INTELLIGENT TUTOR™ MATH SOFTWARE SERIES

Windows Network Version

The following pages contain user operating instructions for the three Intelligent Tutor™ series:

- **Concepts and Skills Series**
- **Practice and Review Series**
- **Special Topics Series**

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INTELLIGENT TUTOR™ CONCEPTS AND SKILLS SERIES

Windows Network Version

The Concepts and Skills Series contains these six programs:

- **PRE-ALGEBRA**
- **ALGEBRA 1**
- **GEOMETRY**
- **ALGEBRA 2**
- **TRIGONOMETRY AND ADV. TOPICS**
- **INTRODUCTORY CALCULUS**

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Introduction

Objective

The INTELLIGENT TUTOR™ Concepts and Skills Series consists of six programs, each of which is a complete and self-contained course. The programs are designed for students and others engaged in self-study. Using graphics and animation, each program's tutorials will help students learn the concepts and ideas of Grades 7-12 math, and learn how to apply these to solving problems.

The six programs in the series are:

- PRE-ALGEBRA
- ALGEBRA 1
- GEOMETRY
- ALGEBRA 2
- TRIGONOMETRY AND ADVANCED TOPICS
- INTRODUCTORY CALCULUS

Level

Grades: 7-12

Minimum Computer Requirements for Each Program

* 486 IBM or compatible PC with 8MB of RAM
* Windows 95, Windows 98, Windows 2000, or Windows NT
* 10MB of free hard disk space

Overview: INTELLIGENT TUTOR™ Concepts and Skills Series

The INTELLIGENT TUTOR™ Concepts and Skills Series consists of six programs, covering the levels of math normally taught in Grades 7-12. Each program is a complete and self-contained course designed especially for students and others engaged in self-study. Each is designed to allow you to work at your own pace, using easy to follow tutorials and problem solving exercises.

The programs in the series were designed by math educators, and are comprehensive yet simple to use. Our goal is to build your math skills and make you more confident about using math in your everyday life, both inside and outside the classroom.

The lessons in each program provide you a dynamic and unique learning experience. Graphics and animation are used throughout the lessons to present the ideas of math clearly and concretely.

Although the lessons are designed to be worked in order, you can study them in any order you wish. Easy to use menus allow you to go directly to any of the lessons in the program.

Topics Covered By "Pre-Algebra"

ADD./SUB. WHOLE NUMBERS
Place Value
Ordering Numbers
Rounding Numbers
Adding Whole Numbers
Subtracting Whole Numbers
Word Problems

MULTIPLYING/DIVIDING WHOLE NUMBERS
Multiplying By 1-Digit Numbers
Multiplying By Whole Numbers
Dividing By 1 and 2 Digit Numbers
Dividing By Whole Numbers
Word Problems
Denominate Numbers

OTHER OPERATIONS USING WHOLE NUMBERS
Using Divisibility Rules
Factoring Whole Numbers
Using Exponents
Order of Operations
Square Roots of Perfect Squares
Finding the GCF and LCM

ADDING/SUBTR. FRACTIONS AND MIXED NUMBERS
Fractions and Mixed Numbers
Finding Equivalent Fractions
Reducing Fractions to Lowest terms
Comparing and Ordering Fractions
Adding Fractions
Adding Fractions and Mixed Nos.
Subtracting Fractions
Subtr. Fractions and Mixed Numbers
Word Problems

MULT./DIVIDING FRACTIONS AND MIXED NUMBERS
Multiplying Fractions
Mult. Fractions and Mixed Numbers
Dividing Fractions
Div. Fractions and Mixed Numbers
Word Problems

OPERATIONS WITH DECIMALS
Place Value and Decimal Numbers
Comparing/Rounding Decimal Nos.
Adding & Subtr. Decimal Numbers
Mult. & Dividing Decimal Numbers
Word Problems

POSITIVE AND NEG. NUMBERS
The Number Line
Addition and Subtraction
Multiplication and Division
Positive and Negative Exponents
Scientific Notation

EXPRESSIONS AND FORMULAS
Variables and Expressions
Like Terms
Simplifying Expressions

EQUATIONS
Properties of Equations
Solving Equations
Translating Words into Expressions
Solving Word Problems

PERCENT
Percents and Decimal Numbers
Using the Percent Equation
Percent Problems Using Proportions
Word Problems Involving Percent

Topics Covered By "Algebra 1"

REVIEW OF ARITHMETIC
Order of Operations
Using Exponents
Variables and Expressions
The Number Line; Absolute Value
Scientific Notation

FUNDAMENTAL
Properties of Addition
Properties of Multiplication
The Distributive Property

EQUATIONS
Properties of Equations
Using Formulas
Like Terms
Simplifying Expressions
Solving Equations

SOLVING WORD PROBLEMS
Translating Words into Expressions
Simple Word Problems
Work Problems
Mixture Problems
Distance-Rate-Time Problems
Advanced D-R-T Problems

EXPONENTS AND POWERS
Multiplying With Exponents
Dividing With Exponents
Power of a Product
Power of a Power
Power of a Monomial

POLYNOMIALS
Simplifying Polynomials
Adding and Subtracting Polynomials
Multiplying Polynomials / FOIL

FACTORING
Prime Factorization
Factors of Expressions
Perfect Squares

LINES AND SLOPES
The Coordinate System
The Slope of a Line
The Equation of a Line

INEQUALITIES
Simple Inequalities
Complex Inequalities
Properties of Inequalities
Solving Inequalities

RADICALS
Simplifying Radicals
Simplifying Radical Expressions

QUADRATIC EQUATIONS
Solving Quadratic Equations
Completing the Square
The Quadratic Formula

Topics Covered By "Geometry"

BASIC ELEMENTS
Introductory Terms
Rays and Angles
Measuring Angles
Types of Angles

INTERSECTING AND PARALLEL LINES
Perpendicular Lines
Some Basic Facts
Parallel Lines

TRIANGLES AND TRIANGLE CONGRUENCE
Terms Used With Triangles
Basic Facts About Triangles
Congruence of Triangles

QUADRILATERALS
Parallelograms
Trapezoids
Review Problems and Examples

RIGHT TRIANGLES
General Right Triangles
Special Right Triangles

CIRCLES
Circle Definitions
Arcs and Angles

AREAS AND PERIMETERS
Areas of Special Polygons
Perimeters of Polygons
Area and Circumference of Circles

ADV. TRIANGLES AND TRIGONOMETRY
Interesting Facts About Triangles
Similar Triangles
Measuring With Trigonometry

THE LANGUAGE OF THEOREMS
If-Then Statements
Statements and Their Converses

INTRODUCTION TO PROOFS
Why We Need a Formal Proof
What is a Proof?
Proofs in Everyday Situations

THE BASIC ELEMENTS OF A PROOF
Why We Need Definitions
Axioms and Postulates

PROOF DEMONSTRATIONS AND EXAMPLES
Examples of Completed Proofs
Creating a Proof
Indirect Proofs

Topics Covered By "Algebra 2"

REVIEW OF ALGEBRA
Order of Operations
Variables and Expressions
Simplifying Expressions
Properties of Addition
Properties of Multiplication
The Distributive Property
Formulas

EQUATIONS AND INEQUALITIES
Properties of Equations
Solving Equations
Translating Words into Expressions
Solving Word Problems
Properties of Inequalities
Solving Inequalities

LINEAR EQUATIONS
The Coordinate System
The Slope of a Line
The Equation of a Line
Evaluating Functions

SYSTEMS OF EQUATIONS
Solving Systems by Graphing
Solving Systems Algebraically
Systems of Equations: Word Problems
Systems in Three Variables
Determinants
Cramer's Rule

POLYNOMIALS
Simplifying Polynomials
Adding and Subtracting Polynomials
Multiplying Polynomials / FOIL
Dividing Polynomials
Synthetic Division

ROOTS AND RADICALS
Simplifying Radicals
Simplifying Radical Expressions
Multiplying Radicals
Rational Exponents
Complex Numbers

QUADRATIC EQUATIONS AND FUNCTIONS
Solving Quadratic Equations
Completing the Square
The Quadratic Formula
Word Problems Involving Quadratics

CONIC SECTIONS
The Parabola
The Circle
The Ellipse
The Hyperbola
Solving Nonlinear Systems

EXPONENTIAL AND LOGARITHMIC FUNCTIONS
Exponential Functions
Logarithmic Functions
Properties of Logarithms
Computing With Logarithms

Topics Covered By
"Trigonometry And Advanced Topics"

TRIGONOMETRIC FUNCTIONS
Definition of Angle
Degrees and Radians
Defining Trigonometric Functions
Measuring with Trigonometry
Trig Functions of Angle Measures

IDENTITIES, FORMULAS, EQUATIONS
Simplifying Trigonometric Functions
Sums and Differences
Double Angle Formula
Trigonometric Equations

RIGHT TRIANGLES
Right Triangles I
Right Triangles II
Law of Cosines
Law of Sines

SERIES AND PROGRESSIONS
Arithmetic Progressions
Arithmetic Series
Geometric Progressions
Geometric Series
Binomial Theorem

PROBABILITY
Permutations
Combinations
Probability

Topics Covered by "Introductory Calculus"

PREREQUISITES FOR CALCULUS
Review of Powers and Exponents
Evaluating Functions
The Coordinate System
The Slope of a Line

INTRODUCTION TO DIFFERENTIAL CALCULUS
The Derivative
Derivative of Monomials
Derivative of Sum of Monomials
Product Rule
Quotient Rule

MORE DIFFERENTIAL CALCULUS
The Chain Rule
Higher Order Differentiation
Implicit Differentiation
Min/Max of Quadratic Functions
Min/Max Word Problems

INTRODUCING INTEGRAL CALCULUS
The Integral
Integration of Monomials I
Integration of Monomials II
Integration of Sum of Monomials
Integration of du/u

MORE INTEGRAL CALCULUS
Area Under a Curve
Integration by Parts

TRIG, EXPONENTIAL, AND LOG FUNCTIONS
Derivative of Trig Functions: Proofs
Derivative of Trig Functions:
Integration of Trig Functions
Differentiation/Integration of e^u
Derivative of a^nx

ADVANCED TOPICS
Solids of Revolution
L'Hospital's Rule
Convergence/Divergence of Series

Installing the Programs

These program are network versions. They are meant to be installed with the INTELLIGENT TUTOR™ recordkeeping and management software included on the INTELLIGENT TUTOR™ CD-ROM.

Please refer to the installation instructions entitled “INTELLIGENT TUTOR™ Recordkeeping System” that were contained in the manila envelope you received with this package.

Starting the Programs

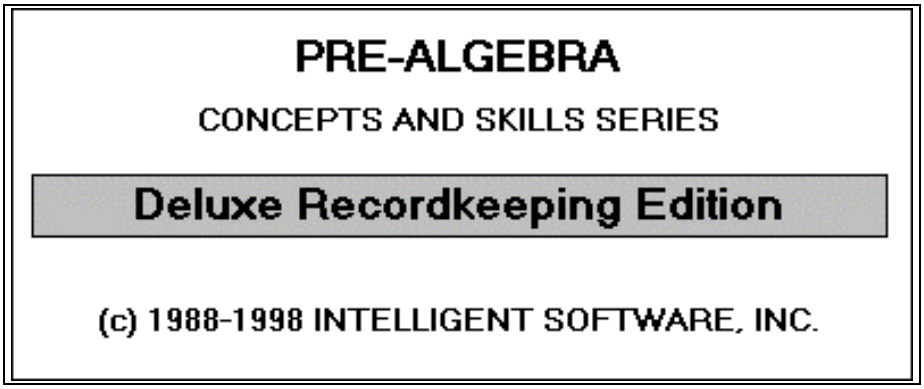
Note - <u>The instructions and information on this and the following pages refer to Pre-Algebra. The other five programs in the series contain similar screens and these instructions apply to them as well.</u>

Step 1 Click the **Start** button on the Windows taskbar. The Start menu opens.

Step 2 Choose **Programs**. The Programs folder opens.

Step 3 Choose **Intelligent Tutor**.

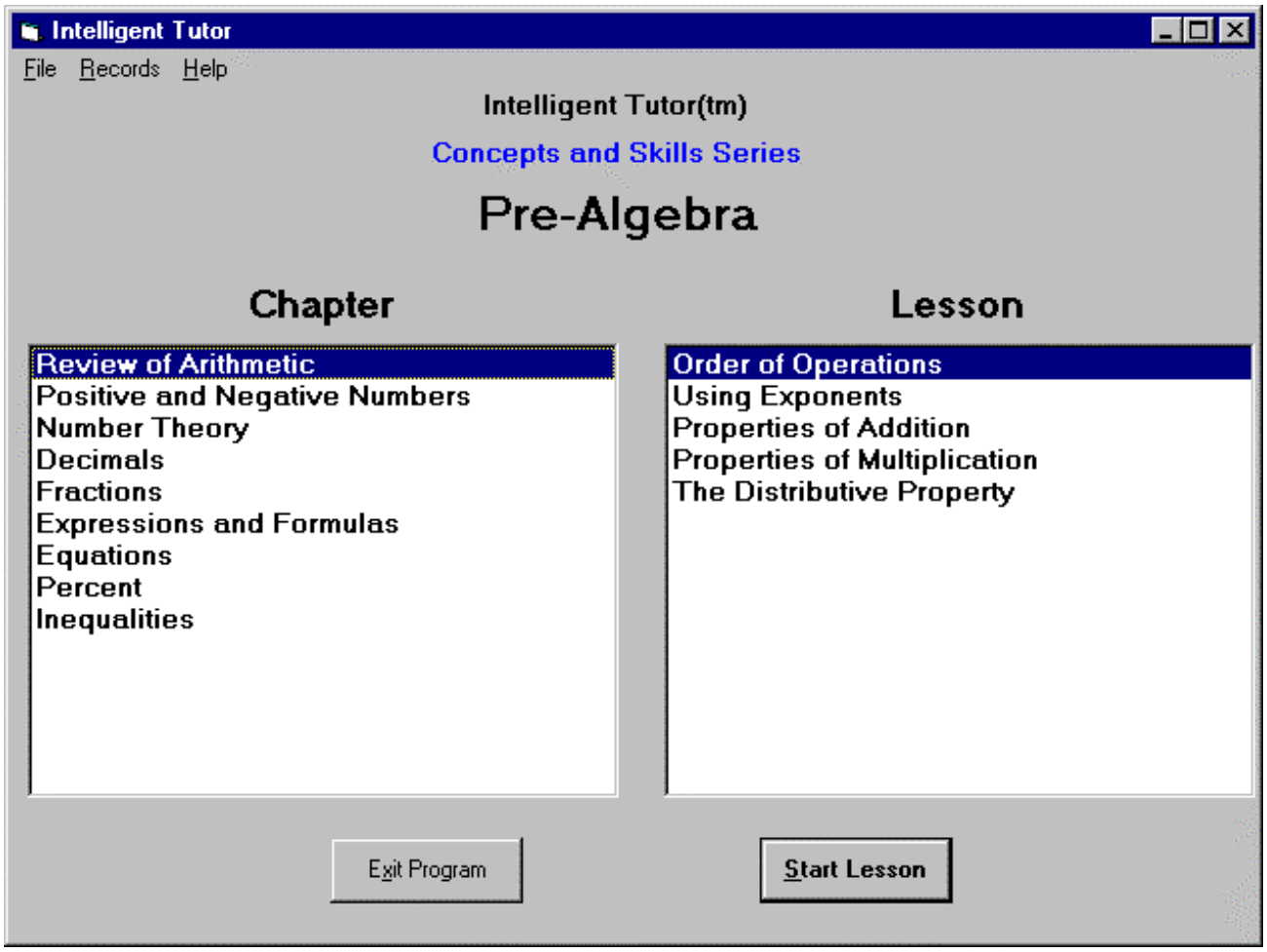
Step 4 Click **Pre-Algebra Concepts**. The program will then begin, and the title screen (shown below) will appear. Click the title screen window, or press ENTER.



Step 5 The **Student Login** screen (shown below) will appear. To keep records for this session, select a name and click **Login**. If you prefer not to keep records for this session, click **Skip Login**.

If the Student List contains no names, the **Student Login** screen will not be shown. Instead, you will see a screen that allows you to enter student names.

Using the Programs



The program menu (shown above) is the starting point for your study of pre-algebra. The **CHAPTER** window shows the chapters in the course. The **LESSON** window shows the lessons in the current highlighted chapter. To see a list of the lessons in a different chapter, click that chapter in the **CHAPTER** window.

To study a lesson, click the lesson in the **LESSON** window. Then click the **START LESSON** button at the bottom. Your lesson will then begin!

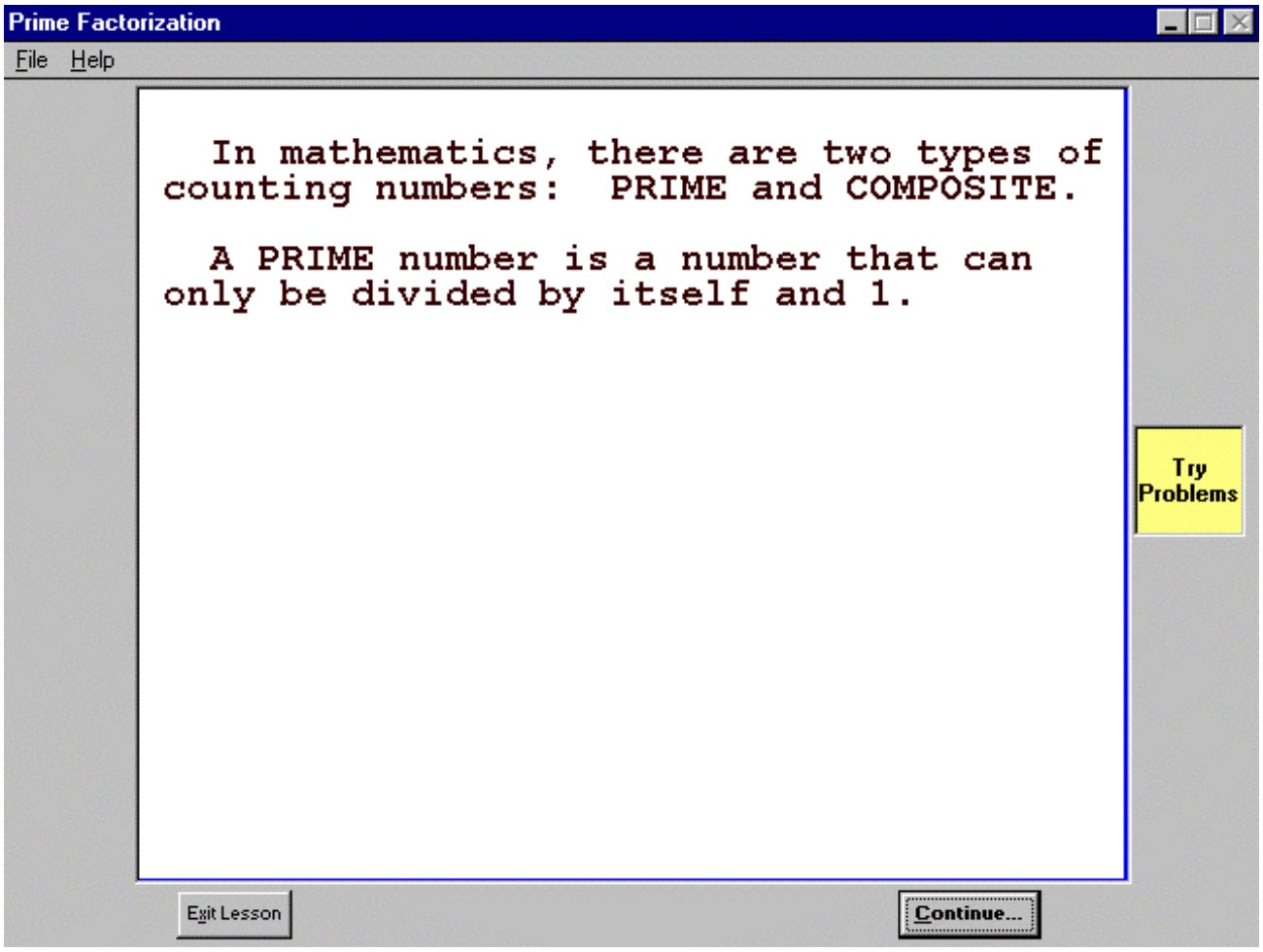
The beginning student is encouraged to work the chapters and lessons in order. But the program gives you the freedom to study the lessons in any sequence you wish.

As you work your way through lessons, and try your hand at solving problems, you may wish to see a summary of how well you are doing in the current session. The RECORDS menu allows you to see a summary of your performance in the current session. It is explained later in this manual.

Working a Lesson

After entering a lesson, you can move through the lesson at your own pace by clicking the "**CONTINUE...**" button at the bottom of the window. To return to the program menu click the "**EXIT LESSON**" button at the bottom of the window. To restart the current lesson use the **File** menu and select "**Restart Lesson**".

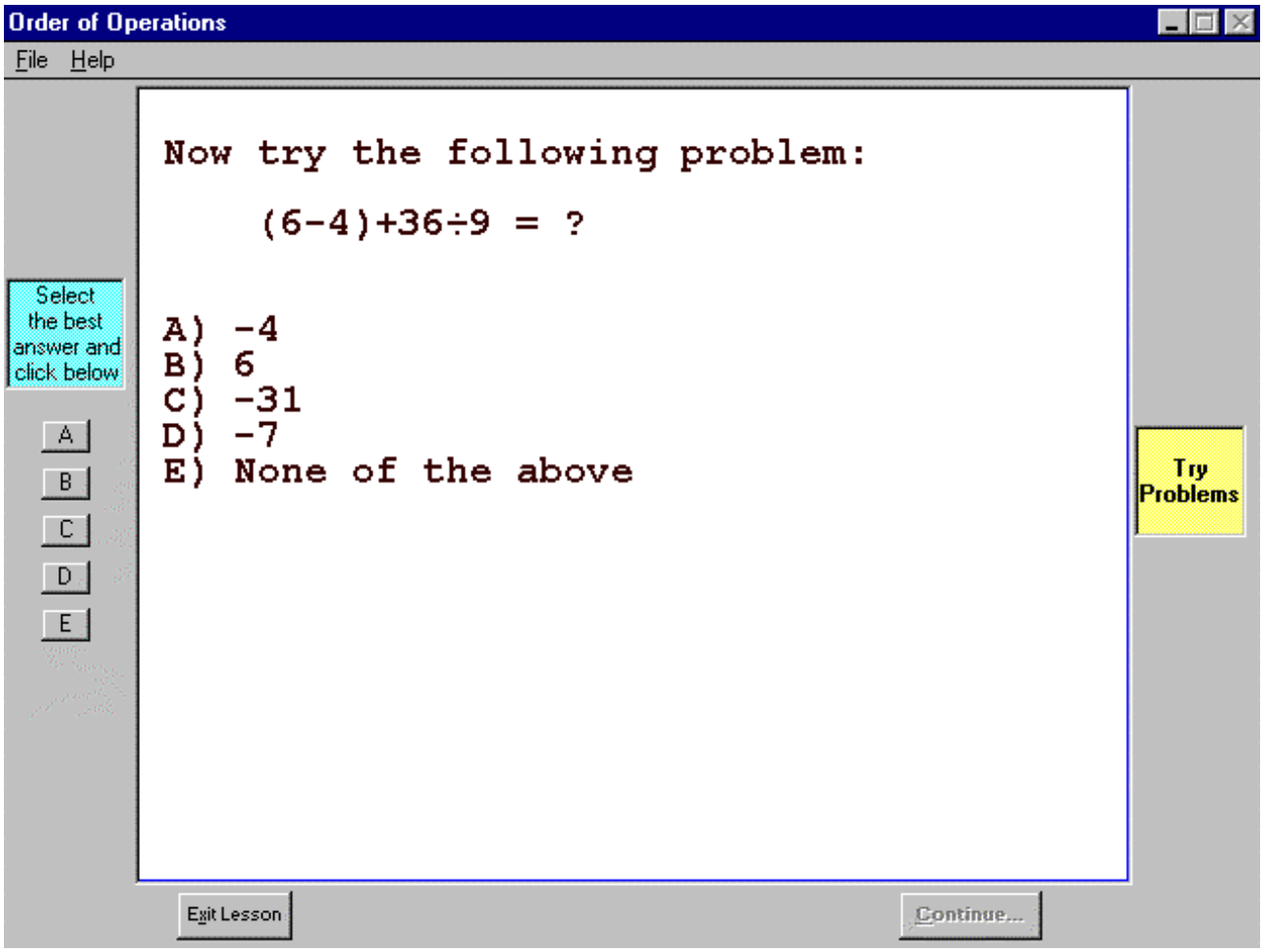
Most lessons have a similar format. First, the main concepts and ideas are presented. Then, one or more examples are presented to illustrate the concepts. After seeing these you will be asked if you would like to see another example. If you click "Yes" you will be shown another example. You will be able to see as many additional examples as you wish. If you click "No" you will be shown a problem to solve.



Here's a tip: When you are in a lesson, if you wish to go straight to solving problems click the "Try Problems" button in the right margin.

Working a Lesson (continued)

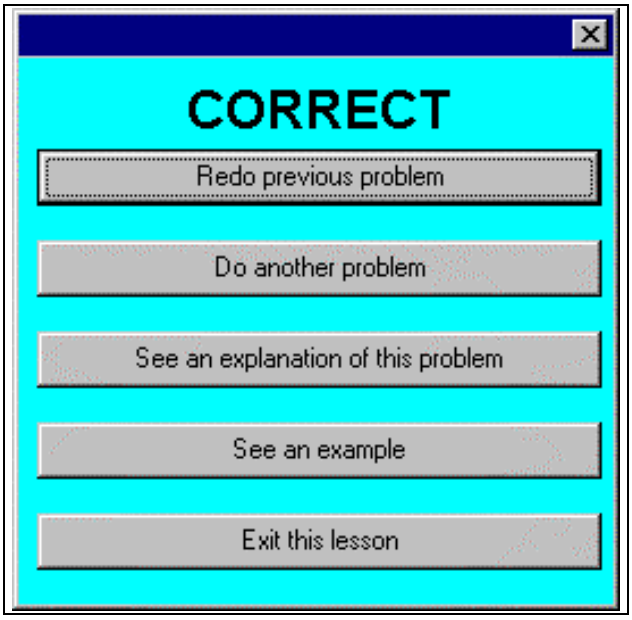
Trying to solve problems is one of the best ways for you to build your math skills, so we encourage you to spend some time on problem solving in each of the lessons you study. After trying a problem you'll have a chance to see the program solve the problem you just tried.



When the program presents a problem for you to solve, the possible answer choices will be displayed in a multiple choice format. To select an answer, click one of the answer choice buttons in the left margin.

The program will respond by telling you if your answer was correct or incorrect. The options available to you at this point are shown below.

Working a Lesson (continued)



After doing a problem, select one of the options shown to the left.

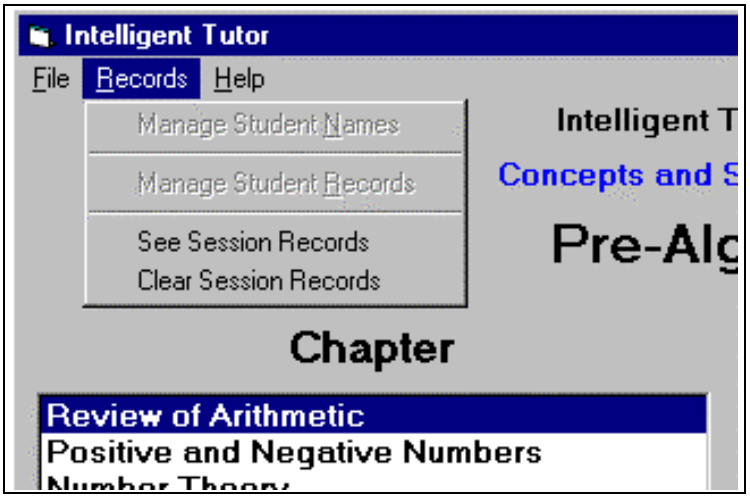
Most of the choices are self-explanatory.

If you did not solve the problem correctly, and would like to see how it can be solved, select the third option choice: "**See an explanation of this problem**".

Summary of How to Navigate a Lesson

In order to do this, then...	Do This
Proceed sequentially through a lesson	Click the "Continue..." button
Go directly to doing problems	Click the "Try Problems" button in the right margin
Select an answer to a problem	Click one of the answer choice buttons (A, B, C, D, E) in the left margin
Restart the current lesson	Choose "Restart Lesson" from the File menu
Return to the program menu	Click the "Exit Lesson" button, or choose "Return to Menu" from the File Menu

Looking at Your Performance in the Current Session

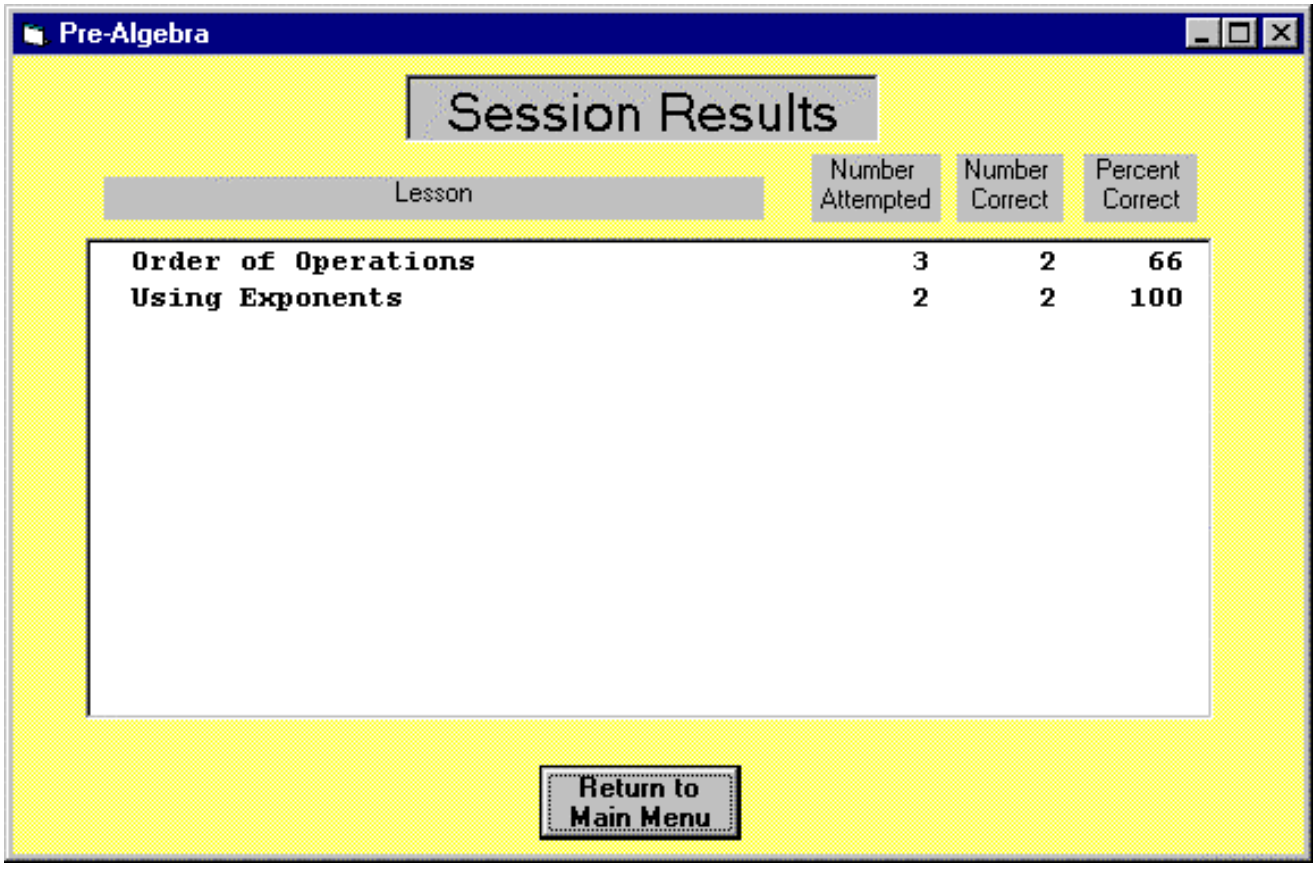


The **RECORDS** menu allows you to see your performance during the current session.

Select "See Session Records" to see your performance.

Select "Clear Session Records" to erase this sessions records.

The screen below shows how the current session's records are displayed.



INTELLIGENT TUTOR™ PRACTICE AND REVIEW SERIES

Windows Network Version

The Practice and Review Series contains these six programs:

- **PRE-ALGEBRA**
- **ALGEBRA 1**
- **GEOMETRY**
- **ALGEBRA 2**
- **TRIGONOMETRY AND ADV. TOPICS**
- **INTRODUCTORY CALCULUS**

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Introduction

Objective

The INTELLIGENT TUTOR™ Practice and Review Series consists of six programs, each of which is complete and self-contained. The programs provide drill and practice exercises for students and others engaged in self-study. Each program helps students build problem solving skills, and reinforces their understanding of basic concepts and principles. A test mode is also available to help students evaluate their skills, and identify their strengths and weaknesses.

The six programs in the series are:

- PRE-ALGEBRA
- ALGEBRA 1
- GEOMETRY
- ALGEBRA 2
- TRIGONOMETRY AND ADVANCED TOPICS
- INTRODUCTORY CALCULUS

Level

Grades: 7-12

Minimum Computer Requirements for Each Program

* 486 IBM or compatible PC with 8MB of RAM
* Windows 95, Windows 98, Windows 2000, or Windows NT
* 10MB of free hard disk space

Overview: INTELLIGENT TUTOR™ Practice And Review Series

The INTELLIGENT TUTOR™ Practice and Review Series consists of six programs, covering the levels of math normally taught in Grades 7-12. Each program will help students develop problem solving skills, and reinforce their understanding of basic concepts and principles. Designed by educators, each program provides a comprehensive range of drill and practice exercises that will provide challenging practice for students, even after being used many times.

Each program can be used in two ways: Practice Mode and Test Mode.

Practice Mode allows you to select a problem type and to practice solving problems of that type. After each problem, you are told if your answer was correct or incorrect. You are then given these options: to re-do the problem; to see an explanation of the problem; to try another problem of the same type; to return to the Practice Menu to select another problem type; or, to return to the Main Menu.

Test Mode allows you to take sample tests. Following the test you will see your performance on each problem, as well as an overall evaluation of your skill level.

Problem Types Covered by "Pre-Algebra"

The 38 problem types contained in PRE-ALGEBRA are divided into the following six problem set areas:

* ARITHMETIC SKILLS: INTEGERS
* ARITHMETIC SKILLS: FRACTIONS
* ARITHMETIC SKILLS: DECIMALS
* VARIABLES AND EQUATIONS
* ALGEBRAIC RULES
* PROBLEM SOLVING

ARITHMETIC SKILLS: INTEGERS

1. The Number Line
2. Multiplication Table
3. Addition and Subtraction
4. Multiplication and Division
5. Addition of Several Integers
6. Addition/Subtraction of Several Integers
7. Word Problems: Addition and Subtr.
8. Word Problems: Mult. and Division.

ARITHMETIC SKILLS: FRACTIONS

9. The Number Line
10. LCM, GCD
11. Equivalent Fractions
12. Addition and Subtraction I
13. Addition and Subtraction II
14. Multiplication and Division

ARITHMETIC SKILLS: DECIMALS

15. The Number Line
16. Addition and Subtraction
17. Multiplication and Division
18. Decimals, Fractions, Percent
19. Scientific Notation

VARIABLES AND EQUATIONS

20. Words and Symbols
21. Words and Equations
22. Word Problems I
23. Word Problems II
24. Evaluating Expressions
25. Satisfying Equations I
26. Satisfying Equations II
27. Correct Solutions
28. Incorrect Equations

ALGEBRAIC RULES

29. Linear Terms I
30. Linear Terms II
31. Equivalent Expressions
32. Products
33. Simple Powers
34. Basic Operations
35. Inequalities

PROBLEM SOLVING

36. Word Problems: TV Sets
37. Word Problems: Percent/Ratio
38. Units of Measure

Problem Types Covered by "Algebra 1"

The 36 problem types contained in ALGEBRA 1 are divided into the following four problem set areas:

* REVIEW OF ARITHMETIC
* SIMPLE ALGEBRAIC OPERATIONS
* ADVANCED ALGEBRAIC OPERATIONS
* FUNCTIONS AND MISCELLANEOUS TOPICS

REVIEW OF ARITHMETIC

1. Basic Rules of Arithmetic
2. Add./subtr/mult/div of Fractions
3. Comparison of Fractions
4. Interpretation of Fractions
5. Arithmetic Comparisons
6. Scientific Notation

SIMPLE ALGEBRAIC OPERATIONS

7. Addition/subtr. of Polynomials
8. Multiplication of Polynomials
9. Elementary Factoring I
10. Elementary Factoring II
11. Addition/subtr. of Rational Expressions
12. Solving Simple Alg. Equations I
13. Solving Simple Alg. Equations II
14. Units of Measure
15. D = RT
16. Elem. Word Probs I: Linear Eqns
17. Elem. Word Probs II: Quad. Eqns

ADV. ALGEBRAIC OPERATIONS

18. Intermediate Factoring
19. The Roots of a Quadratic Equation
20. Combining Algebraic Expressions I
21. Combining Algebraic Expressions II
22. Simplifying Radicals I
23. Simplifying Radicals II
24. Exponent Rules
25. Pythagorean Theorem
26. Intermediate Word Problems I
27. Intermediate Word Problems II

FUNCTIONS AND MISC. TOPICS

28. Reading and Interpreting Tables
29. Coordinate Geometry
30. Lines in the Plane
31. Equation of a Straight Line
32. Solving an Inequality
33. Absolute Value Function
34. Determining a Function
35. Direct and Inverse Proportion
36. Word Problems: Absolute Value

Problem Types Covered by "Geometry"

The 33 problem types contained in GEOMETRY are divided into the following five problem set areas:

* FUNDAMENTAL MATERIAL
* STRAIGHT LINE FIGURES
* FIGURES INVOLVING TRIANGLES
* FIGURES INVOLVING PARALLELS
* FIGURES INVOLVING CIRCLES AND POLYGONS

FUNDAMENTAL MATERIAL

1. Definitions
2. Theorems and Formulas
3. Converses

STRAIGHT LINE FIGURES AND ARITHMETIC REVIEW

4. Solving an Algebraic Equation
5. Fractions: Comparisons
6. Fractions: Qualitative
7. Arithmetic Comparisons
8. Angles: Addition and Subtraction
9. Line Segments: Addition, Subtraction
10. Angles: Correct Conclusions
11. Angles: False Conclusions

FIGURES INVOLVING TRIANGLES

12. Isosceles Triangles
13. Angles About a Triangle
14. Congruent Triangles
15. Congruent Angles
16. Angle Calculations
17. Parallel Lines
18. Indirect Proof
19. Inequalities in a Triangle

FIGURES INVOLVING PARALLELS

20. Quadrilaterals
21. Angle Comparisons
22. Parallelograms
23. Coordinates in a Rectangle
24. Trapezoids and Right Triangles
25. Triangle (Connect Midpoint); Angles
26. Rectangles and Angles

FIGURES INVOLVING CIRCLES AND POLYGONS

27. Proportion (Length, Area, Volume)
28. Arcs/Angles (Triangle in a Circle)
29. Arcs/Angles (Circle in a Triangle)
30. Area Between Two Figures
31. Triangles/Midpoints (Area)
32. Tangents and Secants
33. Historical Summary

Problem Types Covered by "Algebra 2"

The 33 problem types contained in ALGEBRA 2 are divided into the following three problem set areas:

* SYSTEMS OF EQUATIONS AND DETERMINANTS
* POLYNOMIALS AND RATIONAL FUNCTIONS
* ADVANCED FUNCTIONS AND CONICS

SYSTEMS OF EQUATIONS AND DETERMINANTS

1. Definitions and Concepts
2. Systems of 2 Equations: Equivalent Equations
3. Systems of 2 Equations: Solutions
4. Systems of 3 Equations: Equivalent Equations
5. Systems of 3 Equations: Solutions
6. Translating Statements to Equations
7. Determinants: 2 x 2
8. Determinants: 3 x 3
9. Systems of 2 Equations: Word Probs
10. Systems of 3 Equations: Word Probs
11. Word Problems: A Grass Mixture
12. Word Problems: A Money Collection

POLYNOMIALS AND RATIONAL FUNCTIONS

13. Definitions and Concepts
14. Polynomials: Elementary
15. Proportions: Direct / Indirect
16. Polynomials: Roots
17. Polynomials: Qualitative
18. Quadratic Inequalities
19. Complex Numbers
20. Absolute Value
21. Word Problems: Filling a Can
22. D = RT
23. Word Problems: Animals on a Farm
24. Averages: A Magazine Salesman

ADVANCED FUNCTIONS AND CONICS

25. Definitions and Concepts
26. Logarithms
27. Equations: Parameters
28. Exponents and Their Properties
29. Comparison of Functions
30. Curves in the Plane
31. Conics: Properties
32. Conics: Equations
33. Conics: Graphs

Problem Types Covered by "Trigonometry And Advanced Topics"

The 28 problem types contained in TRIGONOMETRY AND ADVANCED TOPICS are divided into the following four problem set areas:

* ELEMENTARY TRIGONOMETRY
* ADVANCED TRIGONOMETRY
* VECTORS, COMPLEX NUMBERS, EXPONENTS, LOGS
* ADVANCED TOPICS

ELEMENTARY TRIGONOMETRY

1. Concepts / Definitions
2. Right Triangle Trigonometry
3. Elementary Identities I
4. Signs of Functions
5. Quadrants of Angles
6. Radian/Degree Measure
7. Elementary Identities II
8. Trigonometric Graphs I

ADVANCED TRIGONOMETRY

9. Elementary Identities III
10. Trigonometric Graphs II
11. Law of Sines and Cosines
12. Word Problems: Law of Sines and Cosines
13. Identities: Angle Addition and Subtraction
14. Identities: Trigonometric
15. Comprehensive Identities

VECTORS, COMPLEX NUMBERS, EXPONENTS, LOGS

16. Vector Definitions
17. Vector Applications
18. Vector Components I
19. Vector Components II
20. Complex Numbers
21. Exponents/Logs - Properties

ADVANCED TOPICS

22. Permutations and Combinations
23. Probability
24. Series: Numerical
25. Truth Tables
26. Binomial Theorem
27. Bases
28. Word Problems: Series

Problem Types Covered by "Introductory Calculus"

The 30 problem types contained in INTRODUCTORY CALCULUS are divided into the following four problem set areas:

* REVIEW OF ALGEBRA
* FUNCTIONS
* DIFFERENTIAL CALCULUS
* INTEGRAL CALCULUS

REVIEW OF ALGEBRA
1. Concepts / Definitions
2. Right Triangle Trigonometry
3. Elementary Identities I
4. Signs of Functions
5. Quadrants of Angles
6. Radian/Degree Measure

FUNCTIONS
7. Evaluation and Inverses
8. Coordinate System
9. Graphs of Straight Lines
10. Graphs of Conics
11. Graphs of Logs and Exponents
12. Asymptotic Curves
13. Delta Notation
14. Average Rates of Change

DIFFERENTIAL CALCULUS
15. Function Properties
16. Differentiation I
17. Differentiation II
18. Maxima and Minima
19. Word Problems: Brooms
20. Implicit Differentiation
21. L'Hospital's Rule
22. Differentiable Functions
23. Areas and Perimeters

INTEGRAL CALCULUS
24. Indefinite Integrals I
25. Indefinite Integrals II
26. Indefinite Integrals
27. Advanced Integration Techniques
28. Bounded Area: Curves
29. Bounded Area: Straight Lines
30. Solids of Revolution

Installing the Programs

These program are network versions. They are meant to be installed with the INTELLIGENT TUTOR™ recordkeeping and management software included on the INTELLIGENT TUTOR™ CD-ROM.

Please refer to the installation instructions entitled “INTELLIGENT TUTOR™ Recordkeeping System” that were contained in the manila envelope you received with this package.

Starting the Programs

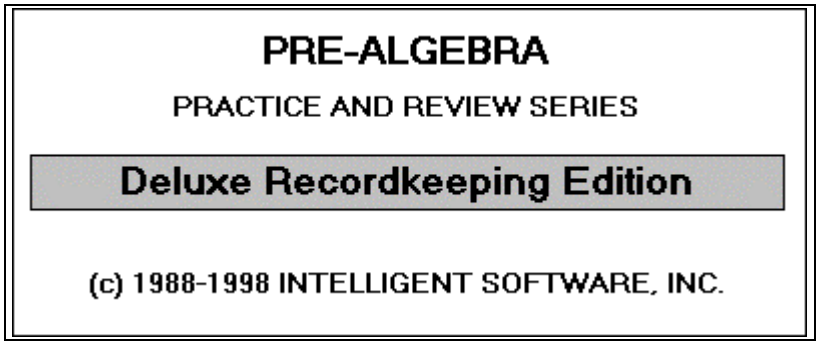
Note - <u>The instructions and information on this and the following pages refer to Pre-Algebra. The other five programs in the series contain similar screens and these instructions apply to them as well.</u>

Step 1 Click the **Start** button on the Windows taskbar. The Start menu opens.

Step 2 Choose **Programs**. The Programs folder opens.

Step 3 Choose **Intelligent Tutor**.

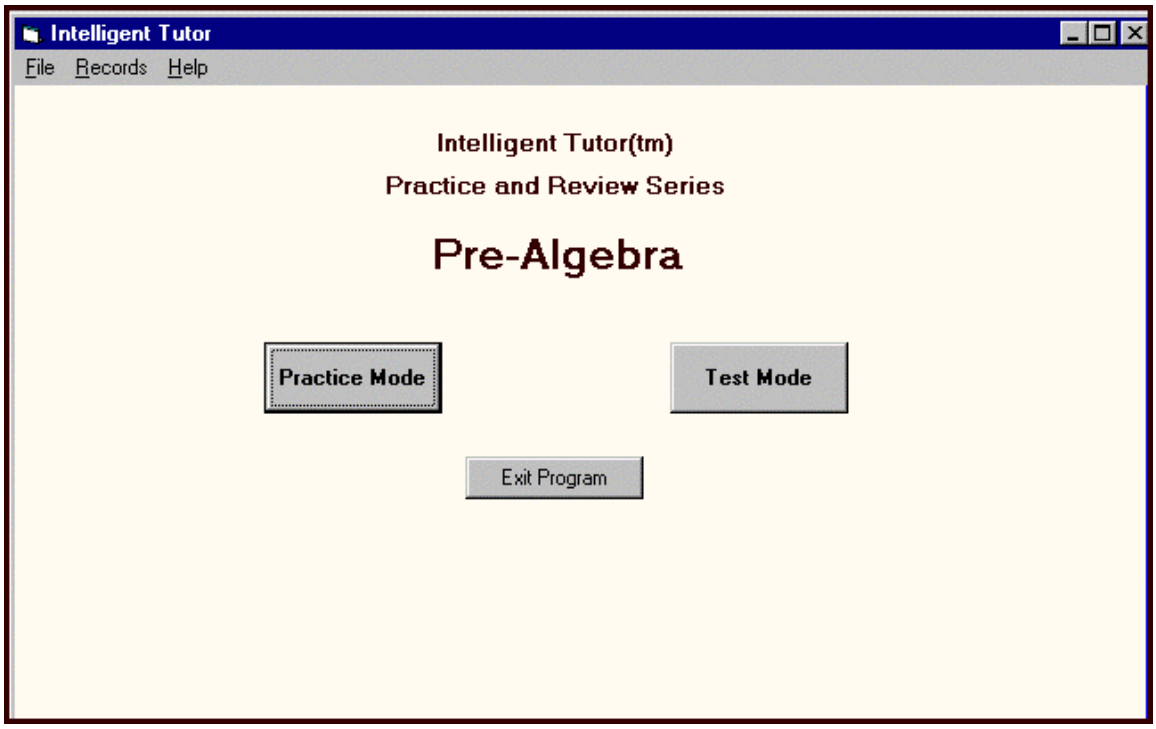
Step 4 Click **Pre-Algebra Practice**. The program will then begin, and the title screen (shown below) will appear. Click the title screen window, or press ENTER.



Step 5 The **Student Login** screen (shown below) will appear. To keep records for this session, select a name and click **Login**. If you prefer not to keep records for this session, click **Skip Login**.

If the Student List contains no names, the **Student Login** screen will not be shown. Instead, you will see a screen that allows you to enter student names.

Using the Programs



The main program menu (shown above) is your take-off point for using the two main parts of the program - Practice Mode and Test Mode.

Click **Practice Mode** to see the Practice Mode Menu, which is described on the following page.

Click **Test Mode** to see the Test Menu, which is described on page 10.

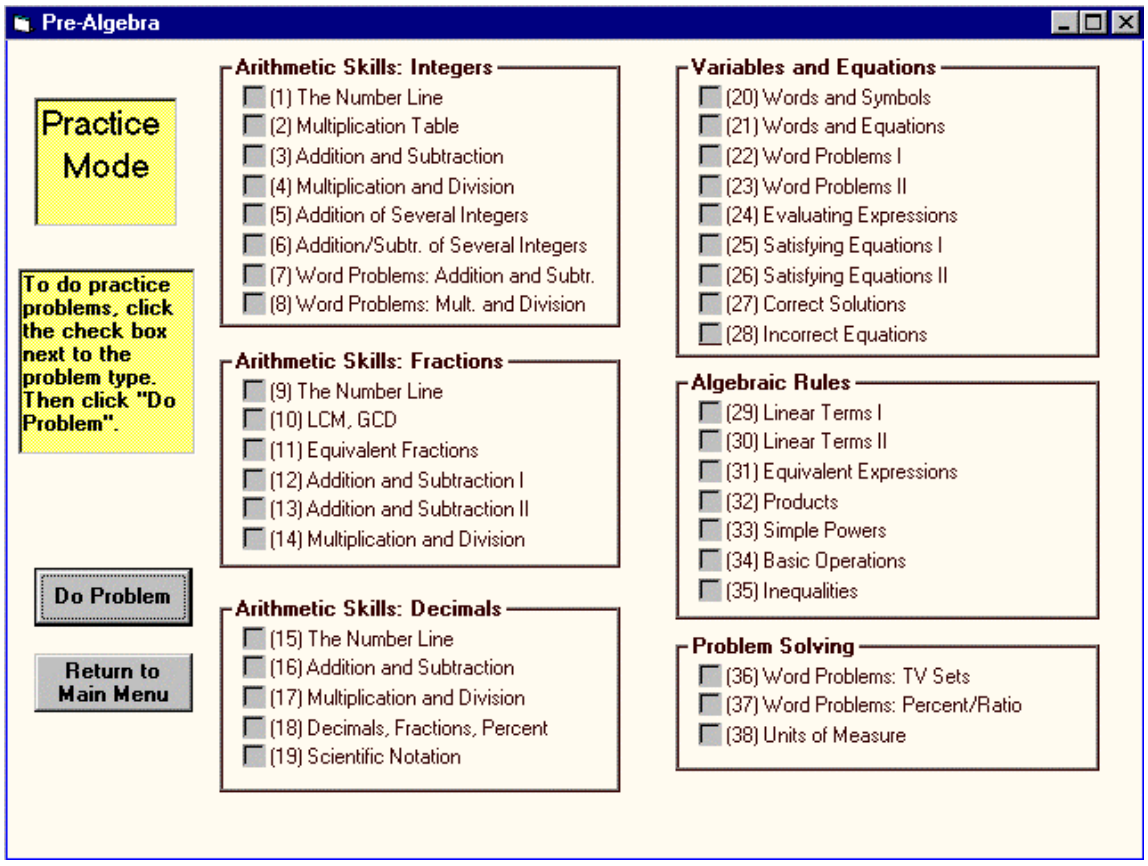
Click **Exit Program** to end the program.

As you use the program, you may wish to see a summary of how well you are doing in the current session. The RECORDS menu allows you to see a summary of your performance in the current session. It is explained later in this manual.

Regarding the Taskbar...

Some users may notice that the bottom of some of the screens in this program is partly covered by the Windows taskbar. If you notice this problem, you may minimize the Taskbar while using the program. To minimize the Taskbar, move the mouse pointer to the top edge of the Taskbar. When the mouse pointer becomes a two-headed arrow, press the left mouse button, drag downward, and release the button.

Practice Mode



If you selected “Practice Mode” on the main menu you will see the Practice Mode Menu shown above.

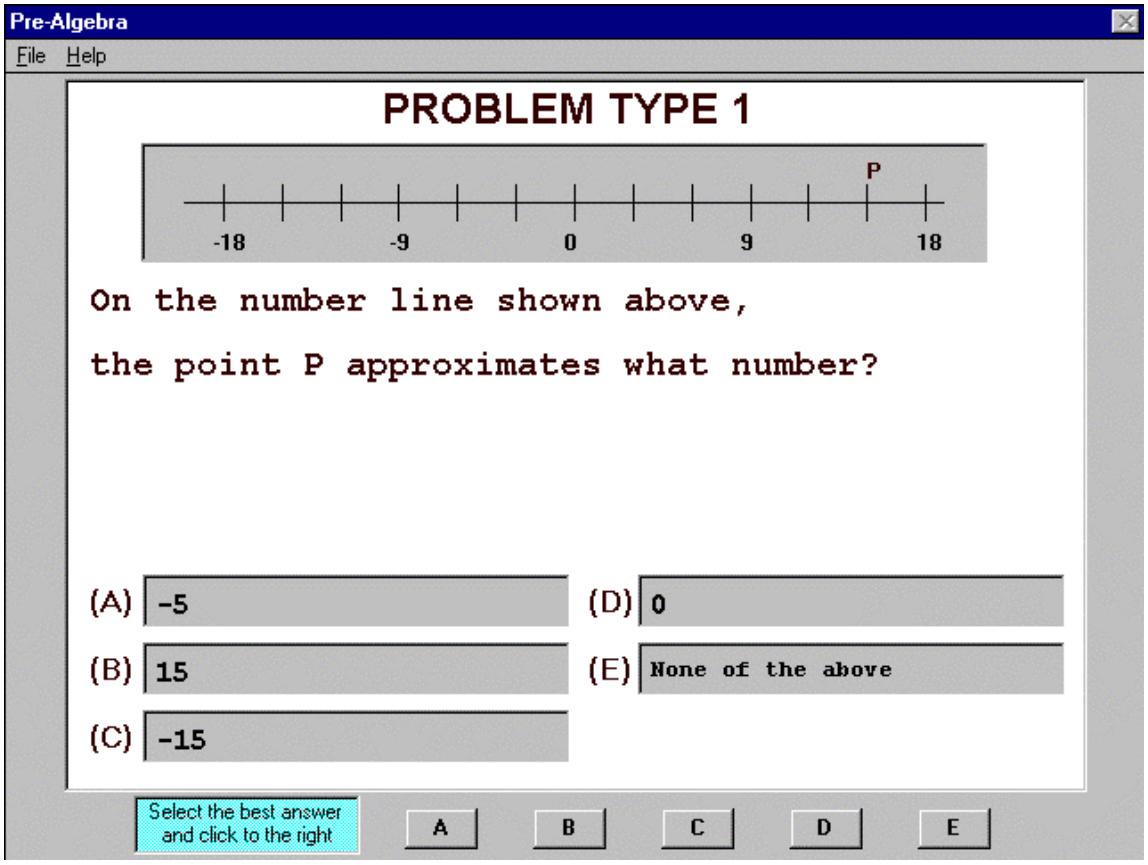
This menu allows you to select a problem type to practice. Each of the 38 problem types contains thousands of random variations, assuring that the program will continue to provide new and challenging problems even after being used many times.

The Practice Mode menu groups the problems into six problem set areas, making it easier for you to find particular kinds of problems that you may wish to practice.

To begin practice in problem solving, click the check box to the left of the problem type description. Then click the “Do Problem” button.

After trying a problem you'll be told immediately if your answer was correct or incorrect. If you like, you’ll be able to re-do the problem. You’ll also be able to see an explanation of the solution to the problem.

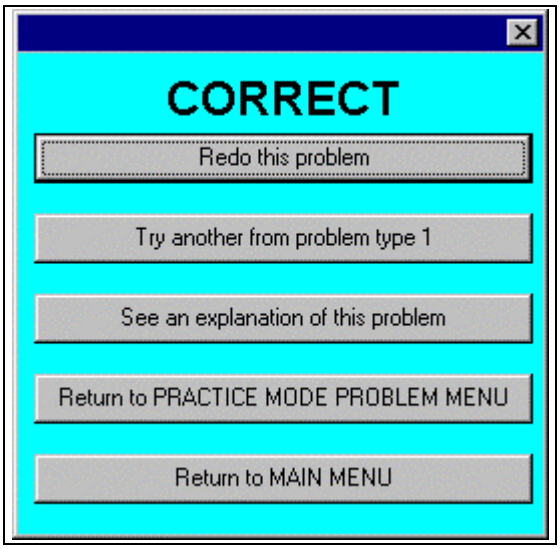
Practice Mode (continued)



When the program presents a problem for you to solve, such as you see in the screen above, the answer choices will be displayed in a multiple choice format. To select an answer, click the box that contains the answer, or click one of the answer choice buttons at the bottom of the screen.

The program will respond by telling you if your answer was correct or incorrect. The options available to you at this point are shown on the following page.

Practice Mode (continued)



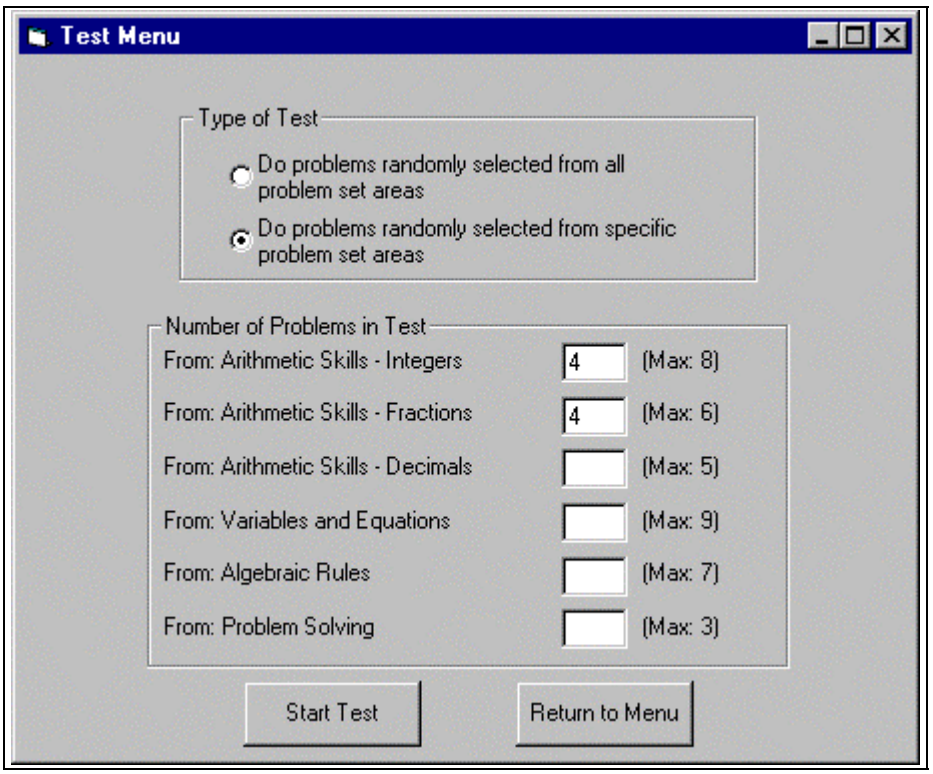
After doing a problem, select one of the options shown to the left.

Most of the choices are self-explanatory.

If you did not solve the problem correctly, and would like to see how it can be solved, select the third option choice: "**See an explanation of this problem**".

Trying to solve problems is one of the best ways for you to build your math skills, so we encourage you to spend time practicing problems.

Test Mode



If you selected "Test Mode" on the main menu you will see the Test Menu shown above. Test mode allows you to take sample tests, and to see both a detailed evaluation of your performance and an overall evaluation of your skills.

Before you begin a test, you must specify two things. First, you must specify if you want your test to contain problems from all problem sets, or from selected problem sets. Second, you must specify the number of problems in your test. (If your test is from selected problem sets you must specify the number of problems you wish to do in each problem set.)

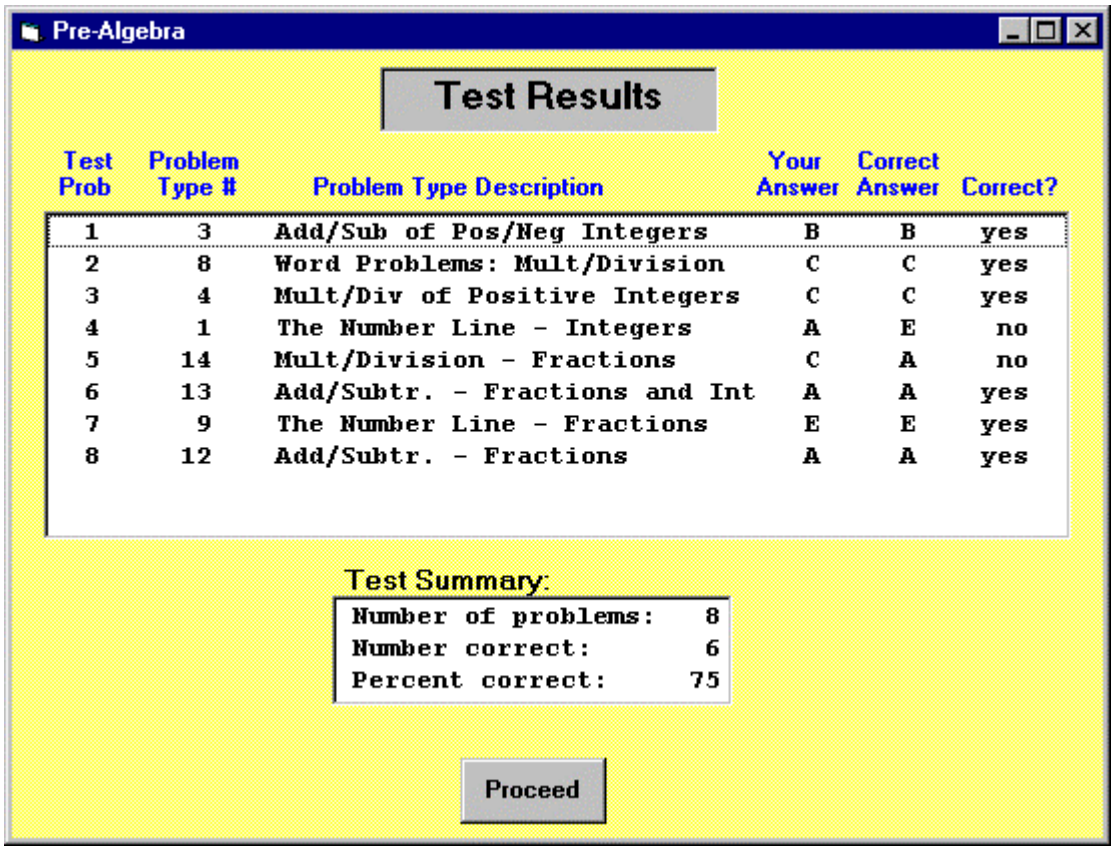
In the Test Menu screen above, you can see that we have specified that our test will consist of four problems from the problem set "Arithmetic Skills - Integers", and four problems from "Arithmetic Skills - Fractions". When the program begins the test, four problem types will be randomly selected from the eight problem types contained in "Arithmetic Skills - Integers", and one problem will be generated for each of the four types. Likewise, four problem types will be randomly selected from the six problem types contained in "Arithmetic Skills - Fractions", and one problem will be generated for each of the four types.

To begin your test, click "Start Test".

Test Mode (continued)

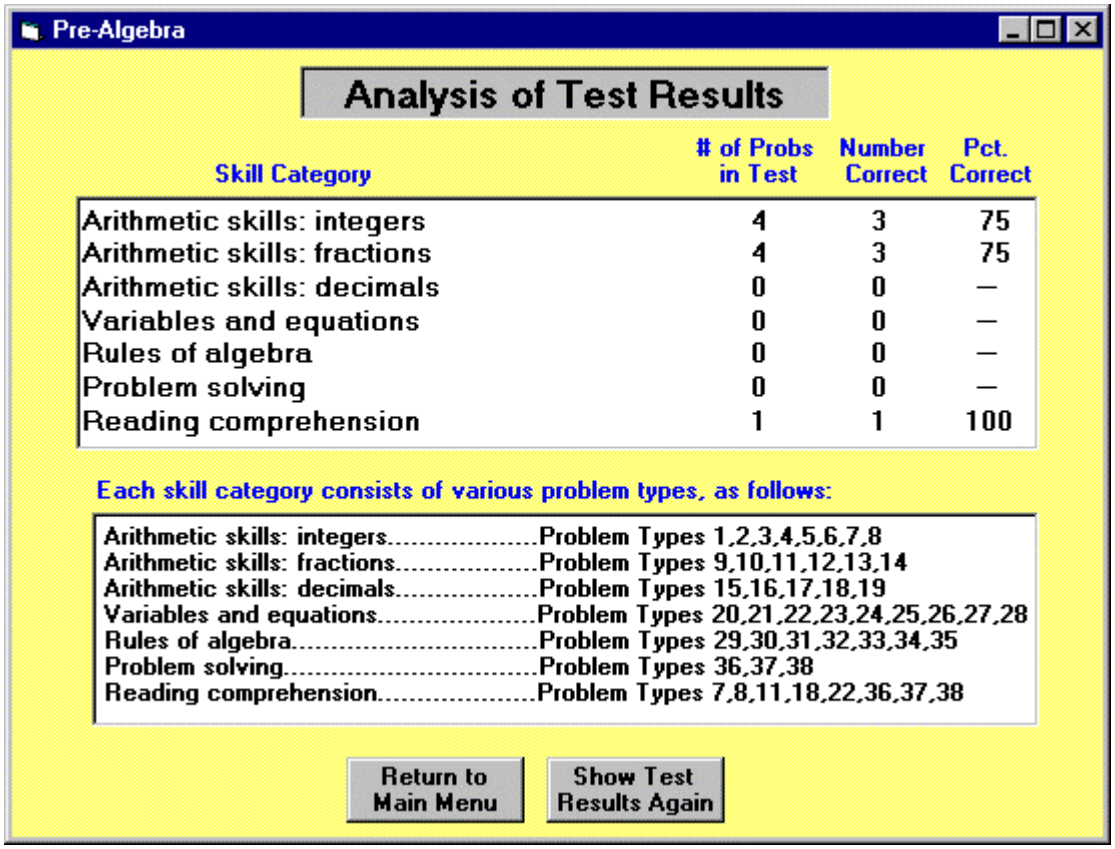
After completing the test, the program will show you the results in two separate screens.

First, you will see your performance on each of the test problems, as shown below. For each test problem you are shown the problem type number, the problem type description, your answer, the correct answer, and whether your answer was right or wrong. Your overall percentage correct is shown in a summary box at the bottom at the screen.

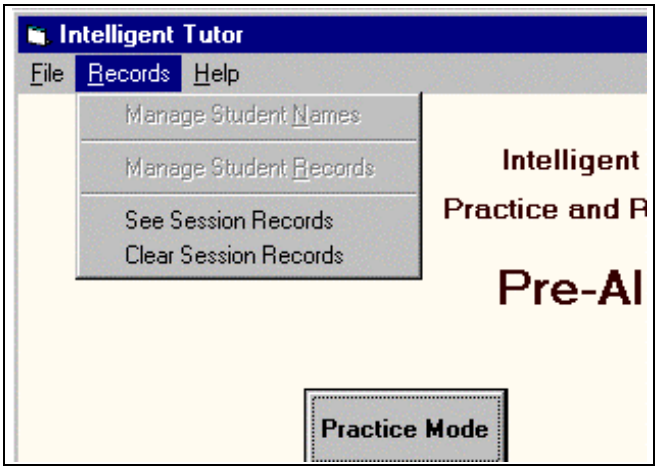


Test Mode (continued)

Next, you will see an evaluation of your performance by skill category, as shown below. Each skill category represents a group of problem types that require a certain skill. The skill categories are explained in the table at the bottom of the screen. For example, the skill category "reading comprehension" consists of problem types 7, 8, 11, 18, 22, 36, 37, and 38.



Looking at Your Performance in the Current Session

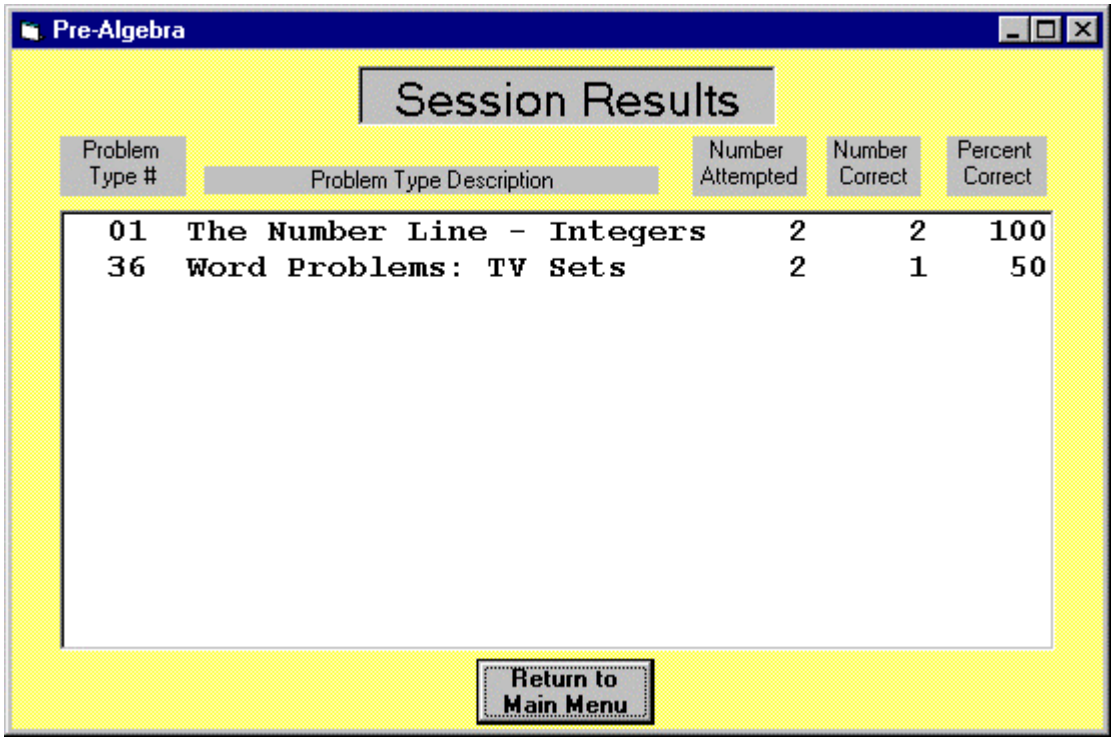


The **RECORDS** menu allows you to see your performance during the current session.

Select "See Session Records" to see your performance.

Select "Clear Session Records" to erase this sessions records.

The screen below shows how the current session's records are displayed.



INTELLIGENT TUTOR™ SPECIAL TOPICS SERIES

Windows NetworkVersion

The Special Topics Series contains these two programs:

- **LEARNING BUSINESS MATH**
- **SAT/ACT MATH**

INTELLIGENT SOFTWARE, INC.
9609 Cypress Ave.
Munster, IN 46321
(219) 923-6166

Introduction

Objective

The INTELLIGENT TUTOR™ Special Topics Series consists of two programs covering special areas within the math curriculum. One helps students gain proficiency in business and consumer math. The other helps students prepare for the math section of the SAT I and ACT exams.

The two programs in the series are:

- LEARNING BUSINESS MATH
- SAT/ACT MATH

Level

Grades: 7-12

Minimum Computer Requirements for Each Program

* 486 IBM or compatible PC with 8MB of RAM
* Windows 95, Windows 98, Windows 2000, or Windows NT
* 10MB of free hard disk space

Overview: INTELLIGENT TUTOR™ Special Topics Series

The INTELLIGENT TUTOR™ Special Topics Series consists of two programs covering special areas within the math curriculum: LEARNING BUSINESS MATH and SAT/ACT MATH.

LEARNING BUSINESS MATH

LEARNING BUSINESS MATH was designed by math educators, and is comprehensive yet simple to use. It covers all the topics normally taught in a one-year course in business mathematics. Our goal is to build your math skills and make you more confident about using math in your everyday life, both inside and outside the classroom.

The lessons in LEARNING BUSINESS MATH will provide you with a dynamic and unique learning experience. Graphics and animation are used throughout the lessons to present the ideas of math clearly and concretely.

Although the lessons are designed to be worked in order, you can study them in any order you wish. Easy to use menus allow you to go directly to any of the lessons in the program.

SAT/ACT MATH

SAT/ACT MATH is designed to help you improve your performance on the Math Section of the SAT I and ACT exams. Designed by educators, it provides a comprehensive range of drill and practice exercises that will provide challenging practice for students, even after being used many times.

SAT/ACT MATH can be used in two ways: Practice Mode and Test Mode.

Practice Mode allows you to select a problem type and to practice solving problems of that type. After each problem, you are told if your answer was correct or incorrect. You are then given these options: to re-do the problem; to see an explanation of the problem; to try another problem of the same type; to return to the Practice Menu to select another problem type; or, to return to the Main Menu.

Test Mode allows you to take sample tests. Following the test you will see your performance on each problem, as well as an overall evaluation of your skill level.

Topics Covered by "Learning Business Math"

REVIEW OF BASIC MATH SKILLS
Place Value: Naming Numbers
Adding Decimal Numbers
Subtracting Decimal Numbers
Multiplying Decimal Numbers
Dividing Decimal Numbers
Order of Operations

PERCENTS, DECIMALS, AND FRACTIONS
Percents and Decimal Numbers
Percents and Fractions
Using the Percent Equation
Percent Problems Using Proportions

INCOME AND WAGES I
Hourly Pay
Overtime Pay
Total Pay
Weekly Time Card I
Weekly Time Card II

INCOME AND WAGES II
Salary
Commission
Graduated Commission
Piecework

FEDERAL, STATE, AND OTHER TAXES
Federal Income Tax
State Income Tax
Graduated State Income Tax
Social Security Tax
Group Insurance
Earnings Statements

CHECKING ACCOUNTS
Deposits
Writing Checks
Check Registers
Bank Statements
Reconciling Bank Statements

SAVINGS ACCOUNTS
Deposits
Withdrawals
Passbooks
Account Statements
Simple Interest
Compound Interest

CASH PURCHASES AND COMPARISON SHOPPING
Sales Tax
Total Purchase Price
Unit Pricing
Finding the Better Buy
Coupons and Rebates
Markdown
Sales Price

Problem Types Covered by "SAT/ACT Math"

The 35 problem types contained in SAT/ACT MATH, shown below, will help students prepare for the kinds of problems most frequently presented on SAT I and ACT exams.

1. Area Between Two Figures
2. Polynomials: Roots/Coefficients
3. Probability
4. Solving an Algebraic Equation I
5. Proportions: Volume, Area, Length
6. Angles Within a Rectangle
7. Arcs/Angles: Triangle Within a Circle
8. Arcs/Angles: Circle Within a Triangle
9. Work Problems: Painting a House
10. Averages: A Carpenter's Salary
11. Sequences
12. Polynomials: Qualitative
13. D = RT
14. Word Problems: Addition/Subtraction
15. Functions: Comparisons
16. Fractions: Comparisons
17. Averages of Test Scores
18. Word Problems: Mult./Division
19. Lines in the Plane
20. Mixtures: Salt Water
21. Coordinates: Rectangle
22. Word Problems: Factory Workers
23. Solving an Algebraic Equation II
24. Angle Comparisons
25. Interpretation of Fractions
26. Data Interpretation
27. Arithmetic Comparisons
28. Word Problems: People at a Party
29. Decimals, Fractions, Percent
30. Word Problems: TV Sets
31. Word Problems: A Library
32. Word Problems: A School
33. Evaluating Expressions
34. Exponents
35. Word Problems: Percent/Ratio

Installing the Programs

These program are network versions. They are meant to be installed with the INTELLIGENT TUTOR™ recordkeeping and management software included on the INTELLIGENT TUTOR™ CD-ROM.

Please refer to the installation instructions entitled “INTELLIGENT TUTOR™ Recordkeeping System” that were contained in the manila envelope you received with this package.

Starting the Programs

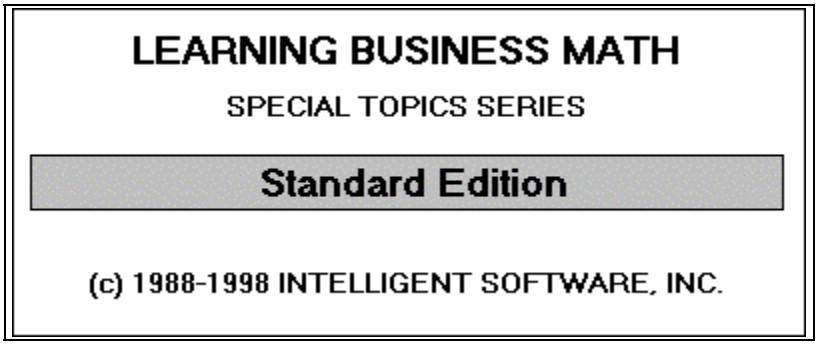
Note - <u>The instructions and information on this and the following pages refer to Learning Business Math. SAT/ACT Math contains similar screens and these instructions apply to it as well.</u>

Step 1 Click the **Start** button on the Windows taskbar. The Start menu opens.

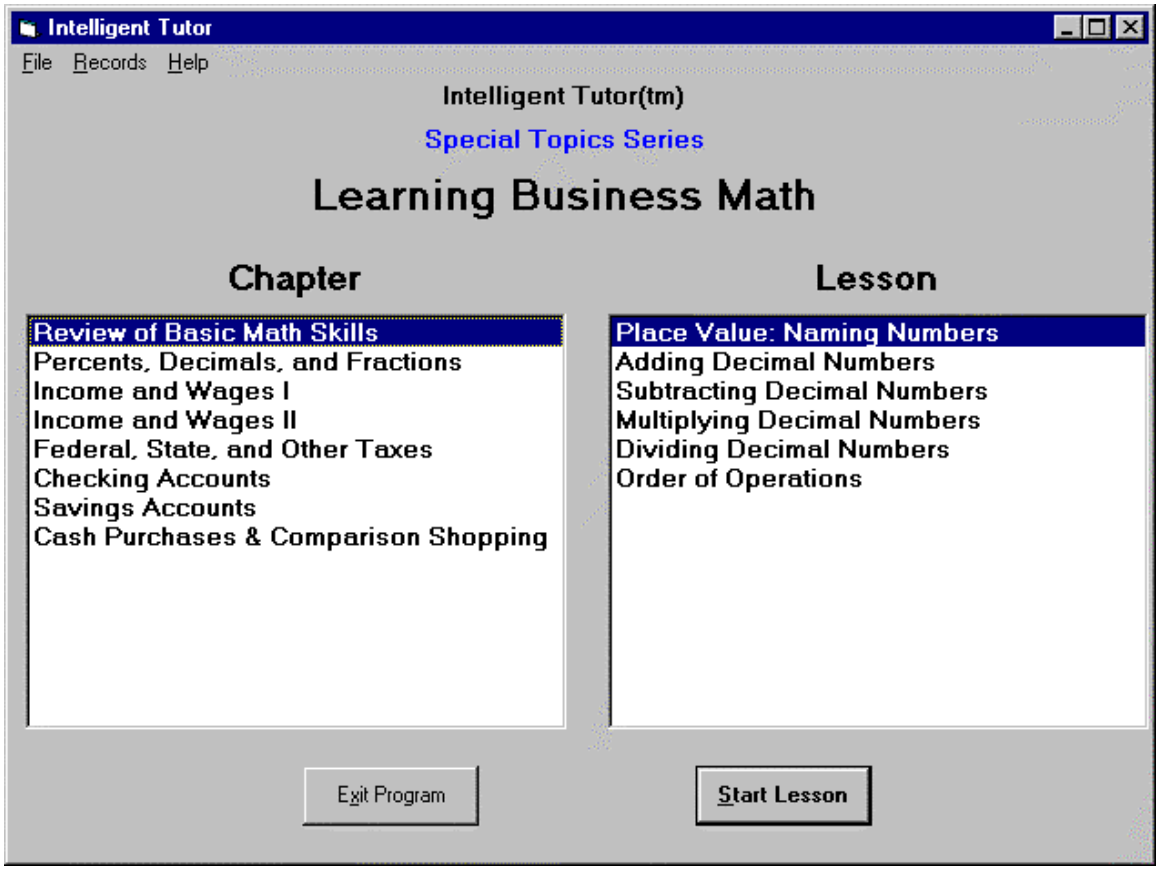
Step 2 Choose **Programs**. The Programs folder opens.

Step 3 Choose **Intelligent Tutor**.

Step 4 Click **Learning Business Math**. The program will then begin, and the title screen (shown below) will appear. Click the title screen window, or press ENTER.



Using the Programs



The program menu (shown above) is the starting point for your study of business math. The **CHAPTER** window shows the chapters in the course. The **LESSON** window shows the lessons in the current highlighted chapter. To see a list of the lessons in a different chapter, click that chapter in the **CHAPTER** window.

To study a lesson, click the lesson in the **LESSON** window. Then click the **START LESSON** button at the bottom. Your lesson will then begin!

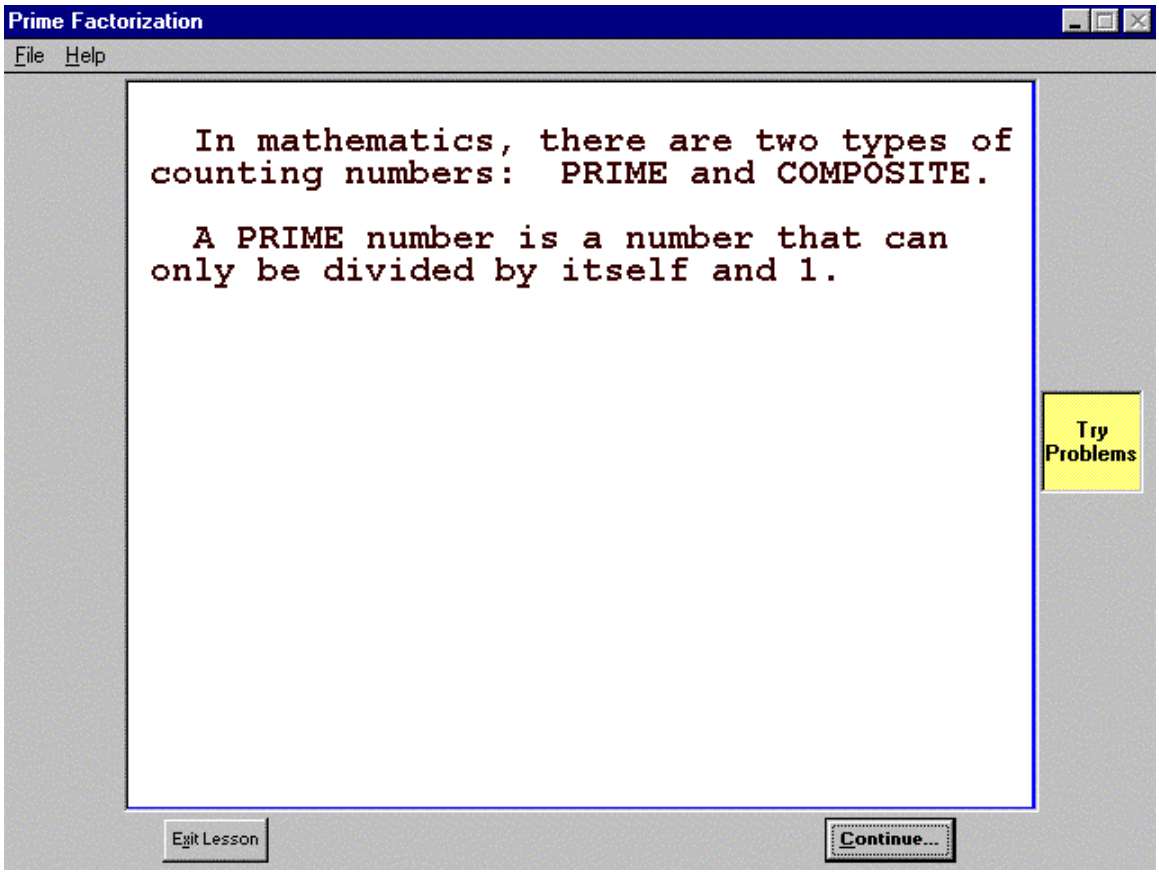
The beginning student is encouraged to work the chapters and lessons in order. But the program gives you the freedom to study the lessons in any sequence you wish.

As you work your way through lessons, and try your hand at solving problems, you may wish to see a summary of how well you are doing in the current session. The RECORDS menu allows you to see a summary of your performance in the current session. It is explained later in this manual.

Working a Lesson

After entering a lesson, you can move through the lesson at your own pace by clicking the "**CONTINUE...**" button at the bottom of the window. To return to the program menu click the "**EXIT LESSON**" button at the bottom of the window. To restart the current lesson use the **File** menu and select "**Restart Lesson**".

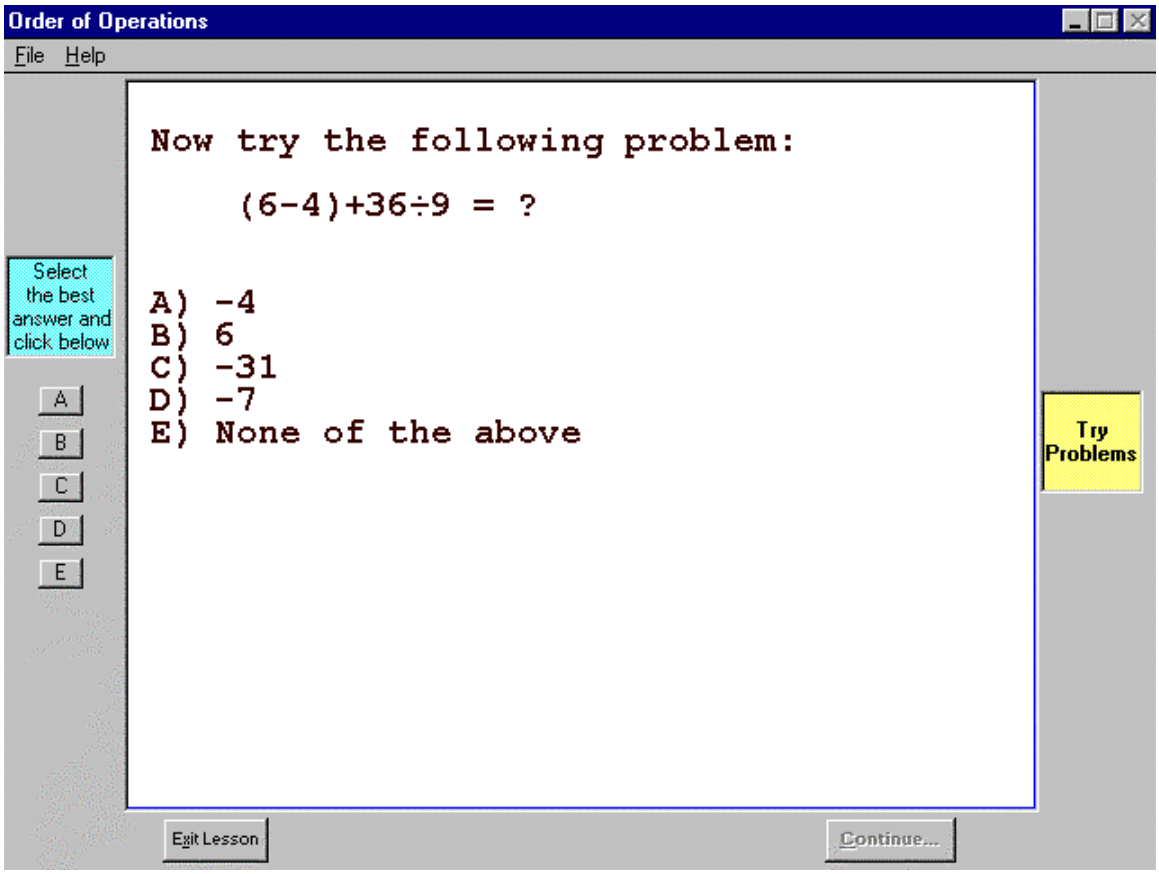
Most lessons have a similar format. First, the main concepts and ideas are presented. Then, one or more examples are presented to illustrate the concepts. After seeing these you will be asked if you would like to see another example. If you click "Yes" you will be shown another example. You will be able to see as many additional examples as you wish. If you click "No" you will be shown a problem to solve.



Here's a tip: When you are in a lesson, if you wish to go straight to solving problems click the "Try Problems" button in the right margin.

Working a Lesson (continued)

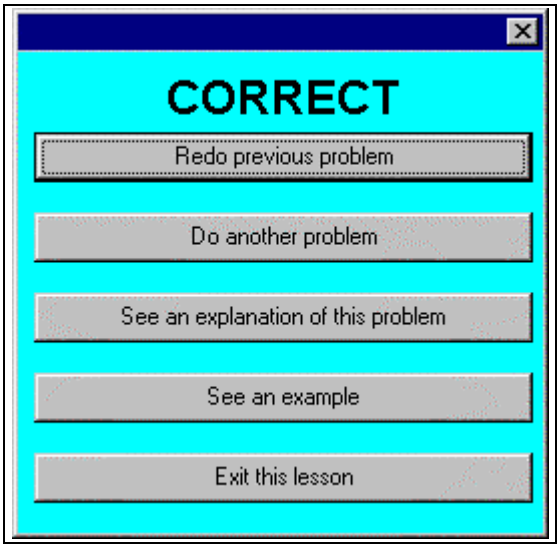
Trying to solve problems is one of the best ways for you to build your math skills, so we encourage you to spend some time on problem solving in each of the lessons you study. After trying a problem you'll have a chance to see the program solve the problem you just tried.



When the program presents a problem for you to solve, the possible answer choices will be displayed in a multiple choice format. To select an answer, click one of the answer choice buttons in the left margin.

The program will respond by telling you if your answer was correct or incorrect. The options available to you at this point are shown below.

Working a Lesson (continued)



After doing a problem, select one of the options shown to the left.

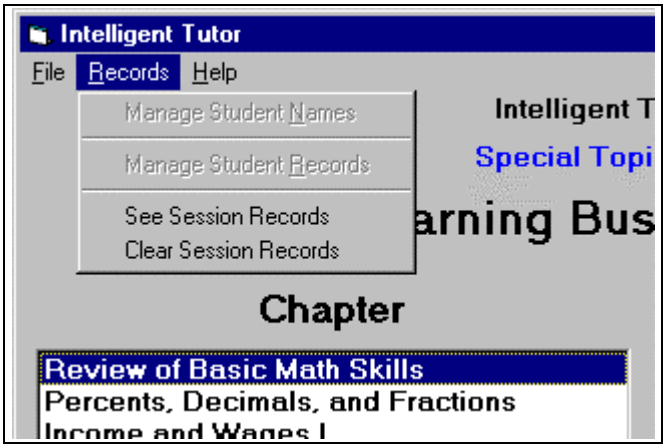
Most of the choices are self-explanatory.

If you did not solve the problem correctly, and would like to see how it can be solved, select the third option choice: "**See an explanation of this problem**".

Summary of How to Navigate a Lesson

In order to do this, then...	Do This
Proceed sequentially through a lesson	Click the "Continue..." button
Go directly to doing problems	Click the "Try Problems" button in the right margin
Select an answer to a problem	Click one of the answer choice buttons (A, B, C, D, E) in the left margin
Restart the current lesson	Choose "Restart Lesson" from the File menu
Return to the program menu	Click the "Exit Lesson" button, or choose "Return to Menu" from the File Menu

Looking at Your Performance in the Current Session



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Select "Clear Session Records" to erase this sessions records.

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