

The persons who will use this material will be the administrators, teachers, and the GED students.

Setting

William K. Willis High School is the Education component of Scioto Village School for Girls. Scioto Village is part of the Scioto Village/Riverside Complex with the Department of Youth Services for the state of Ohio. It is located in a rural/suburban community. It is located on the banks of the Scioto River five miles north of the Columbus Zoo in the community of Rathbone in Delaware County. It is less than five miles from Muirfield Village in Dublin, Ohio. The students are juvenile delinquents who are incarcerated. They are from all counties in Ohio. The school has three buildings used for classes. Students are enrolled in classes from grades 7 to 12, with GED classes offered.

Data Collection

The data was gathered from computer printouts, books, and the researcher’s experience. The state’s GED office and adult centers were contacted.

Design

The handbook will contain the following:
Section I. Resource Materials

Section II. Test-Taking Tips

Section III. Enrichment Materials

Results

The result of this study is a handbook useful to teachers who teach GED math classes. It focuses on supplementary materials for the GED math classes.

The materials in the handbook will be used by teachers to improve students' performance on the GED test through additional information.
CHAPTER II
REVIEW OF LITERATURE

The GED has emerged as a part of the educational system since 1942. It originally served as a means for military persons to finish high school after World War II. The number of people taking the test continues to grow as it is a desirable mechanism to get a high school diploma other than through the traditional high school.

The reasons for seeking a GED vary. Some people did not complete high school for reasons such as lack of interest, family problems, age factors, and pregnancies. As they became older, they found a need to be successful educationally. The GED seemed to be a successful route. The American Council on Education (ACE) survey of 1984 found that one-half of the GED test-takers took the test to further their education beyond the high school level. In 1980 about one-third of the test-takers took the test for job-related reasons. Henry Spille, the director of GED Testing Service, stated that "people may be realizing that education is becoming even more critical to future employment" (ACE, 1985, p. 166).

The administrative responsibility of the GED program falls upon the American Council on Education. Each state sets fees and testing sites. Rules governing the administration of the test are established. There are designated
public agencies where testing can be done. The GED program of the State Department of Education in each state’s capital can be contacted for any information on the test.

The GED diploma is recognized by different facets of society. State and federal agencies, colleges and universities, labor unions and private employers accept the GED diploma for the high school diploma requirement. The acceptance of the GED diploma covers all states of the U.S. and parts of Canada.

Although the GED program was highly used to educate the servicemen during World War II, times have changed. Because of the reduction of the Armed Forces, the Armed Forces have become very selective. The GED alone is not acceptable for military entrance. The prospective serviceman must have college hours after getting the GED. This regulation is number 601210 in the Army Regulation booklet dated August 1991. GED graduates would be accepted if there was a national emergency. As reported in a telephone conversation with an Army recruiter, the ruling is subject to change. The other branches of the military agreed with the requirements of the Army.

The tests are standardized across the country. "The GED test measures retention of broad concepts rather than recall of facts and details" (ACE, 1985, p. 167). The materials are based on subjects that would be covered in the high schools. Skills are the major focus.

During the tenure of the GED testing program, there has only been one revision up to 1978. From 1982 through 1987, the American Council on Education (ACE) had a review process in motion. Its purpose was to make sure
that the test had credibility and substance. According to the GED Testing Center (S. Dauzat & J. Dauzat, 1987, p. 27). The following areas were the concentration of the group:

1. The needs that the testing program should serve
2. The total scope of what the test should measure
3. The manner in which the test would be administered and organized

After the review, the 1988 edition of the GED test was published.

Due to the changes in the 1988 GED test, skills will be "viewed as a set of comprehensive, integrated skills rather than isolated fragments of learning from individual disciplines" (GED Testing Service, 1985, p. 6). The main focus of the GED test will still be to measure the skills that are expected to be learned by a high school student attending a secondary school.

More emphasis on "highly developed critical thinking and problem solving" (GED Testing Service, 1985, p. 7) will be a feature of the 1988 GED test. Problems involving multiple-step solutions will be used. Students will have to be able to apply information learned to daily living.

The computer age is upon us. The 1988 test will show evidence of an examinee's ability to understand the role and the impact of computer technology on the lives of everyone. Persons tested will not have to be computer literate to answer the questions. If the examinee is aware of the computer application in record keeping, offices, supermarkets, and the collection and analysis of data, the change will be non-threatening (S. Dauzat & J. Dauzat, 1987).
The Writing Skills test of the 1988 GED test will assess two areas of one's writing ability. The indirect assessment will measure the general usages of written English. The direct assessment will measure the examinee's ability to write an essay. The areas of focus in the essay will be idea development, language structure, development of sentences and paragraphs, good examples and background on the topic (S. Dauzat & J. Dauzat, 1987).

The Social Studies test will apply higher level thinking skills in the 1988 GED test. The students will have to have some knowledge of history, economics, political science, geography, and behavioral sciences. The behavioral sciences include psychology, sociology, and anthropology. These subjects will help students in their decision-making process. In the decision-making process all of the areas are brought together. There will be some global issues addressed.

According to S. Dauzat and J. Dauzat (1987), the Science test will change in the area of the distribution of the questions. The number of questions from the areas of life science and physical science will be the same. Abstract reasoning will be a must in answering the questions. Factual knowledge will not be the focal point of the Science test. Life science will address questions from biology, while physical science will address questions from physics, chemistry, and earth science. The content areas that are covered will include conservation, interactions in natural systems, the constant state of change, and the relationship of time and space to natural phenomena.

There will be three changes in the Literature and the Arts test. Practical and general reading will be omitted because they will be measured by the other
tests. The Literature and the Arts test will include popular literature from authors such as Joyce Carol Oates, Mary Gordon, and James Baldwin. There will be prose, non-fiction, fiction, poetry, lyrics, and drama. Classical literature from 19th-20th century authors such as Steinbeck, Faulkner, Hemingway, Orwell, Thoreau, and Fitzgerald will be given. The commentary about literature and the arts will include recent writings about literature, the theater, music, dance, film and art. The prose will contain 100 to 400 words. The poetry will be eight to 25 lines. There will be five to eight questions at the end to test the student's comprehension and analysis abilities (S. Dauzat & J. Dauzat, 1987).

The major change in the Mathematics test will be the appropriation of the items. The number of one-step problems will be reduced. Higher level thinking and problem solving skills will be necessary to solve the problems. The problems will be multi-step problems. The word problems will be average to difficult in their make-up.

The Arithmetic section of the math test will be divided into three parts. The concentration will be on problem solving in the area of measurement, number relations, and data analysis. The measurement part will cover perimeter, length, area, circumference, distance, time, money, and measurement conversion. Number relations will deal with fractions, decimals, the comparison of numbers, drawing conclusions, scientific notation, and percent. The data analysis portion of the test covers probability, means, medians, graphs, charts, and tables with interpretation (Lemay, 1992).
The Algebra portion of the test will focus on problem solving with algebraic symbols and expressions, equations, and inequalities. Factoring, graphing equations, finding the slope of a line, solving problems in the exponents, and using roots will be covered (Lemay, 1992).

The Geometry problems will work with volume, angles, triangles, and quadrilaterals. Indirect measurement will be covered through the problem dealing with congruency, similarity, and the Pythagorean Theorem (Lemay, 1992).

Because of the 1988 revisions, the content areas of the test have the following structure (Barasch et al., 1988, p. 4):

Test 1 is the Writing test. Part I covers the Conventions of Written English. Sentence structure comprise 25% of the questions. Usage makes up 25% of the questions; capitalization 10%, punctuation 20%, spelling, possessives and contractions 20%. Part II of the Written Skills test is the Essay. Part I will have questions to be answered in 75 minutes and one essay to be done in 45 minutes.

Test 2 is Social Studies. Twenty-five percent (25%) of the questions come from history. Economics covers 20% of the test; questions from geography make up 15% of the test. Political science questions cover 20% of the test, while the remaining 20% of the questions are from the behavioral science subjects. The test will have 64 questions to be completed in 85 minutes.

Test 3 is Science. Life science topics will cover 50% of the test. The last 50% of the questions will come from physical science. The test will consist of 66 questions to be done in 95 minutes.
Test 4 will address the area of Interpreting Literature and the Arts. Popular literature makes up 50% of the test. Classical literature makes up 25% of the test, while 25% of the test comes from the commentary topics. The test will have 45 questions to be answered in 65 minutes.

Test 5 is Mathematics. Measurement topics cover 30% of the test. Algebra problems are covered in 30% of the test. Geometry topics make up 20% of the test. Numeration and statistics each cover 10% of the test. There will be a total of 56 problems to be solved in 90 minutes.

The new GED exam contains a total of 286 multiple choice questions and one essay. The total time to spend on the test is seven hours and 35 minutes (Barasch et al., 1988, p. 5).

The Ohio GED Program

The Ohio GED Program is coordinated through the state GED office which is part of the Ohio Department of Education. All of the information and regulations governing the program are taken through this office. The information on applications, official test centers, official testers, testing procedures, and eligibility requirements would be received through the state GED office.

The GED is not considered a reason for dropping out of school. The GED office recognizes the compulsory school attendance rules so students have to meet certain requirements. The main requirement is that the person has officially withdrawn from elementary or secondary school and is at least 19 years old.
The state GED office (1989) requires that one of the following requirements must be met as an exception to the main requirement:

1. The applicant must be 18 years old, and the applicant's graduating class has graduated. The applicant must have an official transcript showing that at least 12 credits were earned before withdrawing from school.

2. The parents, guardian, or court official can sign the "Age Waiver Form" for an 18 year old. An 18 year old also has the right to sign the form instead of the parents. If this occurs, the school superintendent or a designee must also sign the form.

3. Sixteen and 17 year olds have to file an "Age Waiver Form." The form has to be signed by the parents, guardian, or court official and by the superintendent of the applicant's school district.

4. The commanding officer must write a statement to verify the swearing-in ceremony date for a newly sworn-in military person. The officer's statement must be attached to the "Age Waiver Form." Persons in the Delayed Entry Program do not meet this requirement.

Before a student can take the official GED test, the student must pass the Official Practice Test. The student must make at least 35 on each of the five tests, but the overall average must be 45 for the total tests.

Individual programs have the right to require a higher score if it is approved by the state GED office. The Practice Test can be given at any center
that offers GED classes. The centers can be public or a non-profit adult education program.

After passing the Official Practice Test, the applicant is now ready to take the Official GED Test. The applicant has to fill out a GED Test Application and get it notarized. If a Fee Waiver is needed, the form has to be completed. Fee waivers are given once. A $30 fee must be included with the application if a fee waiver is not needed. All forms must be sent to the state GED office which is presently located at 65 South Front Street, Columbus, Ohio.

There is a time limit on the taking of the test. The GED office should send the applicant a letter of authorization to take the test. The test must be taken within 90 days after the authorization letter has been taken.

The applicant can take the GED test at any of the approved Ohio Testing Centers. There is at least one test center in all 88 counties of Ohio. A listing of the Ohio GED Test Centers can be found on the application. An updated list of centers can also be obtained. The last updated list is dated November 4, 1991.

GED programs are part of the education programs for juvenile and adult penal institutions. The Practice and Official Tests are given at the institutions. There are designated staff who are the official test administrators. They are trained to administer the tests. A person who is not involved in the student’s test preparation program is normally the first choice for an official test giver. The different forms required for the GED test are completed and sent to the state GED office. The institution and the education director oversee the paperwork.
If a student does not pass the GED test, the student can retake the test. The retake time is determined by the student's overall score. Persons who make from 220 to 224 (44-48.8 average) can take the test over after one month. The test can be taken after three months if the total score ranges from 215 to 219 (43-43.8 average). Six months after the testing date is the retake time for a person whose score was 214 or below (42.8).

When the test is retaken, the highest score on each individual subject test will be used to calculate the final score. The applicant will have to reapply and pay the $30 for the retesting.

The Ohio Certificate of High School Equivalence will be sent to an applicant about four weeks after taking the test. If an official transcript is needed for employment and other reasons, the state GED office can send one on request. A service fee is required. The request forms can be found at the state GED office and at local GED centers. The record can be framed and displayed with pride.
CHAPTER III

HANDBOOK

A HANDBOOK FOR GED MATH TEACHERS
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Activities

Answer Key
Introduction

According to a 1989 GED Performance Study by Douglas R. Whitney, the Director of GED Testing Service of the American Council on Education in Washington, D.C., the examinees have made significantly lower scores in math. The lower scores are attributed to the significant changes in the math test (Whitney, 1991). The new test requires the usage of problem-solving skills rather than an emphasis on computation. Higher-order thinking skills have to be stressed because the examinee must apply mathematical concepts, analyze and evaluate information to solve the problems (Vanthournout, 1989). The materials that are used in the GED math classes have to follow this trend of learning.

The content area of math, as well as the test-taking process, are two valuable components to assist in the preparation for the GED test (Vanthournout, 1989). Teachers have to spend ample time in both areas. Algebra, geometry, and number relations are key areas for concentration (Whitney, 1991).

This handbook will be divided into three sections. Section I will highlight the up-to-date resources that focus on the 1988 test. Section II will highlight test-taking tips. The last section will be an Enrichment section. Section III will have exercises that will enhance the students' skills.
Section I

Resource Materials

Workbook Texts

The GED books are composed in a manner that individualized or group work can be done. The texts listed in this group provide pre-test, post-tests, half and full length tests, practice tests, simulated tests, coverage of all areas of the GED mathematics tests, assessment charts, and instructional strategies for the teachers.

The Cambridge Program for the GED Mathematics Test, Cambridge Adult Education, Prentice Hall Regents

The New GED Mathematics Test 5, Contemporary Books

Steck-Vaughn GED Mathematics, Steck-Vaughn Company

Exercise Books

The exercise books listed below provide excellent drills on computation. The books also have material that will help the students master the basics through GED level and problems. Tests are included.


The New GED Mathematics Exercise Book, Contemporary Books

Steck-Vaughn GED Exercise Book Mathematics, Steck-Vaughn Company
Comprehensive Texts

The Comprehensive Texts provide a complete preparation for the entire GED test. It provides a good "refresher course" for the students who now are only waiting to take the official test.

Complete GED Preparation, Steck-Vaughn Company

GED 1990 Barron’s Educational High School Equivalency Exam, Barron Eighth Edition

GED High School Equivalence — Cambridge, Cambridge Adult Education

New GED: How to Prepare for the High School Equivalency Examination,
Contemporary Books

Preparation for the New GED High School Equivalency Examination, Arco

Pre-GED Materials

The Pre-GED materials are used to build the skills of students who are not ready for the GED Materials in Mathematics, the computational skills, and problem solving areas are given special attention. The grade level is below the seventh grade.

Pre-GED Math Book — Cambridge, Cambridge Adult Education

Pre-GED Mathematics and Problem Solving Skills, Book 1, Robert Mitchell — Contemporary

Pre-GED Mathematics and Problem Solving Skills, Book 2, Robert Mitchell

Strategies for Success — Mathematics, Steck-Vaughn Company
Test-Taking Skill Workbooks

The workbooks listed below will provide the students with lessons in developing confidence and test-taking skills.

The GED Math Problem-Solver-Reasoning Skills to Pass the Test — Myrne Mandy, Contemporary

Mathematics Workshop: Exam Preparation, Globe

Research Shortcuts, Judi Kesselman-Turkel and Franklynn Peterson,

Contemporary

Study Smart, Judi Kesselman-Turkel and Franklynn Peterson, Contemporary

Test-Taking Strategies, Judi Kesselman-Turkel and Franklynn Peterson,

Contemporary

Assessment Program and Teacher Aids

Diagnostic Pre-Tests for GED Instruction

Evaluative Post-Tests for GED Readiness

Scoring Guide for the GED Assessment Program


These materials were developed to assist the teachers in placement of the students as test readiness and teacher guidance and understanding of the GED program.

Videotapes


The New GED Tests — Guide gives an analysis of the five GED tests and scoring procedures, Contemporary Software

GED-2000, Steck-Vaughn

This is the only complete GED preparation software program. It provides the following:

1. Skill builders
2. Testing components
3. Practice tests in timed and tutorial form
4. A management system
5. Student test reports
6. Analysis and prescription
7. Progress chart
9. Simple instructions and on-screen prompts

The program is designed for both Apple II and IBM PC systems.

Addresses of Companies

Arco Publishing
Gulf & Western Building
One Gulf & Western Plaza
New York, NY 10023

Barron’s Educational Series, Inc.
250 Wireless Boulevard
Hauppauge, NY 11788
Anxiety is normal for anyone while taking an important test (Walch, 1985). As teachers, we should try to assist students in reducing their degree of anxiety. This assistance might aid them in their overall performance on the test.

The following list gives some test-taking tips for taking the GED test:

1. Read the directions carefully.
2. Ask for clarification immediately if the directions are not clear.
3. Address all of your questions to the test proctor.
4. Fill out all requested forms.
5. Have your driver's license or identification card and your
   authorization letter with you.
6. Read each problem carefully before answering each.
7. Bring gum or hard candy to help relieve tension. A deep breath or
   a little stretch helps.
8. Answer the easiest questions first.
9. Place a check by the questions that are skipped to identify them
   easier.
10. Answer the question that is addressed. The questions are not tricky.
11. Budget your time. Do not spend a lot of time on one problem.
12. Do easy computations in your head.
13. Look for mathematical shortcuts.
14. Use estimation.
15. Work backwards by substituting the choices for the unknowns in the
   equations.
16. Substitute numbers for letters.
17. Look for key words and phrases.
18. Read charts, graphs, and tables carefully.
19. Make sure that you fill in the blank that you intended to.

   Sometimes the questions request the wrong answer.
20. Answer all questions. Points are not deducted for wrong answers

   (Mulcrone, 1988, p. 1).
21. Use an elimination process when guessing. Some answers are unreasonable.

22. Try to use common sense.

23. Change fractions to decimals.

24. Rule out information that is not needed.

25. Indirectly check answers to your addition, subtraction, multiplication, and division.

26. Make sure that stray marks are erased. The tests are scored by a rating machine. Do not fold or crease the answer sheet.

27. Check your answer order on the answer sheet frequently to make sure answers are in the right place.

28. Try not to watch the clock.

29. Be careful of answer choices that are numbers used in the problem.

30. Use a consistent plan for solving problem.

31. Try not to change answers because of feelings.

32. Do not get upset if some questions are very difficult. The questions will range from average to difficult in level.

33. Make sure all papers that you use are turned in and include your name and identification number.

34. Turn in all scrap paper, booklets, and answer sheets to the proctor before leaving the testing room.

35. Read all questions at least twice.
36. Stay as calm as possible. The right attitude and careful preparation helps to promote a good performance.

37. Eat a good meal and get plenty of rest the night before the test. Breakfast that morning keeps your mind off food.

38. Get your clothes and any other materials together the night before the tests. Make sure to bring two to three No. 2 pencils.

To provide students with these helpful tips, the instructors can do some of the following:

1. Place posters on the walls giving testing strategies.
2. Give timed tests to practice on speed and accuracy.
3. Use fill-in answer sheets to record answers.
4. Make fact sheets concerning careless errors, reasonableness of answers, and other facts.
5. Develop lessons covering math shortcuts, estimation, and other test-taking tips.
6. Provide verbal support and encouragement often.
7. Show motivational films.
8. Bring in articles that concern the GED program to keep students abreast of current information on the test.
9. Have students do projects involving several math skills. An example is as follows: Record the highest daily temperature for the month of March in a city.
   a. Make a frequency distribution.
b. Make a line graph.

c. Find the mean, median, mode, and range of the data.

10. Develop questionnaires on how students feel about math and tests.

Section III

Enrichment Activities
#1-MATH WORD SEARCH: THESE WORDS CAN BE FOUND DOWN, ACROSS, BACKWARDS AND DIAGONALLY.

T D T C E R H O M B U S F G D H F F T A
S E L U R T R A P E Z O I D K H M I K G
N V R A A O A A S S T U O D R M N G G Y
O I G M N L I N R N C N X D I K L U F T
G T S R S O G R R I O N N O I G E R N I
Y I C O O C G E E T I S O P P O E X R
L S R I S R A A B T T H T O D T M S K A
O O G R A C K L I R N L M A N E Q D P L
P P C E E Q E M E D A I A E L O R E L I
M F N T O M R L E N B T N P T E R P J M
D I B X H M X L E Q E D P P H I R Q S I
L D J E A O E E L S U U K D B E C C O S
F F V C M P M T L M S O Q Q S R W T I O W
H N N T I H K V R O S K J U Q Y G K H N
S E S U N E T O P Y H E L A U J S M C U
B C O M P L E M E N T W B Y A N J X H M
T D K O B I A S S L U F Q H Q F G C G B
I M U Q N E G A T I V E X D H D A T F E
D P Q V Q R R Y B V I K I J W E M L E R
U R M U I Y N S U I G E O J K I K G U S

TERMS  SCALENE  POSITIVE  MATH
RULES   ISOSCELES  EXTERIOR  ALTERNATE
INTERIOR ALGEBRA  RHOMBUS  OPPOSITE
RELATIONS GEOMETRY  ARITHMETIC  HYPOTENUSE
NUMBERS LINEAR  COMPLEMENT  SUPPLEMENT
WHOLE  DIAGONAL  TRAPEZOID  SIMILARITY
FIGURES  POLYGONS  REGION  NEGATIVE
#2-MATH WORD SEARCH: THESE WORDS CAN BE FOUND DOWN, ACROSS, BACKWARDS AND DIAGONALLY.

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W U Q W A R V Q J D A G K P S E O M
I E C X N I E O F K O E T R M M N R
D Q I H O L T T P X I Q R U E N O D
T S B G N M G F O R M U L A D H C Q
H T U M H S R I P P O O N F N P P U
T A C E E T T S Y A V P C A P V F U
G T I D I A M E T E R E O E I N M W
N I R I R N S A Y R Y R R R Q D L E
E S T J D D D U H H A I K T T F E J
L T E P B A Y V R N M H U F I I Q M
C I M H S R V S G E L V C Q C C O B
R C F L B D V E T V S F W Q L F A N
I S G B N S H E H O R I Z O N T A L
C H C J H S R L S T J Y L O V R L E
U S P G M C N W M A J K C V G M Q E
Y B S R U X X Y I S Q M A S D L X G
G A R X K V K I I C U F X H O R K D
T C F G D H F T A K H M K G S T U O

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T I T L E  F O  Q J S S O D  M H R R  M Q X
T A X E S  Q Q E N N H G Q S R H H K T L
P W B A A Y B M O M B P L R N S D H J X
A R F L L E W I I X P A A U O E X Y X G
R A O A E K S T S E U B S R P L V W C P
T T Y F S S G A R Q D D S E G A W D L S
K E T M I F W C E D I S T A N C E X Q E
B E I M D T E T V R S N A A O S J V X U
N M M N O N L C N J C F C X Y O E D S E
B O B R T X Y D O T O E I R E X K N S L
C C L P C E C A C B U E D H E U L E F A
P N O K B I R D C X N E S A C A D C C J
Q I G R L S W E R J T E H E U U S H R J
U I Q M N R U A S C M H S A H J F E R O
J R B V J B W I V T I L K Q C C H G E T
S A T G A R T W X W S S S F I P C U C X
G X Q O N M L F Q G E C A Q S R Q I C J
X O N C S A U G U C J O E T Y K S N U X
L N U V H F V B J V N L A A X O Y J R Q
N X H D S N W G G R R O S N K Q N Q N F
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#4 - MATH WORD SEARCH: THESE WORDS CAN BE FOUND DOWN, ACROSS, BACKWARDS AND DIAGONALLY.

```
E U L A V E C A L P Y Q C E N T C W P T
C S P S J K D N V E U G S D U K J X G Y
N D T T R O S I V I D R F O M T I X R P
E N H I N U M E R A T O R L R B I F E I
R E M G M S C T P P Y U A E C Q F C W B
E D O I K A Q A Q Q D N C O T N A E F C
F D O D N W T N M N I D T Q H A C L M Y
F A H C S D L I I U V I I M O H E A C U
I Q E A O X N M O F I N O Q P T G R U O
D L M C P U X O I N D G N E N S S Q G Q
I S D G E N D N V B E E N O A S F Y H M
T O U N R B F E J C N R C I W E Y N T P
N C D B A Q R D P R D T A I W L E I F W
E V U R T T H C U I V F G P M O Q D N U
I R C D I R G S H U R B W K M A R E S J
T V P E O T A K M L O F J Y N O L R F E
O E G T N R V H G E B S U V Q U C W O T
U S P L S U P D E C H Y T E E P L M Y B
Q Q H B U F P M R N N C Q R C J D A M C
Y E O B E R K I R T D I A C V A N W B F
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<td>SUBTRAHEHD</td>
<td>PRODUCT</td>
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<td>FRACTION</td>
<td>DIVIDEND</td>
<td>COMPARE</td>
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<tr>
<td>GREATER</td>
<td>BORROWING</td>
<td>DECIMAL</td>
<td>LESSTHAN</td>
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#5—Math Word Search: These words can be found down, across, backwards and diagonally.

---

BINOMIALS FACTORS CUBE COORDINATE ORIGIN EVALUATE DIMENSION QUADRATIC QUANTITIES SQUAREROOT SLOPE STATEMENT NOTATION RISE GRID ORDERED RUN SOLUTION PLOTTING SCIENTIFIC PAIRS POLYNOMIAL SQUARING VALUE
#6-MATH WORD SEARCH: THESE WORDS CAN BE FOUND DOWN, ACROSS, BACKWARDS AND DIAGONALLY.

ISOLATE
EXUYXQTRCWMY 

INTEGRERSATFHAILAJX 

YWVUTOJFUIGBLNNLNT 

EFEOSBAVLUSGOSUKJ 

DXHTRKVOEADODEQKWC 

TPSKESTHQUEABBUSAP 

OREECQENTQVARIABLE 

TEIFTOUNEECPAFRSUT 

ASIAAWMARNGKIBEOWS 

LSRCNMLBTIONCWOLII 

CIBTGGQVIIICPKPLUJT 

OOTOLIRYNOOXSSTTL 

SNNREEMETWENAEREUU 

TLBITVCECYDRYEFEM 

RWYNVSTRATEGIESFSW 

DRJGDPSSIMPLIFYDPRC 

OBAVahlKUSVTRADIUS 

THGIEHLDVBXBNNOJBG 

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<td>COMBINED</td>
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<td>SIMPLIFY</td>
</tr>
<tr>
<td>MULTISTEP</td>
<td>STRATEGIES</td>
<td>TOTALCOST</td>
<td>FACTORING</td>
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#7-MATH WORD SEARCH: THESE WORDS CAN BE FOUND DOWN, ACROSS, BACKWARDS AND DIAGONALLY.

S I W S B O G E U G C B Q C H F B B T Y
E T N E M G E S I C V X A D J A C E N T
N N R I G H T C E S R E T N I O Y R S F
I K O A S W R T Q H P B R H B L T F P Q
L A P C I C I R C U L A R A R T E N O J P N
E M R U S G E P L A N E U E E O C S P M
L A G T Y F H R Y G J S R U P X R Y N E
L O S E L A E T L E E G R X Y A X E V I
A U D E A D R E J X E G E W K V T T M S
R Q X D N B X H N D N K I U E O T C N I
A L A I A P S T U O Q E Q K D R K A V
P G L M G C D H C T U P L V I E L V D M
V Y O A C H I F G Q C I O Q C G V S W U
C D B R I T I Y Q S D U N F X B W F M N
J V R Y X H F N I Y P T M O O R X W G C
N W D P O R B I L M L F U C D A N W N I
F J W J J X L W W N W Q Q W I T P W A V
S U P G H Q F Y P D S V J Q S O C B E C
U D M F Q Q F A N J X H E L X A B P V D
I G R P R I P V V T V P G F J G D D K U

STRAIGHT  ACUTE  ANALYSIS  ARC
LINES  REFLEX  CONE  RIGHT
SEGMENT  CIRCULAR  ANGLE  PLANE
INTERSECT  THEOREM  SOLID  ADJACENT
CYLINDER  PYRAMID  RAY  VERTEX
DEGREE  OBTUSE  CONGRUENT  PARALLEL
#8-SCRAMBLE: UNSCRAMBLE THESE LETTERS TO FORM WORDS THAT NAME GEOMETRIC FIGURES.

1. ONCE
2. BEUC
3. USERAQ
4. UMHBROS
5. RAIDPYM
6. LINEYDCR
7. NILTRAGE
8. NCEGERTAL
9. OADIZTPRE
10. GELRAROMALPAL
**#9-PERCENT PROBLEMS:** SOLVE THE PROBLEMS IN COLUMN A. FIND THE ANSWER IN COLUMN B. PLACE THE WORD THAT IS ASSIGNED TO PROBLEM IN THE BLANK IN COLUMN B. THE DEFINITION OF THE WORD FOLLOWS.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) 25% of $750= Equation</td>
<td>28.64 ________: the distance around the edge of any flat object.</td>
</tr>
<tr>
<td>2) 300% of 400= Scientific Notation</td>
<td>$642 ________: the measure of the likelihood that an event will occur.</td>
</tr>
<tr>
<td>3) $\frac{1}{2}$% of 500= Factors</td>
<td>0.168 ________: the distance around a circle.</td>
</tr>
<tr>
<td>4) $\frac{3}{3}$% of 900= Volume</td>
<td>157 ________: the number of times a number is multiplied by itself.</td>
</tr>
<tr>
<td>5) 100% of 1716= Variable</td>
<td>328 ________: the measure of the surface inside any flat surface.</td>
</tr>
<tr>
<td>6) 4% of 716= Perimeter</td>
<td>1200 ________: a way of writing very large or very small numbers.</td>
</tr>
<tr>
<td>7) .2% of 84= Circumference</td>
<td>$300.00 ________: the amount of space inside a 3-dimensional object.</td>
</tr>
<tr>
<td>8) $16\frac{2}{3}$% of 942= Exponents</td>
<td>$187.50 ________: a statement that says that two expressions are equal.</td>
</tr>
<tr>
<td>9) 410% of 80= Area</td>
<td>32.5 ________: numbers that multiplied together.</td>
</tr>
<tr>
<td>10) 50% of $1284= Probability</td>
<td>1716 ________: any letter used to represent a number whose value is unknown.</td>
</tr>
</tbody>
</table>
I. State the coordinates of each lettered point in the figure below.

```
1) A( ) 4) D( ) 7) G( ) 10) J( )
2) B( ) 5) E( ) 8) H( ) 11) K( )
3) C( ) 6) F( ) 9) I( ) 12) L( )
  13) M( ) 14) N( ) 15) O( ) 16) P( )
  17) Q( ) 18) R( ) 19) S( ) 20) T( )
  21) U( ) 22) V( ) 23) W( ) 24) X( )
  25) Y( ) 26) Z( )
```

II. Write the letter of the ordered pairs in the blanks below to complete the passage.

To really help yourself in preparing for the GED TEST, you should DEVELOP AN

\[(2,3) (7,7) (4,-5) (-3,-3) (1,-1) (5,0) (-5,-4) (-3,0) (6,-2)\]

\[(4,2) (0,-3) (3,7) (6,-2) (0,0)\]

\[(2,-7) (-2,5) (-3,-3) (1,-1)\]
#11-DECIMALS: IN COLUMN A WRITE THE DECIMAL FORM OF THE WORDS. IN COLUMN B ARRANGE THE ANSWERS IN ORDER FROM SMALLEST TO LARGEST. IN COLUMN C WRITE THE QUESTION NUMBER OF THE ANSWERS IN COLUMN B.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
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<th>C</th>
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<tbody>
<tr>
<td>1</td>
<td>Five and six tenths=</td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>2</td>
<td>One hundred thirty-five thousandths=</td>
<td></td>
<td>B</td>
</tr>
<tr>
<td>3</td>
<td>Fourteen ten-thousandths=</td>
<td></td>
<td>C</td>
</tr>
<tr>
<td>4</td>
<td>Four thousand and eight tenths=</td>
<td></td>
<td>D</td>
</tr>
<tr>
<td>5</td>
<td>Nine thousand fourteen and seven tenths=</td>
<td></td>
<td>E</td>
</tr>
<tr>
<td>6</td>
<td>Forty-five and forty-five millionths=</td>
<td></td>
<td>G</td>
</tr>
<tr>
<td>7</td>
<td>Six hundred twelve and three tenths=</td>
<td></td>
<td>I</td>
</tr>
<tr>
<td>8</td>
<td>Two hundred seventy-four=</td>
<td></td>
<td>J</td>
</tr>
<tr>
<td>9</td>
<td>Three thousand two hundred seventeen ten-thousandths=</td>
<td></td>
<td>L</td>
</tr>
<tr>
<td>10</td>
<td>Three and twenty-two millionths=</td>
<td></td>
<td>M</td>
</tr>
<tr>
<td>11</td>
<td>Five hundred thirty-seven hundred-thousandths=</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>12</td>
<td>Forty-five and nine hundredths=</td>
<td></td>
<td>O</td>
</tr>
<tr>
<td>13</td>
<td>One hundred ten and one tenth=</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>14</td>
<td>Eight tenths=</td>
<td></td>
<td>Q</td>
</tr>
<tr>
<td>15</td>
<td>Two and three hundred thousandths=</td>
<td></td>
<td>R</td>
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<tr>
<td>16</td>
<td>Twenty-seven hundred-thousandths=</td>
<td></td>
<td>T</td>
</tr>
<tr>
<td>17</td>
<td>Forty-four hundredths=</td>
<td></td>
<td>U</td>
</tr>
<tr>
<td>18</td>
<td>Eighty millionths=</td>
<td></td>
<td>X</td>
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<tr>
<td>19</td>
<td>Seven hundredths=</td>
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D. Decode the message by placing the letter from C above the question number.

18  2  6  6  11  18  7  7  17  7  4  11  19  3  18  2  9  19  15  12

11  4  8  17  1  2  18  2  19  5  18  10
A. Compute the answers to the problems in decimals to the nearest two places. Circle the correct answer. Signs are not included with the answers.

1) The sum of the angles of a triangle = 180 270
   ON FROM

2) If 2 angles of a triangle are 40° and 50°, the third angle = 90 60
   MORE SAME

3) If 2 angles of a triangle are 22° and 115°, the third angle = 53 43
   WE YOU

4) Give the perimeter of a triangle with sides 7", 8" and 10". 17.5 16.5
   MORNING DAY

5) The perimeter of a triangle is 35". Two sides are 9" and 12". What is the third side? 13.25 14.25
   EXAM TEST

6) The perimeter of a triangle is 30". Two sides are 11.4" and 12.65". What is the third side? 6.95 5.95
   WITH TO

7) If one acute angle of a right triangle is 77.23°, the other angle = 12.77 13.77
   SLEEP NAP

8) If one angle of a right triangle is 52.22°, the other angle = 37.78 47.78
   BE IS

9) If one side of an equilateral triangle is 87.25, another side = 87.25 97.25
   GOOD BETTER

10) If the base of a triangle is 84" and the altitude is 57", the area = 2394 3394
    HELPS ASSISTS

11) If the area of a triangle is 256.44 square feet and the base is 25 feet, the area = 19.52 20.52
    RESTED RELAXED

12) If the legs of a right triangle are 12" and 16", the hypotenuse = 30 20
    DAY'S NIGHT'S

B. Place the word below the circled answer in the blank above the question number.

A 9 12 7 10 3 6

8 2 11 1 5 4
Answer Key
#1-MATH WORD SEARCH: THESE WORDS CAN BE FOUND DOWN, ACROSS, BACKWARDS AND DIAGONALLY.

TERMS
RULES
INTERIOR
RELATIONS
NUMBERS
WHOLE
FIGURES
SCALENE
ISOSCELES
ALGEBRA
GEOMETRY
LINEAR
DIAGONAL
POLYGONS
POSITIVE
EXTERIOR
RHOMBUS
ARITHMETIC
HYPOTENUSE
COMPLEMENT
SUPPLEMENT
TRAPEZOID
SIMILARITY
REGION
NEGATIVE
#2-MATH WORD SEARCH: THESE WORDS CAN BE FOUND DOWN, ACROSS, BACKWARDS AND DIAGONALLY.

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#3-MATH WORD SEARCH: THESE WORDS CAN BE FOUND DOWN, ACROSS, BACKWARDS AND DIAGONALLY.
#4-MATH WORD SEARCH: THESE WORDS CAN BE FOUND DOWN, ACROSS, BACKWARDS AND DIAGONALLY.
#5-MATH WORD SEARCH: THESE WORDS CAN BE FOUND DOWN, ACROSS, BACKWARDS AND DIAGONALLY.

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</tr>
<tr>
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Binomials  Dimension  Notation  Plotting
Factors     Quadratic  Rise     Scientific
Cube        Quantities  Grid     Pairs
Coordinate  Squireroot  Ordered  Polynomial
Origin      Slope      Run      Squaring
Evaluate    Statement  Solution  Value
#6-MATH WORD SEARCH: THESE WORDS CAN BE FOUND DOWN, ACROSS, BACKWARDS AND DIAGONALLY.

INVERSE INEQUALITY ROOTS RADIUS
HEIGHT INEQUALITY ALGEBRAIC RECTANGLE
UNIT VARIABLE EXPONENT TRIANGLE
EQUATION ABSOLUTE SQUARE ISOLATE
COMBINED EXPRESSION POWERS SIMPLIFY
MULTISTEP STRATEGIES TOTALCOST FACTORING
#7-MATH WORD SEARCH: THESE WORDS CAN BE FOUND DOWN, ACROSS, BACKWARDS AND DIAGONALLY.

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<td>OBTUSE</td>
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<td>PARALLEL</td>
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SCRAMBLE

1. CONE
2. CUBE
3. SQUARE
4. RHOMBUS
5. PYRAMID
6. CYLINDER
7. TRIANGLE
8. RECTANGLE
9. TRAPEZOID
10. PARALLELLOGRAM
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<th>B</th>
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I.  
1) A(-3,-3)  
2) B(0,6)  
3) C(3,-4)  
4) D(6,-2)  
5) E(-3,0)  
6) F(7,-7)  
7) G(4,-5)  
8) H(-7,7)  
9) I(5,0)  
10) J(-3,-6)  
11) K(3,0)  
12) L(-2,5)  
13) M(-4,-1)  
14) N(1,-1)  
15) O(2,3)  
16) P(2,-7)  
17) Q(-7,-7)  
18) R(7,7)  
19) S(4,2)  
20) T(0,-3)  
21) U(3,7)  
22) V(-4,2)  
23) W(5,4)  
24) X(-5,6)  
25) Y(0,0)  
26) Z(-5,-4)  

II.

\[
\begin{array}{cccccccc}
O & R & G & A & N & I & Z & E & D \\
\hline
(2,3) & (7,7) & (4,-5) & (-3,-3) & (1,-1) & (5,0) & (5,-4) & (3,0) & (6,-2) \\
\hline
S & T & U & D & Y \\
(4,2) & (0,-3) & (3,7) & (6,-2) & (0,0) \\
\hline
P & L & A & N \\
(2,-7) & (-2,5) & (-3,-3) & (1,-1) \\
\end{array}
\]
### DECIMALS

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### D

| A   | G | O | O | D | A | T | T | I | T | U | D | E | C | A | N | H | E | L | P |
| 18  | 2 | 6 | 6 | 11| 18| 7 | 7 | 17| 7 | 4 | 11| 9 | 3 | 18| 2 | 9 | 19| 15| 12|

**During an exam**
#12 TRIANGLES

A. 1) 180 5) 13.25 9) 87.25
2) 90 6) 5.95 10) 2394
3) 43 7) 12.77 11) 20.52
4) 16.5 8) 37.78 12) 20

B.

A GOOD NIGHT'S SLEEP HELPS YOU TO BE MORE RELAXED ON EXAM DAY.
Suggested Sources for Enrichment Materials

Crossword Magic and Wordmaze
Mindscape Educational Software
A Division of SVE
1345 Diversey Parkway
Chicago, IL 60614-1299
1-800-829-1900

Mathematics
Opportunities for Learning, Inc.
941 Hickory Lane
P.O. Box 8103
Mansfield, OH 44901-8103
419/589-1700

Scholastic Math Magazine
P.O. Box 3710
2931 East McCarty Street
Jefferson City, MO 65102-9957
CHAPTER IV
SUMMARY, CONCLUSION, AND RECOMMENDATIONS

From the review of literature, the interest in the GED test has not declined. The number of examinees has continued to increase. There has been an increase in persons taking the Spanish and French Language tests. More disabled persons have been given the test. The Braille audiocassette and large print editions of the test have been given more often. The test seems to serve as a means to further education, to further job prospects, and for another chance at success.

Because of the changes in the math test, the math scores have dropped. The drop is due to the multi-step problems, to the increase in reading, and to the problem solving skills needed on a higher thinking level. Knowing how to approach the test is also an area of concern.

The researcher recommends that this handbook serves as a primer for the GED math program. Math educators can expand the handbook in the area of the resources available, in the development of lessons to illustrate the testing tips, and in the development of other enrichment to aid in the mathematical skills and vocabulary. The effort would trigger more success with the GED math test.
BIBLIOGRAPHY


United States Army Recruiting Station. (Telephone Interview), Columbus, 1992.
