

MATHOLOGY

Mythical Math
Arcade Adventure



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MATHOLOGY

The Legend of Greecia 2
Quick Start. 3
System Requirements 5
Starting a New Game 5
Saving a Game 5
Quitting a Game. 5
Continuing a Game 5
Using the Mouse 5
Playing the Game 5
 Greecia 6
 Moving around Greecia 6
 Apathy and his minions 7
 Inside Greecia: Windows, actions, etc. 7
 Health Window 7
 Level Window 7
 Game Level Window 7
 Lives Window 7
 Weapons Window 8
 Potion Window 8
 Help Window 8
 Delete a Game 8
 Magic Window 8
 Save a Game 9
 Iris Window 9
 Esc Window 9
 Points Window 9
 Zeus's Throne Room 9
 Moving around *The Chamber of Numbers* 9
 Scores Window 9
 Clock Window 10
 Number Window 10
 Numerator Window 10
 Denominator Window 10
 Repeat Window 10

Enter Window 11
 Hints 1-5 – F1-F5 Windows 11
 Freeze Clock Potion – F6 Window 11
 Calculator – F7 Window 11
 Hints – F8 Window 12
 New Room – F9 Window 12
 Iris takes you to Greecia – F10 Window 12
 Quit – Esc Window 12
 Advancement in *The Chamber of Numbers*. 12
 Star of Zeus 13
 Rooms Remaining 13
 Leaving The Chamber of Numbers 13
 Play of the Game 13
 Command Line Parameters. 13
Hints 14
 The Chamber of Numbers. 14
 Greecia. 14
 City of Troy 15
 Hills of Death 15
 Cave of Darkness 16
 Ice Mountain 16
 Midnight Forest 17
 Deadman's Wharf. 17
 Delphi 18
 Mt. Olympus 18
Educational Comments for Parents and Teachers 19
 Poor Motivation. 19
 Vocabulary Words 19
 Forming a Mental Picture 19
 Focusing on the Processes Involved 19

The Legend of Greecia

Praises to the Hero

Hello hero. You probably are wondering why you are being asked to become part of the legend. I'm going to tell in due time.

I must introduce myself first, gentle friend. My name is Hermes, son of Zeus. I have been known as the god of theft which naturally is against my father's beliefs, so I have given up this path of darkness and am trying to follow the way of light. My father, Zeus, wants me to explain to you the history of the legend and how it came into being. I will also tell you about the Numbers of Light and how important they are to the Grecian people and to you.

I am 5,000 years old, so that explains how I know of the history of the legend. Now let me tell you about the legend.

The Legend Unfolds

According to your calendar it is 600 B.C. 110 years ago, during the age of Light, the god, Apathy, brought evil and death to Greecia. Apathy in your language means "one who doesn't care." You will find out what that means in due time. I must go on with the story. Apathy created minions and monsters and had them destroy Greecia and enslave its people. This brought on the age of Darkness. Apathy was unstoppable!

The only hope of Greecia was for their god, Zeus, to stop Apathy, and return them to the wisdom of Light. Zeus sent my brother, Apollo, and me to talk to the people. We entered Greecia disguised as a bard and a dancer.

We came to the city of Troy which had once been beautiful, but now, through Apathy's power, had turned into a dark and sinful place. The buildings were falling apart; men were getting drunk and wound up killing each other. They were doing other things that I cannot mention. Apollo and I decided to start right there. With Zeus's help, we started teaching the people the Numbers of Light. The people didn't like learning the numbers at first,

but after a while, Light started to return to Greecia as the people started to use the numbers in their daily lives.

In time, with the help of the Numbers, the people tricked Apathy and his minions into going to jail. The age of Light had returned. The people rejoiced and celebrated.

As Apollo and I were about to leave, we met a wise prophet from a far away land. He said, "these numbers helped us, but we're going to forget them. The age of darkness will return to Greecia. I want the god, Zeus, to hear my prediction. A person will come from darkness and change his ways to become a man of light!" I, still being a young god, said, "No man can ever change after his future has been written down by Zeus." The prophet yelled out, "curse the man who believes that is true!" With that the prophet left, and we never saw him again.

We then went back to Mt. Olympus, and Zeus praised us for our work.

100 years passed and just as the prophet predicted, the people began to forget the Numbers of Light. One day Apathy and his minions escaped. Darkness returned to the land of Greecia.

Zeus shouted at Apollo and me for not teaching the numbers thoroughly. Zeus then remembered the words of the old prophet. Zeus searched through all the world until he found the person of the legend.

The person of the legend has been found, and that person is YOU. I have now told why you are the chosen one. You must defeat Apathy and his minions. Learn the Numbers of Light and save Greecia. You are our last hope.

Your most awesome adventure is about to begin. May light be with you always!

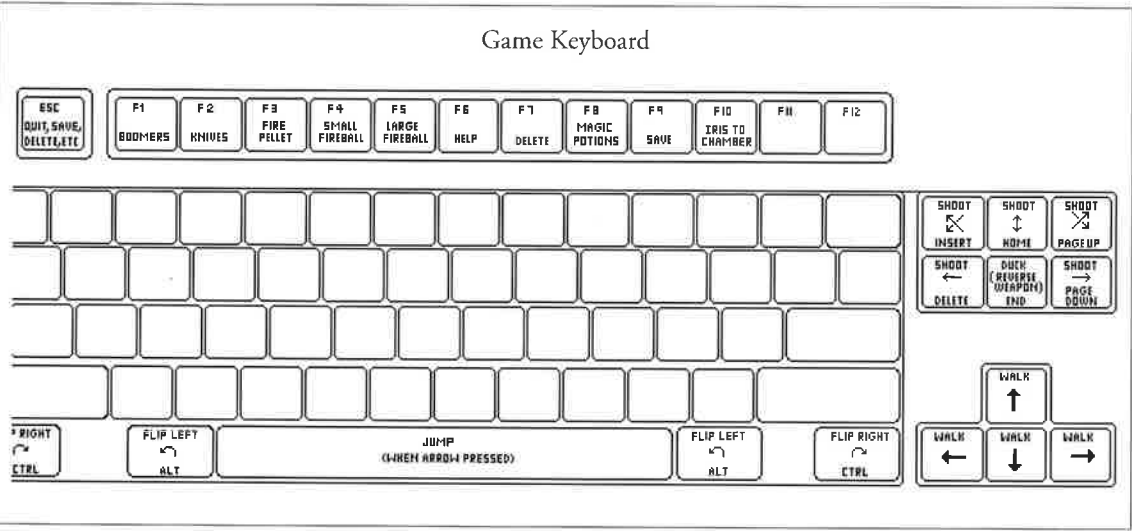
Quick Start

Place your disk 1 into your floppy disk drive. Type the letter of the disk drive you just placed the disk into followed by a colon and press ENTER (e.g. A:).

Temporary Installation (before installation program is in package). Do not type quotation marks.

- 1. Type **INSTALL** then press ↵.
- 2. Complete the installation process.
- 3. Type **MATH** then press ↵. Answer the on-screen questions and begin playing.

Moving Around Greecia



- ARROW ← ↑ → ↓ move
- ALT flip left
- CTRL flip right
- SPACE jumps when arrow pressed
- DELETE shoot left
- INSERT shoot up and left
- HOME shoot up
- PAGE UP shoot up and right
- PAGE DOWN shoot right
- END duck. and – reverses vertical direction of INSERT, HOME, PAGE UP. (Hold the END key while you shoot with the other keys.)

Inside Greecia

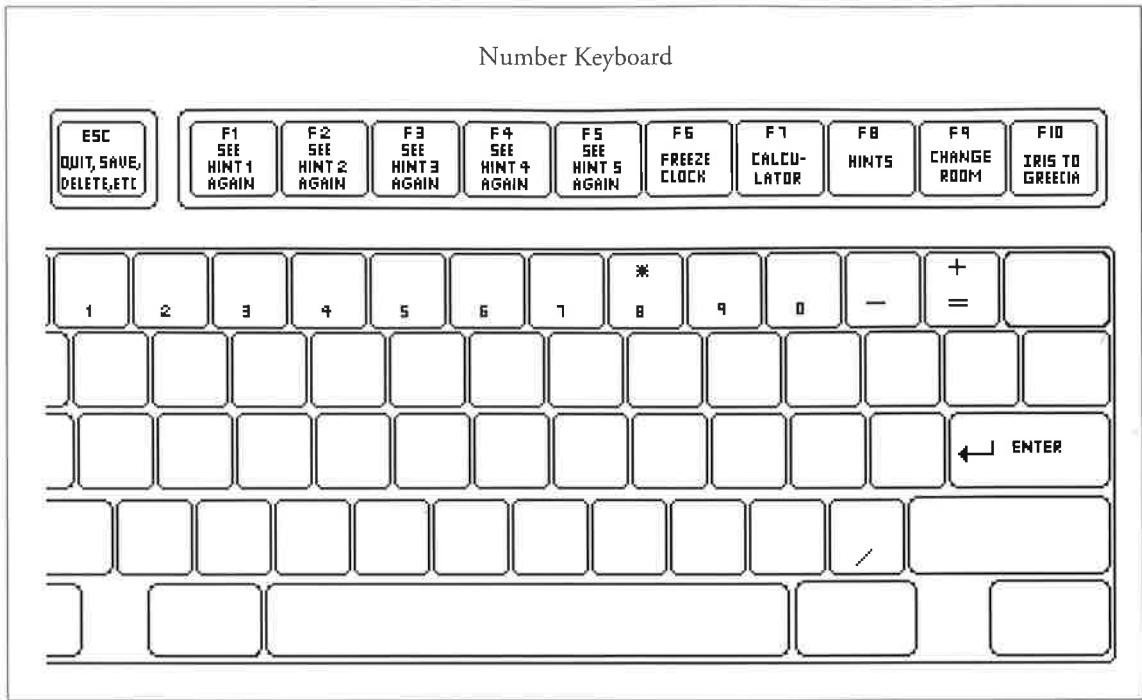
Movement in Greecia

Each location in Greecia has three scenes. Your objective is to get to the last scene while scoring as many points as possible and gathering as many potions as possible. All potions have very powerful magic, and some of the potions are necessary for you to successfully travel through Greecia. Be wary of bad potions left by Apathy. Zeus has marked these with an X. Explore all areas because there are a few scattered invisible potions. These have special powers in *The Chamber of Numbers*.

Health

This shows how much health you have. If this drops to 0, you die and Iris takes you away.

The Chamber of Numbers



F1 - F5 *Hints 1 thru 5*

Active after F8 has been pressed or the mouse clicked. Allows you to see a particular hint the second time. Use F8 to see the hint the first time.

F6 *Freeze Clock Potion*

If you have earned a freeze clock potion in Grecia, you can spend it here to earn more weapons and health points.

F7 *Calculator*

Enter: 4 + 5 = = This places 9 into the next problem.
Enter: - 6 = You will see 9 - 6 = 3.
Enter: Ins The answer (3) is entered and your results are seen.

F8 *Hints*

F9 *New Room*

When you get stuck on a problem, you can choose a new room which will give you a new problem.

F10 *Iris takes you to Grecia*

Advancement in *The Chamber of Numbers*

To gain enough wisdom and intelligence to defeat Apathy's minions in Grecia you must rise to a higher rank. There are 8 ranks. They are:

Rank	Minion	Game	Location
Thief	(Travels through game level 1 but can't complete)		
Squire	Zortex	1	Troy
Guard	Lucutta	2	Hills of Death
Fighter	Pary	3	Cave of Darkness
Protector	Ithicus	4	Ice Mountains
Warrior	Prometheus	5	Midnight Forest
Beret	Carthon	6	Deadman's Wharf
Gladiator	Jagua	7	Delphi
Gladiator	Apathy	8	Mount Olympus

System Requirements

The following are needed to run the program:

1. IBM or IBM AT or PS/2 compatible computer system.
2. DOS 3.3 or higher.
3. 527K of free conventional memory (548K with Sound Blaster).
4. A VGA or MCGA video card and monitor.
5. Hard drive with 4.0 megabytes free. This will not run on floppy disks.

Mathology runs best in conventional memory, but if you do not have the minimum required, the program will use extended or expanded memory if it is available. These are the minimum requirements for each memory type:

1. Extended memory: 320K, with 420K conventional memory (430K with Sound Blaster).
2. Expanded memory: 320K, with 460K conventional memory (478K with Sound Blaster).

Starting a New Game

1. When the game begins you must decide if there are one or two players by pressing the appropriate number.
2. You are then prompted to enter your name.
3. If this is your first time you can choose the level of game difficulty and the level of math number difficulty. Levels range from 1 to 3 with level 1 being the easiest and level 3 being the hardest.
4. Choose your warrior. Choice 1 is the lightest; choice 3 is the darkest.
5. Speech on / off. If you have enough memory and a recent version of Sound Blaster, you can turn speech on or off.

6. Regular numbers / fractions. If you have a fraction version, you can choose fractions or regular numbers. (Fractions are not yet available.)

Saving a Game

There are three ways to save a game.

1. At any time push the escape key (esc) and then press F2.
2. When in Grecia, press F9.
3. Press Esc to quit then press Esc again. When prompted to save the game, press Y or esc.

Note: With two players, only the active player's game is saved. The other player can save his game when he is up.

Quitting a Game

At any time press escape (esc), and then press esc again. To save the game press 'Y' or esc again. If you quit without saving or escaping in this manner, your current results will not be saved. With two players, each person must press esc to quit.

Continuing a Game

At the prompt for your name, type your name exactly as spelled before.

Using the Mouse

The mouse can be used anywhere in the game except for moving and shooting in Grecia. Point the cursor to the object on the screen desired and click with the left mouse button.

Playing the Game

The object is to free the citizens of Grecia from Apathy's control and to fight and defeat Apathy in the final battle. This is accomplished through learning the wisdom of numbers from Zeus, and defeating Apathy and his minions as you travel through Grecia.

Weapons Window

The letter-numbers on the top right indicate the key you must push to change weapons. The weapons are:

- F1 Boomer - very weak weapon;
- F2 Knife - weak weapon;
- F3 Small Fire Pellet - average weapon;
- F4 Small Fireball - strong weapon;
- F5 Large Fireball - very strong weapon;

Potion Window

This window displays all the potions picked up in the game. Potions can be played directly by clicking the mouse cursor directly on the potion. A description of the potion is given.

Help Window

Help is provided by pushing F6.

Delete a Game

F7 provides a shortcut in Greecia for deleting a game.

Magic Window

F8 will indicate how many potions you have and what their names are. It is similar to the Potion Window. Each potion seen represents a potion in the potion window. Press the given letter to activate the potion.

Potion	Key	Description
	L	Slows all your enemies.
	S	Speeds you up. Needed to walk in some locations.
	I	Makes you invincible to weapons.
	F	Freezes your enemies though they can still shoot.
	P	Powers up your weapons.
	D	Anti-Gravity. Allows you to walk in the air.
	W	Allows you to walk on items that might otherwise kill you.

	T	Walk through walls that would normally stop you.
	Z	Become spiritual like Zeus—most powerful of all. You can walk on air and are invincible.
	J	Jump through spirit world and appear on other side of Greecia. Use carefully.
	O	Walk off into spirit world. (Actually walk in spirit world where no one can touch you.)
	N	Lanterns to light up your life and your world. These are needed in dark places in Greecia.
		Gems provide Number Wisdom as you pick them up. These will be used in the <i>Test of Worthiness</i> . (HINT: Pick up every gem you see and write down its message.)
		Calculators can be used in <i>The Chamber of Numbers</i> to help you solve problems. (HINT: These are important in game difficulty 2 & 3.
		Invisible Freeze Clocks can be used in <i>The Chamber of Numbers</i> to stop the clock. (NOTE: There are few of these but they are very valuable.)

Apathy has also left a few potions lying around for you. These potions should be avoided because they will hurt you. Zeus will attempt to warn you of the danger by placing an X on Apathy's potions.

Bad Potions	Descriptions
	Apathy takes away 1/3 of your weapons.
	Apathy takes away 1/3 of your health.
	When you hit an object it will now kill you.

Save a Game

F9 is a short cut in the game part to save your game. With 2 players this saves only the game of the active player.

Iris Window

F10 summons Iris to take you to *The Chamber of Numbers*. This is necessary to replenish your health and your supply of weapons. In addition, each game level has a boss who is directly under the control of Apathy. For your own protection, Zeus will not allow you to fight the boss until your wisdom is sufficient to defeat Apathy's minion. You can increase your wisdom in *The Chamber of Numbers*.

Esc Window

Esc - escape is always available everywhere in the game. When Esc is pushed, a menu appears and these keys are presented:

- Esc Quit the game.
- F1 Save the game of the currently active player.
- F2 Delete a game (cannot delete present game). Not active if /D command line option used. See command line options.
- F3 Turn the music on or off.
- F4 Turn the sound effects on or off.
- F5 Increase the game speed. The game starts at maximum speed. This will probably only be needed on very fast computers after first being slowed down.
- F6 Slow the game speed. This will probably only be needed on very fast computers.
- F7 Switch the keyboard. This allows you to change the weapons keys in Greecia.
- F8 If you use speech, this will turn the speech on and off.

Points Window

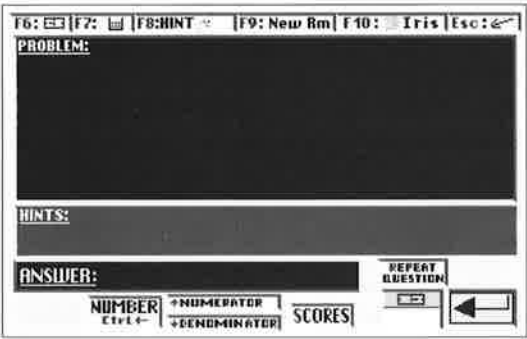
This gives the total number of points earned in the game. This score is used for comparison in the Hall of Fame. Points can only be earned in Greecia. Ways of earning points include shooting objects, picking up a gem, and getting bonus points throughout the game.

Zeus's Throne Room

After defeating Apathy's minion in Greecia, Zeus will dispatch Iris to bring you to his Throne Room. Here Zeus will discuss your progress so far and advise you of upcoming dangers and adventures. When you are finished, Iris will take you to *The Chamber of Numbers*.

Moving around *The Chamber of Numbers*

Zeus has designed *The Chamber of Numbers* in a way to help you increase your knowledge and wisdom of numbers so that you can defeat Apathy's minions and eventually Apathy. If you succeed, Greecia will be free.



Scores Window

Type 'S' to see all the scores and levels for the entire game.

Level

This shows your level in *The Chamber of Numbers*. There are 24 levels.

Weapons

This shows the number of weapons. It increases as you gain in wisdom. The number of weapons you gain for answering a question is based on:

1. The amount of time as shown on the clock.
2. The number of hints you used.
3. The number of times you got the answer wrong.
4. Zeus's mood. Depending upon how Zeus is feeling, he may give you more weapons or more health. When you go back to Greecia, Zeus divides your total weapon score into 5 weapons. Since some weapons are more powerful than others, they take more

weapon strength. Your weapon score indicates the total worth of all your weapons, not how many weapons you actually get.

Health ♥

This shows your health and increases as you gain in wisdom. Gains in health for answering a question are based on:

- 1. The amount of time as shown on the clock.
- 2. The number of hints used.
- 3. The number of times the answer was wrong.
- 4. Zeus's mood. Depending upon how Zeus is feeling, he may give you more weapons or more health.

Points ⚙️

This shows your total points. Points are gained in Greciaia.

Attempts

This shows the number of incorrect answers on a problem.

Room 🏠

This shows which room you are in. There are 10 rooms in each level. Each room represents a different area of knowledge. The 10 rooms and their areas are:

- 1. Simple counting.
- 2. U.S. conventional weight such as pounds and ounces.
- 3. U.S. conventional volume such as pints, quarts, and gallons.
- 4. U.S. conventional length such as inches, feet, and yards.
- 5. U.S. conventional area such as square feet and square yards.

- 6. U.S. money such as pennies, nickels, and dimes.
- 7. Metric length such as centimeters and meters.
- 8. Metric volume such as milliliters and liters.
- 9. Metric mass (weight) such as grams and kilograms.
- 10. Metric area such as square meters and square kilometers.

Clock Window 🕒

This is the number clock which starts at 0 when you begin a new problem and continues until you finish or change the problem. If you use a Freeze Clock potion (F6), this clock will halt until you begin a new problem. This can greatly increase the number of weapons and health gained.

Number Window

This is only available with fractions. This allows you to return to whole numbers after typing numerators or denominators. Use CTRL ← (CTRL + ←) to type whole numbers.

Numerator Window

This is only available with fractions. Use the ↑ (up arrow) to insert a numerator. Use only in fraction version.

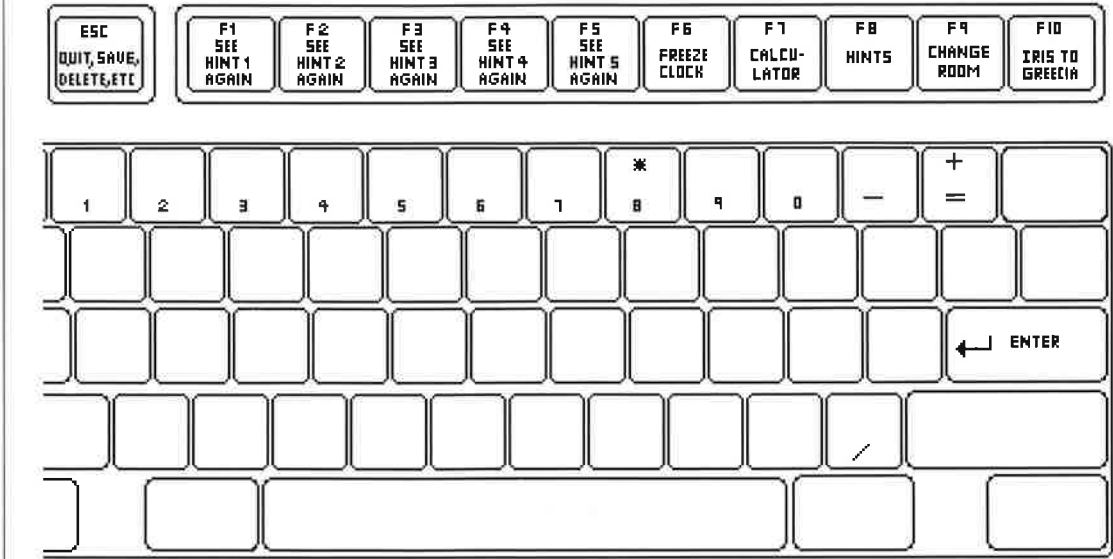
Denominator Window

This is only available with fractions. Use the ↓ (down arrow) to insert a denominator. Use only in fraction version.

Repeat Window

This is only available with speech. Use this to repeat the problem.

Number Keyboard



Active keys in The Chamber of Numbers

Enter Window

Hit or click on the enter key when you want to enter your answer.

Hints 1 - 5 F1 - F5 Windows

These are hint keys, but only appear and become active after F8 has been pressed or the mouse clicked. These allow you to see a hint the second time, never the first time. Use F8 to see the hint the first time.

Freeze Clock Potion - F6 Window

If you have earned a freeze clock potion in Greciaia, you can spend it here to earn more weapons and health points. When an answer is correct, the number of weapons and health points depends on among other things, the time.

Hint: Use this in the beginning of a problem.

Calculator - F7 Window

The number of calculators you have depends on the degree of number difficulty (when you started) and the number of calculators you picked up in Greciaia. There are two ways to exit the calculator:

press or click on F7 or use insert. "Insert" ends the calculator, inserts your answer onto the answer line, and presses enter for you. This is a fast way to do three steps in one, shorten your time, and increase your weapons and health. Make sure, however, the final answer is the correct answer to the problem.

The calculator does three types of problems: whole numbers, decimals, and fractions. Whole numbers are the same as decimals except when dividing. Whole numbers have remainders and decimals don't. Use the 'R' key to switch between 'Remainder On' and 'Remainder Off'. If the remainder is off, the answer is in decimals.

For fractions use ↑ (up arrow) to insert a numerator and use ↓ (down arrow) to insert a denominator. To insert a whole number use CTRL ←. The answer will be a fraction reduced to lowest terms.

Hint: For faster speed on a problem involving two or more steps and when the answer to the first step is the beginning to the next step, use = twice rather than the enter key. This places the answer into the first part of the next problem. For example: suppose you wanted to add 4 + 5 and then subtract 6 from the answer.

Enter: 4 + 5 = This places 9 into the next problem.
Enter: - 6 = You will see 9 - 6 = 3.
Enter: Ins The answer (3) is entered and your results are seen.

Hints - F8 Window

Whenever help is needed push F8. This will give you the next hint. Hints always start with hint 1 (Hn 1) and can go up to hint 6, depending on the problem. The last hint gives the answer to the problem. Zeus always tells you when you are on the last hint so you can choose not to see it. In general you get more weapons and health points when you use fewer hints. *HINT: When a problem is extremely difficult, it is often faster to see all the hints. This is because it increases your understanding of the complete solution process.* If you wish to see a hint again, push the keys F1 - F5 that correspond to hints 1 - 5.

New Room - F9 Window

When you get stuck on a problem, you can choose a new room which will give you a new problem. If you play at number difficulty levels 1 or 2, this can make *The Chamber of Numbers* a lot easier. With difficulty level 3, you must eventually solve all the problems. Either way, it can sometimes be helpful to stop working on a problem and come back to it later. When you start a level you have a total of 10 room changes available. Each time you enter F9, you use one of your room changes. Room changes can also be used after you see the last hint or make an error.

Iris takes you to Greecia - F10 Window

At any time you can summon Iris to take you to Greecia.

Quit - Esc Window

Esc escape is always available everywhere in the game. When Esc is pushed, a menu appears and some of the keys are redefined. The keys are:

Esc Quit the game.

F1 Save the game of the currently active player.

F2 Delete a game (cannot delete present game).

F3 Turn the music on or off.

F4 Turn the sound effects on or off.

F5 Increase the game speed. The game starts at maximum speed. This will only be needed after the game has first been slowed down.

F6 Slow the game speed. This will probably only be needed on very fast computers.

F7 Switch the keyboard. This allows you to change the weapons keys in Greecia.

F8 If you use speech, this will turn the speech on and off.

Advancement in The Chamber of Numbers

To gain enough wisdom and intelligence to defeat Apathy's minions in Greecia you must rise to a higher rank. There are 8 ranks. They are:

Rank	Minion	Game	Location	Level
Thief	(Travels through game level 1 but can't complete)			
Squire	Zortex	1	Troy	1-3
Guard	Lucutta	2	Hills of Death	4-6
Fighter	Pary	3	Cave of Darkness	7-9
Protector	Ithicus	4	Ice Mountains	10-12
Warrior	Prometheus	5	Midnight Forest	13-15
Beret	Carthon	6	Deadman's Wharf	16-18
Gladiator	Jagua	7	Delphi	19-21
Gladiator	Apathy	8	Mount Olympus	22-24

To advance a rank, such as from Thief to Squire, you must pass three levels in *The Chamber of Numbers*. There are 24 levels and 8 ranks available. The number of problems you must solve and the number of hints you use is determined by the level of "number" difficulty you selected when you started the game. Difficulty level 3 requires that you give a correct answer to every problem in the level. Note: if you get the first four problems on a level correct with no hints, Zeus will let you skip the remainder of the level.

Special Advancement: If you get the first four problems correct without using any hints, Zeus rewards you by allowing you to skip the rest of the level and by giving you extra weapons and health points.

Note: Speed is very important in determining how many weapons and health points you receive, but it is not considered in determining whether you "pass" the level. Zeus is constantly watching your performance in The Chamber. If you answer wrong or use too many hints, you may, depending on the level of difficulty,

see the problem again. However, next time, he'll change the numbers. After all, this is The Chamber of Numbers.

Star of Zeus

If you do exceptionally well on a problem, Zeus will award you the Star of Zeus. To receive a star you must get the correct answer the first time, not use too many hints, and answer quickly. You do not need the Star of Zeus to pass a level; however, you receive bonus points.

Rooms Remaining

Each time you start a new level in *The Chamber* you are allowed to change a total of 10 rooms. If you get stuck in one room, you can try another room. Since there are only 10 rooms per level, you cannot change too often. If you use all 10 changes, you cannot leave a room until you get the correct answer. There are three ways to change rooms:

1. Press F9;
2. After you see the last hint and you are prompted as to whether you want a similar problem, press "N" for no;
3. After you answer a problem wrong and you are prompted as to whether you want to try the same problem again, press "N" for no.

Leaving The Chamber of Numbers

You can always leave *The Chamber of Numbers* at any time. There are 2 times when Zeus summons Iris to take you to Greecia:

1. When you advance a rank, Iris takes you to Greecia to fight the Minion. In fact, Zeus will not allow you to reenter *The Chamber* until you have defeated the Minion.
2. With 2 players Zeus will summon Iris after you have completed each level. It will then be the next person's turn.

Play of the Game

To play you must gain weapons and health in *The Chamber of Numbers* and use these in Greecia to gather points and fight Apathy's minions. To win you must fight and defeat Apathy himself. Apathy can control much of what happens in Greecia; however, he is usually seen around Zeus's throne on Mount Olympus.

To gain weapons and health you must complete word problems in *The Chamber*. Zeus will guide and help you if you ask. Throughout the game you will move back and forth between Greecia and *The Chamber*. When you have been successful in Greecia, Zeus will summon Iris to take you to his throne room on Mount Olympus. Zeus will give you the current news, and offer you some advice. Listen carefully.

Command Line Parameters

Some aspects of the game can be controlled at startup by using command line parameters. These are:

- /H Display Help
- /S Disable Sound Effects
- /M Disable Music
- /E Extra Memory Forced - Will use extended memory or expanded memory even when not necessary.
- /F Disable Flyer and Shortcut - Speeds up game.
- /A Makes Speech available - Must have 2 Mbytes of RAM and SoundBlaster card
- /N Disables Speech (but still available)
- /X Forces speech to use XMS (extended memory) rather than EMS (expanded memory)
- /D Disables deleting names by all players unless the name is "Teacher" (no quotation marks).
- /L Forces hard Math Level - This is very important for people below sixth grade math levels. Without sufficient proficiency, people with lower math skills often do not get enough math practice if they play on an easy math level of difficulty.

Example

This will disable music and force players to play on a high math level.

c:\ math /M /L

Hints

The Chamber of Numbers

Whenever you don't know how to solve a problem, push F8. Keep pushing F8 until the problem is solved for you. Then try the problem for yourself. For help on calculating the answer, push F7 for the calculator.

If you have Freeze Clock potions, F6 will freeze the clock and allow you to get more points.

You must rise three levels to advance a rank.

When you are ready to return to Greecia, summon Iris by pushing F10.

If you run out of weapons or health, push F10 to go to the Chamber of Numbers. If you are not allowed into the Chamber of Numbers, you may "buy" more weapons, health, and some potions by pushing "Scroll Lock" two or three times while in Greecia. This will cost 1/3 of your points, but will allow you to continue the game.

Greecia

This is a complete listing of all the gems. You will need this to pass the Test of Worthiness.

Altogether ... usually means 'add'.

Remaining ... usually means 'subtract'.

Added to it ... usually means 'add'.

Taken away ... usually means 'subtract'.

Combined ... usually means 'add'.

How many were left ... means 'subtract'.

How many in all ... means 'add'.

Pounds measure 'weight' or how heavy.

Ounces measure 'volume' or how much space.

Inches measure 'length' or how long.

Square Yards measure 'area' or length x width.

One quarter = '5' nickels.

One dollar = '10' dimes.

One dollar = '20' nickels.

One Dollar = '4' quarters.

Meters measure metric 'length'.

Liters measure metric 'volume' or how much space.

Grams measure metric 'weight' or how heavy.

Square meters measure metric 'area' or length x width.

Square millimeters measure a small metric 'area'.

Square kilometers measure a large metric 'area'.

Pints measure 'volume': how high, wide, & deep.

One mile equals '5280' feet.

Square miles measure 'area': how long x how wide.

Kilo means '1000' times.

Kiloliter means 1000 'liters'.

Milli means divide into '1000' parts.

1000 Millimeters = 1 'meter'.

1000 Milligrams = 1 'gram'.

Centi means divide into '100' parts.

100 *Centimeters* equal 1 'meter'.

1 *Ton* is 2000 'pounds'.

Square centimeters measure 'small' areas.

1 *Pound* = '16' ounces.

1 *Gallon* = '4' quarts.

1 *Yard* = '3' feet.

1 *Yard* = '36' inches.

Square feet = length X 'width': how long x how wide.

1 *Liter* = '1000' milliliters.

'1000' *Grams* = 1 kilogram.

1/10 in *Decimals* is '0.1'.

1/100 in *Decimals* is '0.01'.

1/1000 in *Decimals* is '0.001'.

'pi' is a *Constant* used to find the *Area* of a *Circle*.

PI equals '3.1416'.

'radius' is the distance from the *Center* to the *Edge* of a *Circle*.

Area of a 'circle' equals pi x radius squared.

'Circumference' is the distance around a circle.

City of Troy

Scene 1

Use the arrow keys to move to the right until you find the door. Along the way you will see magic potions. Pick these up by passing over them. Pay close attention to the gems because these give you knowledge of numbers. Before you leave Troy, you must take the Test of Worthiness over one of these gems. If you fail the test you will have to go through Troy again. Use the gems above when taking the test.

Go up the steps to get the potions at the top. Jump up by using the space bar and the left or right arrow keys at the same time. Shoot Apathy's birds and minions by using the keys: 'DELETE', 'INSERT', 'HOME', 'PAGE UP', and 'PAGE DOWN'. 'DELETE' shoots left; 'INSERT' shoots up and left, 'HOME' shoots up, 'PAGE UP' shoots up and right, 'PAGE DOWN' shoots right. If a weapon runs out, use a Function key to change your weapon.

Scene 2

Check your health and weapons. If your health is low (below 100), you need to increase it before you die. F10 will summon Iris to take you to the Chamber of Numbers. Zeus will increase your weapons and health based on your accuracy, speed, and number of hints. When you are strong enough, push F10 to return to Troy.

Make sure you jump out and get the lantern. These are needed later.

Use the arrow keys to move right to find the door. To shoot down, push shift then shoot. 'INSERT', 'HOME', and 'PAGE UP' now shoot down. Gather potions and save these for later.

Scene 3

Zortex is hiding here. To find him you must do three things: 1) rise to the rank of Squire in the Chamber of Numbers; and 2) destroy Zortex's birds and snakes; and 3) pass the test of Worthiness using the gems.

Use your most powerful weapons when fighting Zortex (F5). When he comes toward you, run away while shooting him.

After you destroy Zortex, you must take the test of Worthiness. Use the gems above.

After you pass the test of worthiness, Zeus will show your progress and give you further instructions.

Hills of Death

Scene 1

Walk through the hills and gather as many potions as possible. Be careful because Apathy has placed a curse that takes some of your weapons away. Zeus has marked this curse with an X to guide you. Walk up the ladders to get more potions.

Scene 2

Continue walking to the right and gathering potions. Apathy placed a curse here that reduces your health. Fortunately, Zeus has marked this with an X. Stay away.

Walk up the rock ladder and stand left of the pole. Hit 'CTRL' and flip over the pole to the right. To reverse the flip, hit 'ALT'. For higher difficulty levels, flip once or you will fly into the fire and be killed. Continue to flip over the poles and gather potions.

If you have too much trouble getting past the fire, you can use the magic potion 'W'. This allows you to walk on items that might otherwise kill you.

Scene 3

Again pick up as many potions as possible. Be careful of Apathy's curse that will kill you each time you hit a wall. Use the magic potion 'T' to stop this curse.

An invisible Freeze Clock potion is hanging over the ocean. Be sure to get it. Use these in the Chamber of Numbers to stop the clock. This will then give you more weapons and health. Stand as close to the fiery ledge overlooking the ocean as possible. You may have to use an 'S', speed potion, here to increase your jump. Then jump as far as you can to the right. If you hit the Freeze Clock, you will know it.

Lucutta is hiding in the hills around here. To find him you must be a Guard and you must destroy many of his hill turtles. If you are not a Guard, go to the Chamber of Numbers until you rise to this rank.

After you defeat Lucutta, take the Test of Worthiness using the gems above. Zeus will then show you your position and give you further instructions.

Cave of Darkness

Scene 1

Light up the cave by choosing the magic potion 'N' for lantern. Carefully jump up on the different rocks using the spacebar as you work your way to the right. Be careful of Apathy's curse. To gain all the potions, you will have to walk up the rock ladder and then move back toward the left. You will then have to carefully jump from one ladder to the next. If you miss, you will fall through to the bottom ledges. Continue as you go to the door.

Scene 2

Again light up the cave with the lantern. Be careful of the curse. Walk across the top and jump down so you don't hit the burning pot. After you go up the ladder and down again, you must jump carefully up on the cave ledges as you go right. Continue until you get to the door.

Scene 3

Again light up the cave with the lantern. *Be careful not to waste your lanterns.* You will need them later in the Midnight Forest. Pary is hiding here, but you must be a Fighter to fight him. If you aren't a Fighter, go to the Chamber of Numbers.

The easiest way to walk through the cave is to walk up the rock wall and turn left when at the top. Then continue walking straight up. Then move across the top by either flipping or jumping. You must be very careful because even one miss sends you to the bottom. If flipping, you must back up each time before flipping again.

Continue all the way to the far right side and find another invisible Freeze Clock potion. You will know it if you hit it.

If you can't walk through the cave, use the 'J', Jumping, potion that allows you to jump through the spirit world. Stand at the top left of the cave and walk left. You will appear at the end of the cave on the right.

Eliminate enough minions and Pary will appear. Do you remember that Zeus said you can only kill Pary with wood? The only weapon that will work is your ancient Boomer, boomerang, (F1). Use your 'P', power weapon, potion since this weapon is weak.

Ice Mountain

Scene 1

To walk across the mountains you will need the 'S', Speed, potion. This increases your speed and doubles the length of your jump. You can jump across at the top or at the bottom. If you jump across at the top, you can pick up a Freeze Clock potion. Be sure to get the lantern. You will need this in the Midnight Forest. If you are careful, you can land on the head in the field to get a good position.

Scene 2

Jump across the path at the bottom while moving left. When you can't jump anymore, walk slowly and carefully left and up. Repeat this a few times. When you get to the ladder, walk up. Jump off the top. Be careful not to hit the fire. Directly under the fire is a safe haven area set up by Zeus. Here you can find protection from your enemies.

Continue walking and jumping to the left. Pick up the lantern and the speed potion. You will need the lantern in the Midnight Forest. The 'L', Slow, potion can be helpful by slowing your enemies.

Scene 3

There are two ways to get across this scene. One way is to walk down the mushrooms, stop at the bottom by the fire, and jump up and to the left. If playing high difficulty, be careful not to hit the fire. Jump up the rocks until you get to the top. With your head above the stairway, hit the ALT key and flip to the left or find a place to jump through the rocks. If you have trouble go down one step and jump to the left. Walk down the stairs. At the bottom you can either walk up the ladder or if you are using 'J', jumping, you can walk down the ladder and fall onto the fence on the top.

An easier way is to use the 'O', Walk Off, potion that allows you to walk in the spirit world. Your head can be in the spirit world while your body is in Greecia. At the beginning jump up and left. Then walk across the fence at the top.

Continue walking left as far as you can then walk down the stairs. At the bottom you will find a potion with a gold arrow. Pick this up. This is a jumping potion which allows you to jump through the spirit world from one end of Greecia to another.

Use the 'J' or jumping potion. Now walk down the purple ladder at the bottom of the steps. You will fall onto the ladder at the top of Greecia. Continue your journey to the left.

If you should be unfortunate enough to pick up Apathy's curse, you will die each time you hit a wall. Neutralize this by using the 'W' walk through walls potion.

Pick up the lantern and the other potion. Avoid the curse. Continue fighting until you meet Ithicus. You can use any weapon to fight Ithicus, but he's tough. You might consider using the 'P', Power Weapon, potion.

Midnight Forest

Scene 1

Light the forest with your lantern. Jump across the vines at the top then jump down on the tree stumps. Be careful when jumping to higher stumps. One wrong jump can kill you. Be careful of the bush hanging in the air and the big rock.

Use the 'S', Speed, potion to increase the size of your jumps. When at the bottom, you must jump up high to reach the stumps. This is impossible without speed.

Jump high between the rocks and the bush near the left end of the scene to get another invisible Freeze Clock potion. Pick up the slow potion and avoid the curse.

Scene 2

Light the lantern and get an 'S', Speed, potion to increase jumping distances. Flip over the tree stumps at the top until you land on the rocks. Jump carefully over the fires. A miss will kill you. There are two ways to continue. The hard way is to continue down the rocks until they end and then jump up to the high rock. An easier way is to jump on the branches at their low point then continue up the branches. This puts you back at the top and allows you to continue.

Pick up all your potions. An invisible Freeze Clock is available near the top left end of the forest. Search above the low point of the branches.

Avoid the curse. This causes you to die when you hit a wall. If you hit this curse, use the 'T' potion to stop it. Continue to the door.

Scene 3

Light a lantern. Walk across the flat forest floor until you get to the hill. Jump up as you walk over the hills. Get near the end of the last hill and jump hard to the left onto the high rock. Be careful. If you get eaten by the fiery face, you are jumping too high.

Jump up the blue pillars going left and reverse directions and jump up to the right. At the top take a big long leap going left onto the mounds of grass in the tree. Continue jumping hard until you fall to the bottom. Then finish the trip

You must be a Warrior to fight Prometheus. Pick up all your potions and keep fighting until he appears. A 'P' Power potion may help you in your fight against him.

Deadman's Wharf

Scene 1

Walk to the left, go down the steps, and then come back to the right. Zeus hid a secret Freeze Clock potion near the beginning of the scene.

Be careful to avoid the curse. Pick up all potions.

Scene 2

Walk to the left and flip over the pole using the ALT key. Then either walk up the ladders on the wharf or use the 'J', Jumping, potion to walk down the ladder. You will jump to the top of the wharf. Continue walking left and jump onto the platforms. Next jump onto the wharf, but be careful to jump out and not hit the rocks.

Be careful of the curse. Pick up all potions.

Scene 3

Go up the wharf by taking big jumps while moving left. Pick up all potions and watch for curses. If you go down the big steps, you must jump back and forth to get back up.

Walk down the wall and either jump up to the platform or fall down to the ground. If on the ground, walk up the ladder. Move across the top by jumping to the left.

Be careful. Large Fireballs (F5) won't work against the bats. Continue fighting until Carthon appears.

You must be a Beret to fight Carthon. He is very powerful and has rendered three of your best

weapons useless. Therefore you can only defeat him with Boomers and Knives (F1 & F2). Choose 'P', Power Weapon, potion to increase your weapon strength.

Delphi

Scene 1

Walk to the right then climb the pillar. Walk right to the bottom. To move up jump to the right and walk left to the edge before falling. Keep jumping right and walking back to the left. You could also walk right to the edge and up until you get to the top.

Avoid the curse that will cause you to die if you hit a wall. If you hit this, use the 'T' potion that allows you to walk through walls.

Scene 2

Select the 'O' potion to walk into the spirit world. This allows you to walk across the top. If you also select the 'J' Jumping potion, you can jump from the bottom of Delphi to the top or you can jump from the beginning to the end.

Pick up all the potions and bonus points. Be careful. Destroy the green men with Boomers or Knives (F1 & F2).

Scene 3

Use an 'O', Walk Off, potion to walk in the spirit world. This allows you to go to the top of the city.

Whenever you see the dime, shoot it with Boomers (F1). It has a large number of bonus points. Destroy the bats with Boomers or Knives (F1 & F2). Destroy the bugs with Boomers, Knives, or Small Fire Pellets (F1, F2 or F3). Use a 'P', Power Weapon, to increase your power.

If the bats are too fast, you should use the 'L', slow, potion to slow all your enemies. You might also use the 'I', Invincible, potion so their weapons won't hurt you. You must be a Gladiator to fight Jagua. Keep fighting until he appears. Large Fireballs won't work against Jagua. Be careful. For the Test of Worthiness, check the gems above.

Mt. Olympus

Scene 1

The pace is tough and furious here. If you have at least two 'P', Power Weapons, choose one. If

possible, choose an 'I', Invincible, potion to protect you from the spears. Freezing, 'F' potion, your enemies might also help.

Up in the clouds is a Zeus power potion that gives you all the powers of Zeus. Be sure you get this. Whenever you see a pint glass, shoot it with Boomers (F1). These have a large number of bonus points. Pick up all the potions you can. Find Zeus's castle on the top. Go in.

Scene 2

Finally you may enter Zeus's chamber, but Zeus isn't here. You must find Apathy and destroy him. Use the 'Z', Zeus power, potion here. Also choose a 'P', Power Weapon, potion if possible. Choose nothing higher than Small Fire Pellets (F3) to fight. Use any other potions now because you are ready for the final battle.

Continue destroying Apathy's minions. If you are successful, Apathy himself will appear. Choose Large Fireballs (F5) when fighting Apathy. Use all your cunning and wit when fighting him. He is very tough. Be careful on the Test of Worthiness.

Educational Comments for Parents and Teachers

The purpose of this program is to teach people how to solve math word problems ranging from 3rd grade to 7th grade. 240 separate math problems are presented, and if the hints are selected, are solved with random numbers. In the beginning, problems only involve addition and subtraction. Later multiplication and division are added. Problems initially involve only one step such as only addition, and later involve multiple steps such as addition, subtraction, and division. Levels 21 - 24 involve decimals with these processes. The program assumes there are four reasons people experience difficulty in learning math word problems

These are:

1. poor motivation to succeed;
2. an inability to interpret key vocabulary words;
3. an inability to form a mental picture of the problem;
4. an inability to focus on the processes involved in word problems.

These four difficulties are addressed in these ways:

Poor Motivation

The game is presented in the context of a story during which a player must move back and forth between an arcade game and the math problems. A player must succeed in both to win the game.

In addition, because the focus of the game is thinking skills, a convenient calculator is provided to remove calculating mistakes as a source of error.

Vocabulary Words

In the beginning math levels, key vocabulary words are the focus of the initial hints. These are then displayed on the main screen after first viewed. Also the *Test of Worthiness* in Greecia requires the memorization of "Gems". These involve vocabulary words or formulas such as 16 ounces = 1 pound. A player cannot proceed without this.

Forming a Mental Picture

The math section attempts to show the relationship between words and pictures in two ways. When the first hint is selected, a picture of the problem is illustrated focusing on the overall con-

cept involved in the problem. Since there are 240 unique word problems, 240 pictures are available.

The second way is by using small pictures to represent all the elements in the word problem. Hints 2 - 6 (minimum three hints, maximum six hints) explicitly solve the problem. The number of pictures used corresponds to the number of items presented in the problem. Since each problem varies randomly each time it's presented, the hints also vary each time.

Focusing on the Processes Involved

The most difficult part of learning to solve word problems is to focus on the processes involved. When given the solution to a problem, most students try to memorize the answer without understanding the processes involved. Since the numbers inside the word problems are randomly generated, and their order of presentation is mixed, students cannot memorize an answer when they do the problem more than once. What's more, not only do the problems change every time, but the hints change every time to reflect the different numbers in the problems. This forces the student to focus on the underlying process. To further insure that a student cannot "pass" the problem by looking at all the hints or "mindlessly" memorizing the process without understanding it, the problem will be presented again. The number of times it is presented again depends on the level of difficulty chosen in the beginning of the game and whether the answer is wrong.

It is recommended that people below the sixth grade math level use math difficulty level 3. This requires the highest degree of proficiency in math before going on to the next level. It has been found that unless lower level students achieve a high level of proficiency, they become frustrated when the math problems become harder.

It is suggested that players be encouraged to take notes when doing math problems. This will help them remember many formulas when they see the same math problems again.

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