



The GED Mathematics Test

Passing the GED Math Test



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GED

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Passing the GED Math Test

Do not worry about your difficulties in mathematics. I assure you mine are still greater.
Albert Einstein

TEST OVERVIEW:

- Time: 90 minutes total; 45 minutes for each of the two parts.
- The test consists of two parts:
 - Part 1: Calculator Permitted: You will need to read and solve word problems. You must be able to combine your ability to use computational skills with problem solving.
 - 25 questions - approximately 20 multiple choice and approximately five alternative grid formats
- Use the Casio fx-260 solar powered scientific calculator which will be supplied by the test center
- 4 major content areas tested:
 - Number Operations and Number Sense--about six of the questions on each part
 - Measurement and Geometry--about six of the questions on each part
 - Data Analysis, Statistics and Probability--about six of the questions on each part
 - Algebra, Functions and Patterns-- about six of the questions on each part
- 4 major mathematical skills needed to answer questions:
 - Procedural--choosing the correct method to solve a problem but not having to come up with the correct answer--about 10 of the questions on the whole test
 - Conceptual--knowing and using mathematical principles and ideas--about 15 of the questions on the whole test
 - Application, Modeling, Problem Solving--applying ways and methods to solve problems and judging whether or not an answer is reasonable--about 25 of the problems on the whole test



Part 2: Calculator Not Permitted: You will need to read and solve word problems. You will not need to complete complex calculations. Many of the questions on Part II can be solved using estimation, number sense, and problem solving strategies

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 - Algebra, Functions and Patterns-- about six of the questions on each part
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SCORING:

- Part I and Part II are weighted equally. The number of correct answers on each part is combined to find the total number of correct answers.
- There is no penalty for wrong answers. They just don't count in the total. So try to eliminate some of the answer choices and then go ahead and guess.
- Finally, the scoring center will convert your raw score (total number of correct answers) to a three-digit standard score and send your score to the center where you tested. In California you must have a standard score of 410 or higher to pass the math test.



(Copy GED Formula Page and Alternative Format Grids copied with permission of GEDTS)

Mathematics

FORMULAS

AREA of a:

square	Area = side ²
rectangle	Area = length × width
parallelogram	Area = base × height
triangle	Area = $\frac{1}{2}$ × base × height
trapezoid	Area = $\frac{1}{2}$ × (base ₁ + base ₂) × height
circle	Area = π × radius ² ; π is approximately equal to 3.14.

PERIMETER of a:

square	Perimeter = 4 × side
rectangle	Perimeter = 2 × length + 2 × width
triangle	Perimeter = side ₁ + side ₂ + side ₃

CIRCUMFERENCE of a circle

Circumference = π × diameter; π is approximately equal to 3.14.

VOLUME of a:

cube	Volume = edge ³
rectangular solid	Volume = length × width × height
square pyramid	Volume = $\frac{1}{3}$ × (base edge) ² × height
cylinder	Volume = π × radius ² × height; π is approximately equal to 3.14.
cone	Volume = $\frac{1}{3}$ × π × radius ² × height; π is approximately equal to 3.14.

COORDINATE GEOMETRY

distance between points = $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$;
(x_1, y_1) and (x_2, y_2) are two points in a plane.

slope of a line = $\frac{y_2 - y_1}{x_2 - x_1}$; (x_1, y_1) and (x_2, y_2) are two points on the line.

PYTHAGOREAN RELATIONSHIP

$a^2 + b^2 = c^2$; a and b are legs and c the hypotenuse of a right triangle.

MEASURES OF CENTRAL TENDENCY

mean = $\frac{x_1 + x_2 + \dots + x_n}{n}$, where the x 's are the values for which a mean is desired, and n is the total number of values for x .

median = the middle value of an odd number of ordered scores, and halfway between the two middle values of an even number of ordered scores.

SIMPLE INTEREST

interest = principal × rate × time

DISTANCE

distance = rate × time

TOTAL COST

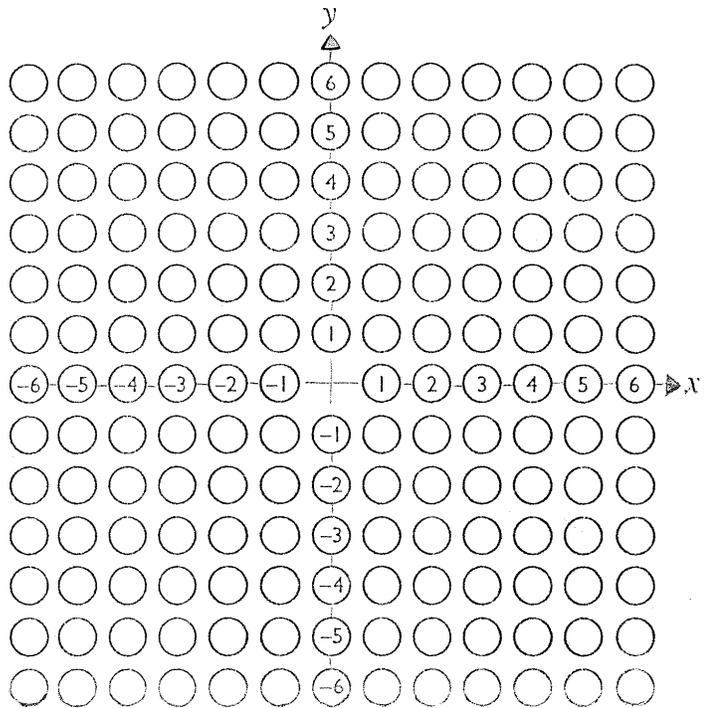
total cost = (number of units) × (price per unit)

Alternate Format Grids

Standard Grid

	/	/	/	
•	•	•	•	•
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

Coordinate Plane Grid



Video 27 Focus: what is on the GED Math Test and what is the format, what's expected of the test-taker, and test-taking strategies.

You Will Learn From Video 27:

- There are no trick questions on the math test.
- Situations and word problems are testing reading as well as math.
- Knowing the one-digit math facts will be helpful in solving problems quickly.
- You will need to recognize symbols and to solve problems or just set the problems up.
- Some answers will not be multiple choice but will use the standard or coordinate plane grid.
- You will be able to use the formula page on both Part I and Part II of the math test.
- You will be able to use the Casio fx-260 calculator on Part I for the first 45 minutes of testing; you do not have to use the calculator if you don't want to.



Words You Need To Know:

While viewing the video, put the letter of the meaning by the correct vocabulary word. Answers are on page 14.

- | | |
|---------------------------|--|
| _____ 1. sum | a. addition, subtraction, multiplication, and division |
| _____ 2. quotient | b. answer to an addition problem |
| _____ 3. Casio fx-260 | c. method of writing the steps or rules to solve a problem; often used to solve algebra problems |
| _____ 4. product | d. answer to a division problem |
| _____ 5. difference | e. answer to a multiplication problem |
| _____ 6. equation | f. official calculator for the GED test, Part I |
| _____ 7. basic operations | g. answer to a subtraction problem |

Points to Remember:

- It is important to read each question very carefully.
- Try to answer each question before you look at the answer choices.
- Sometimes all you need to do to solve a problem is to estimate and make an educated guess.
- About 10 of the answers will not be multiple choice but will require you to bubble in your answer on the standard grid or the coordinate plane grid.

Expectations

We all use judgment and, especially, common sense when we use numbers and number sense in our daily lives. We count, compare, measure, and estimate each day whether we realize it or not. On the GED Math Test you can use the same skills you use each day along with the skills of computation and using the calculator. If you need to learn or brush up on your computation skills, you can practice with these workbooks and also practice with any calculator and the calculator that you will actually use on the GED Math Test -- the Casio fx-260.

As you review the rules of computation, things you learned in school will come back to you as you review. You may learn new skills that you did not learn in school. Also, on some problems on the GED Math Test you will not need to compute to find the exact answer. On the multiple choice questions, you may be able to estimate and select the correct answer. The question may not ask for the answer but rather for the set up to solve the problem if you had to compute the answer. Also, you may be able to use some good test-taking strategies to help you select the correct answer.

As you use these workbooks, you will practice computation, estimation, use of the formula page and alternate format grids, and working with a calculator. Using a calculator is important because you can use it if you want to on half of the GED Math Test. In each workbook you will have practice in using math as you do in your daily life in the *About Math and Life* Section. Each workbook will feature a particular strategy that is useful for the test-taker in the section called **Strategy Session**. In each workbook you will be able to practice some spatial reasoning. Math is not only numbers and operations but also deals with shapes and space. Spatial reasoning is especially important in algebra and geometry. Watch for the **Out into Space** section in each workbook. To practice with measurements, watch for the Measure Up section of each workbook.



In this first workbook, the following topics will be covered: rounding, estimation, the one-digit facts, the four operations, and a test-taking strategy. After you study and practice these skills, you will be able to practice a GED exercise to put all of your skills to work.

Rounding

Rounding a number means expressing it to the nearest 10, 100, 1000 and so on. If you are rounding a number to the nearest 10, look at the number in the one's place. If that number is five or more, round it up to the next highest ten. For example, round 46 up to 50. If the number in the one's place is four or less, round down to the nearest 10, such as rounding 83 down to 80.

Practice rounding the following numbers to the nearest 10.

Answers are on page 14.

68 _____ 33 _____ 92 _____ 16 _____ 44 _____ 59 _____
91 _____ 25 _____ 8 _____ 77 _____ 86 _____ 45 _____

If you are rounding a number to the nearest 100, cover up the hundreds place and look at the numbers in the tens and ones places - 543. If those numbers are 50 or more, round up to the next hundred. If those numbers are less than 50 (>50), round up to the next hundred. In this example 543 would round to 400; 553 would round to 500.

Practice rounding the following numbers to the nearest 100.

143 _____ 689 _____ 263 _____ 262 _____ 388 _____ 730 _____
 941 _____ 890 _____ 228 _____ 713 _____ 425 _____ 687 _____

Answers are on page 14.

Estimation

Rounding numbers is very helpful when you are estimating. You will practice rounding numbers more in other workbooks. On the GED test, it is not always necessary to find an exact answer to choose the correct answer. Often you can use your skills and estimate in order to choose the correct answer. When you estimate you use an approximate answer rather than an exact answer.

Look at the following example:

Jack wants to put a border of flowers around a bed that is 288 inches long and 118 inches wide. About how many inches will he plant in flowers? If you estimate by changing the actual numbers in the problem by rounding to the nearest hundred, you can quickly estimate the answer.

288 → 300
 118 → 100
 400



Don't forget to double the number for 800 inches of flowers.

the other two sides. Jack will plant about

Practice estimating to add or subtract the following numbers by round the numbers to the nearest 10 or to the nearest 100.

493 → 720 → 27 →
 + 114 → - 491 → + 19 →

25 → 838 → 78 →
 + 32 → + 251 → - 39 →

Answers are on page 14.

One-Digit Facts

If you memorize the one-digit facts for the four operations, addition, subtraction, multiplication and division, you will be faster and better at math. If you know that $7+8=15$ and that $7 \times 8=56$, you will not have to take time to count or to enter these numbers in the calculator. If you know that you need to memorize the addition, subtraction, multiplication, and division tables, here are some tips on how to get started. Use this checklist to brush up.

- ❑ Start with the addition facts. You should memorize from $0+0$ to $9+9$. Start by practicing the “doubles” -- $0+0$, $1+1$, $2+2$, $3+3$, etc. You may find that you know most of the “doubles” already.
- ❑ Then study the “neighbors”. The “neighbors” are next to each other. Example of the “neighbors” are $0+1$, $1+2$, $5+6$, $7+8$, etc. When you are practicing the “neighbors,” you can double the smaller number and add 1. Since you already know the “doubles,” this is a useful way to think about the “neighbors.”

Example: $3+2=5$



two is the smaller number
double it and add 1
 $2+2$ is 4
 $4+1=5$

- ❑ Then study the rest of the addition facts. Make flash cards if it is helpful.
- ❑ Since subtraction is the reverse of addition, you should be able to learn the subtraction facts quickly after you have memorized the addition facts.
- ❑ Practice the multiplication tables. These are very useful to know in your daily life and can really help you to work faster on the GED test. You will use multiplication often on the GED test.
- ❑ Study the times tables in this order: 0, 1, 2, 5, 9, 3, 4, 6, 7, and 8.
- ❑ Begin with the zero table. Since $0 \times$ any number = 0, remember the phrase “zero my hero,” because the answer is always zero.
- ❑ Quickly review the ones and twos tables. You probably know these already.
- ❑ Practice the short-cut for the nines table:

	Tens	Ones
$6 \times 9 =$	5	4
$9 \times 8 =$	7	2
$4 \times 9 =$	3	6

choose the number that is not 9
subtract 1 and you have the ten’s place
ten’s place + _____ = 9
that number goes in the one’s place

- ❑ Finally, study the three, four, six, seven and eight tables. Remember $56 = 7 \times 8$.
- ❑ When you are confident that you have memorized the multiplication tables, you can practice reversing it as you practice the one-digit division facts.
- ❑ If you still need more practice, make some flash cards or practice with a deck of playing cards. You can count the face cards as 10 and the aces as zero.

Four Operations

You will use all four operations - adding, subtracting, multiplying, and dividing on the GED Math Test. You will be using the operations with whole numbers, fractions, decimals, percents, and in algebra and geometry problems. These workbooks will give you practice with each operation in each area of math. You need to know the following symbols and terms as you prepare to review operations:

Operation	Answer Name	Symbol(s)	Expressions	Key Words In Problems
Addition	Sum	+	$12 + 3$ $\begin{array}{r} 12 \\ + 3 \\ \hline \end{array}$	total combined all together
Subtraction	Difference	-	$12 - 3 =$ $\begin{array}{r} 12 \\ - 3 \\ \hline \end{array}$	difference more than less than balance
Multiplication	Product	x	12×3 $12 \cdot 3$ $(12)(3)$ $\begin{array}{r} 12 \\ \times 3 \\ \hline \end{array}$	times
Division	Quotient	÷	$12 \div 3 =$ $12/3$ $\begin{array}{r} \underline{12} \\ 3 \quad \underline{\hspace{1cm}} \\ 3 \) \ 12 \end{array}$	per

Write the *name of the operation* you would use to solve each of the following problems:

1. Tina got a new job working at Rocket Root Beer Stand. She is making \$1.85 more an hour than at her former job at Frenzy Freeze. She now makes \$7.25/hour. How much did she make at Frenzy Freeze?



2. The price of gasoline keeps going up in Iowa. It now costs John \$20.35 to fill his 11 gallon gas tank. How much does he pay per gallon?

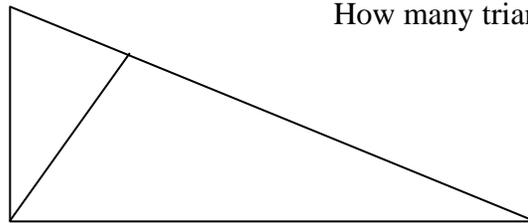
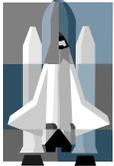
3. Lucy is trying to stick to her diet and eat only 1,200 calories each day. How many calories will she eat each week?

4. Yesterday Mr. Gomez went shopping and bought two trees for \$13.50 each and three flats of bedding plants for \$7.50 each. How much was his total bill at the check-out stand?

5. Ms. Anderson was able to cover at least five pages each day in her physics class. One week she was able to cover seven pages on Wednesday and six pages on Thursday. How many pages combined did she cover in that school week?

Answers and explanations are on page 13.

Out into Space



How many triangles?

Answers are on page 14.

Measure Up

Estimate the length of line AB below. Is it closer to two inches or closer to four inches long?

A _____ B

Answer is on page 15.

Write a short paragraph about your own number sense and what you have learned in this workbook about the GED Math Test. Include the what you already know, what you feel you need to learn, and how you will plan to prepare.

Strategy Session

Using good test-taking strategies on the GED Math Test will help you to choose the correct answer or record the correct answer on the alternate format grids. In each Video Partners workbook you will be able to review a strategy that will be helpful on the GED Math Test. If you are not sure how to go about setting up a problem to get the correct answer or if you have to make an educated guess, use the strategies that you have practiced in your workbooks as well as your common sense and your number sense. Read each question carefully and then think about what you should do and what operation(s) you need to use to select the correct answer.



Watch out for numbers in the problem that are not needed to find the answer.

Test authors often put extra numbers in the problem to try to confuse you. Read each question carefully and decide what numbers are needed to solve the problem. Decide what operation(s) to use. Some problems have more than one step and so more than one operation is needed. For example, you may have to multiply and then add. Use your estimating skills to save time if you are confident that you can get close enough to the correct answer.

In 1999 the population of Pioneer, South Dakota was 22,500. In 2000 the population had grown to 24,600. **When the local factory closed in 2001, the population dropped to 23,800.** How much did the population increase from 1999 to 2000?

- A. 800
- B. 2,100
- C. 1,300
- D. 1,400
- E. 2,001



The correct answer is C.
Subtract 22,500 from 24,600 to find the difference in the two years.
The shaded information is not needed.

Answers A. and B. could be the answer you chose if you used this information that was not needed. Some students could even choose Answer E. because they saw this number in the problem. Be careful and do not use information that is not needed.

In each of the problems below, underline the information and any numbers that are not needed to solve the problem. Answers are on page 15.

1. Leslie makes \$2,800 each month. His employer takes out \$280 for federal taxes, \$140 dollars for state taxes and \$75 for his health insurance. How much money does Leslie pay in taxes each month?

2. Joe and Kim started a lawn mowing business to make money during the summer vacation. Joe was 16 years old, and Kim was 17. They could mow five lawns a day if they worked together, but only two lawns if one of them worked. How many lawns could they mow in the week that they both worked three days and each worked two days alone?



3. The Custom Cakes Bakery orders flour in 20-pound sacks. The bakery sells an average of 400 cakes each week. The bakers use about three cups of flour in each cake and then make frosting that uses a half cup of shortening, three cups of sugar, and a half cup of nuts. If it takes a pound of flour for each cake, how many sacks of flour does the bakery use each week?

4. Maria wants to cut a square cake into equal pieces. She knows the cake is three inches tall and 12 inches on each side. How many pieces 6 inches x 3 inches can she cut?



Watch out for numbers in the problem that are not needed to find the answer.

About Math and Life

We all use math in our daily lives. You may hear someone say, “I haven’t used math since I left school!” However, each day we use numbers and spatial reasoning just to do our jobs as workers, parents, and community members. There is evidence of mathematics everywhere. List some things you see every day that are the tools of mathematics:

Home	School	Work	Community	Other
alarm clock	ruler	cash register	mileage sign	satellite

GED Exercise

1. Suzette is making curtains for her two bedroom windows. She needs yardage as wide as both windows. The windows are 36" high x 6 feet long and 11 feet long. How many yards of fabric does she need to buy?

- 1) 4 yards
- 2) 5 yards
- 3) 6 yards
- 4) 7 yards
- 5) 8 yards

2. Mrs. Borden is planning to treat her third grade class to ice cream sandwiches for Valentine's Day. She can buy dozen packs at Fast Mart for \$7.00 each. How much will she spend for her 28 students?

- 1) \$28.00
- 2) \$24.00
- 3) \$14.00
- 4) \$21.00
- 5) \$26.00

3. The New Artist Coop offers specials on framing for its members. Keesha is framing two matching paintings for the upcoming show. Her paintings are 2' x 2'. How much will it cost using the \$3.00/foot special?

- 1) \$24.00
- 2) \$48.00
- 3) \$36.00
- 4) \$72.00
- 5) \$54.00



4. Pierre is a white standard poodle who weighs 68 pounds. His family got him a new, black poodle puppy for a playmate. She weighs exactly one fourth of Pierre's weight. How much does the new puppy weigh?

- 1) 17 pounds
- 2) 8 pounds
- 3) 16 pounds
- 4) 15 pounds
- 5) 10 pounds



5. Mario has a contract with CalTrans to seed a 168-mile stretch of Highway 49 with wildflowers. He can seed five miles for each pound of seed. How will Mario set up a problem to find out how many 10-pound bags of seed he needs?

- 1) $5(168/10)$
- 2) $10(168/5)$
- 3) $(168/5)/10$
- 4) $(168/10)/5$
- 5) $168/49$

6. Mr. Anderson is building a gazebo for his patio. When it's finished, he is going to get new patio furniture at the 20% off fall sale. About how much will he save on the furniture set that was \$299.95?

- 1) \$240.00
- 2) \$30.00
- 3) \$250.00
- 4) \$50.00
- 5) \$60.00

Answers and Explanations

Words You Need to Know

page 5

1. b. 2. d. 3. f. 4. e. 5. g. 6. c. 7. a.

Rounding to the Nearest 10

page 6

68 70 33 30 92 90 16 20 44 40 59 60

91 90 25 30 8 10 77 80 86 90 45 50

Rounding to the Nearest Hundred

page 7

143 100 689 700 263 300 262 300 388 400 730 700

941 900 890 900 228 200 713 700 425 400 687 700

Rounding and Adding or Subtracting

page 7

493 → 500	720 → 700	27 → 30
<u>+114</u> → <u>100</u>	<u>- 491</u> → <u>500</u>	<u>+ 19</u> → <u>20</u>
600	200	50

25 → 30	838 → 800	78 → 80
<u>+ 32</u> → <u>30</u>	<u>+ 251</u> → <u>300</u>	<u>- 39</u> → <u>40</u>
60	1,100	40

Name the Operation(s)

pages 9 and 10

Problem	Operation(s)	Explanation
1	Subtraction	Subtract the difference of \$1.85 from her new rate of \$7.25 to find out how much less Tina made at Frenzy Freeze.
2	Division	Divide the cost of the tank (\$20.35) by the number of gallons the tank holds to find out the cost of each gallon.
3	Multiplication	Multiply the calories she eats each day (1,200) by the number of days in a week to find out the weekly total.
4	Multiplication/Addition or Addition	Double the cost of each tree (\$13.50) to find out the cost of the trees and multiply the cost of each flat (\$7.50) by 3 to find out the total cost of the bedding plants. Add the cost of the trees and the cost of the bedding plants together to find out the total cost. You can also find the answer by just adding everything together.
5	Multiplication/Addition or Addition	Multiply the 5 pages by 3 for the regular days and add 7 for Wednesday and 6 for Thursday. You can also find the answer by just adding everything together.

Out into Space page 10

3 triangles

Measure Up page 10

Line AB is closer to 2 inches. It's actual measurement is less than 2 inches.

Strategy Session pages 11 and 12

5. Leslie makes \$2,800 each month. His employer takes out \$280 for federal taxes, \$140 dollars for state taxes and \$75 for his health insurance. How much money does Leslie pay in taxes each month?
6. Joe and Kim started a lawn mowing business to make money during the summer vacation. Joe was 16 years old, and Kim was 17. They could mow five lawns a day if they worked together, but only two lawns if one of them worked. How many lawns could they mow in the week that they both worked three days and each worked two days alone?
7. The Custom Cakes Bakery orders flour in 20-pound sacks. The bakery sells an average of 400 cakes each week. The bakers use about three cups of flour in each cake and then make frosting that uses a half cup of shortening, three cups of sugar, and a half cup of nuts. If it takes a pound of flour for each cake, how many sacks of flour does the bakery use each week?
8. Maria wants to cut a square cake into equal pieces. She knows the cake is three inches tall and 12 inches on each side. How many pieces 6 inches x 3 inches can she cut?

About Math and Life page 12
Answers will vary.

GED Exercise page 13

1. (3) At least 17 feet of fabric is needed. Divide by three to change to yards. Since the answer is $5 \frac{2}{3}$ yards. Six yards of fabric will be needed.
2. (4) Three dozen packs are needed. Even though there will be extras, two dozen is not enough for the 28 students. Multiply $3 \times \$7.00$ to find the total amount.
3. (2) Sixteen feet of framing are needed to frame the two pictures. Multiply 16×3.00 to find the total cost at the member rate.
4. (1) $68 \div 4$ or $68 \times \frac{1}{4}$ will give you the weight of the puppy.
5. (3) $168/5$ gives you the number of pounds of seed needed. Then divide the answer by 10 to find out the number of bags needed.
6. (5) Round the cost of the furniture to \$300. Multiply \$300. by .2 to find the 20% savings.