



Educational Activities, Inc.

MICROCOMPUTER PROGRAMS

READ AND SOLVE MATH PROBLEMS #2



READ AND SOLVE MATH PROBLEMS #2

Two-Step Problems

By
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and
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EDUCATIONAL ACTIVITIES, INC.
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ABOUT THE AUTHORS

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A Curriculum Consultant for the New York State Education Department, a Field Consultant in teacher training for St. John's and Hofstra Universities, and the Project Director for an Instructional Resource and Reading Program that was cited for excellence by the Federal Government in their publication, "222 Exemplary Programs," are some of her educational accomplishments. The resource and reading program model became the core of a teacher training program for individualized instruction.

Ann Edson has published many programs in the areas of mathematics, reading, and computer education. She is the author of an educational program that received the Grand Prize at the International Film and TV Festival of New York.

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He is the author of numerous filmstrips, audio/workbook programs, and microcomputer programs in all areas of mathematics.



Instructions for Operating Your TRS-80 Disk Programs Model III

1. Turn on the computer by pressing the rocker switch located under the keyboard at the bottom right of the computer.
2. Insert the diskette into the bottom Drive (Drive O), then press the orange RESET button.
3. The computer will begin loading and will display "ENTER DATE (MM/DD/YY)?". Type the appropriate date and press ENTER.
4. The computer will then display "ENTER TIME (HH:MM:SS)?". Just press ENTER.
5. The **A** will be displayed, then the program will begin.
6. If you wish to stop in the middle of a program, press the orange RESET key and the program will begin again.
7. Pressing the SHIFT and the right arrow (→) simultaneously will also stop the program, and return you to the introductory remarks.

HELPFUL HINT:

If an error is made before the ENTER key is pressed, it may be erased by pressing the left arrow (←) key. Each time this key is pressed, one character will be erased. Press as many times as necessary.



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OVERVIEW

READ AND SOLVE MATH PROBLEMS #2 is a tutorial-and-practice learning system designed to teach students how to solve problems that require two steps. This is achieved through the conversion of written problems to number problems.

Each lesson is objective-based, thus making it easy to identify the specific skills on which the student is working. The program is success-oriented, so two chances are given for each problem. Correct responses bring immediate and positive reinforcements. Incorrect responses result in specific instructional branches that are based on the type of error made and provide clues to aid the student in solving the problem. The clues are a series of sequential teaching. If the student still misses the answer on a second try, the correct answer is displayed in its proper sequence. The student controls the pace of the program and may study any of the situations for as long as desired.

When each lesson is completed, the student receives a summary of performance. If this student achieves a passing score of at least 70%, the student is congratulated and can then move to the next lesson. If the student scores below 70%, s/he is advised that the lesson must be repeated. The management system built into the program directs the student to the appropriate lesson after s/he types in first and last name, and will not let the student progress to the next sequential lesson until a passing score is achieved. Since the numbers in the problems are randomly generated, the lessons can be repeated with different numbers appearing in the problems.

LEVELS

The skills covered in this program are presented in a high-interest, controlled vocabulary manner. This allows for use of the program developmentally and correctively for grades 4-6 and remedially for grades 7-12, as well as for special education.

COURSE SUITABILITY

READ AND SOLVE MATH PROBLEMS #2 is designed to be used for reading and mathematics classes for initial teaching, review, and reinforcement. This highly individualized program can be used in classrooms, resource rooms, math labs, and library/media centers. It can be used for students of varying capabilities developmentally, correctively, remedially, and for enrichment or special education.

LEARNING OBJECTIVES

After using **READ AND SOLVE MATH PROBLEMS #2**, the student will be able to:

- identify, locate, and use key words in problem solving.
- write equations and use them to solve problems.
- solve two-step problems with addition, subtraction, multiplication, or division as the first step.
- interpret the operations of two-step problems without numbers.

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RATIONALE

Problem solving is the central element upon which the teaching of mathematics is based. Problem solving helps students develop speed and accuracy. Real-life problems portray the everyday utility of mathematics, and developmental problems show examples of train of thought. These are just some of the ways problems are used as a means to accomplish various goals.

If problems are the core of mathematics, then problem-solving skills must be developed and mastered. One of the essential tools in accomplishing this mastery is to learn to READ—to consider the problem at hand until it is understood.

Once the problem is understood, the student must DECIDE how to proceed by analyzing the problem. **READ AND SOLVE MATH PROBLEMS #2** deals with problem-solving strategies. Once a strategy has been selected to SOLVE the problem, the process of actually solving it follows. This step may involve one or more operations and procedures.

Finally, the ANSWER must be carefully formulated as the problem demands. If the problem asks how many apples, the answer must be presented as three apples, not just the numerical answer.

Word problems that involve *more than one step* are the kind of problems that people encounter and have to solve in everyday life. In **READ AND SOLVE MATH PROBLEMS # 2**, the problems which require two operations contain a great deal of information. The program helps students learn to READ CAREFULLY in order to simplify or break down the facts.

PROGRAM DESCRIPTION

READ AND SOLVE MATH PROBLEMS #2 consists of eight lessons which are sequential in teaching objective and build upon the previous lesson's learning. The sequence is as follows:

- Lesson 1: Introduction to Reading and Solving Two-Step Problems. This lesson leads the student into two-step problem solving, and also introduces addition as the first step.
- Lesson 2: Two-Step Problems With Addition or Subtraction as the First Step. This lesson continues with addition as the first step, and introduces subtraction.
- Lesson 3: More Practice With Two-Step Problems: Addition or Subtraction as the First Step. This lesson reinforces through practice those concepts taught in Lessons 1 and 2.
- Lesson 4: Two-Step Problems With Addition, Subtraction, or Multiplication as the First Step. This lesson continues with addition and subtraction as the first step, and introduces multiplication.
- Lesson 5: More Practice With Two-Step Problems: Addition, Subtraction, or Multiplication as the First Step. This lesson reinforces through practice those concepts presented in Lessons 1, 2, 3, and 4.
- Lesson 6: Two-Step Problems With Addition, Subtraction, Multiplication, or Division as the First Step. This lesson continues with addition, subtraction, and multiplication as the first step, and introduces division.
- Lesson 7: More Practice With Two-Step Problems: Addition, Subtraction, Multiplication, or Division as the First Step. This lesson reinforces through practice all previous concepts.
- Lesson 8: Two-Step Problems Without Numbers. Word problems are presented with blank lines instead of numbers. The student is required to determine the OPERATION needed (addition, subtraction, multiplication, or division) on both steps.

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All lessons share the following unique features.

- **SPECIFIC BRANCHING for the problem and the error.** There are two responses required in each step of a problem: (1) an *equation* which contains the correct numbers and operator for that equation, and (2) *the answer to that equation with its correct label*.

- (1) On all addition, subtraction, and division equations, there are two specific branches, depending on whether the student got the NUMBERS in the equation incorrect, or the OPERATIONAL SYMBOL incorrect.

On multiplication equations, there are *four* specific branches. Two are for the incorrect NUMBERS or OPERATIONAL SYMBOL. A third branch advises the student to use the asterisk (*) instead of X or x for showing multiplication on the microcomputer. A fourth branch advises the student to MULTIPLY if s/he tries to ADD the correct numbers when constructing an equation.

- (2) On all answers with labels, there are two specific branches—if the student gets the WRONG NUMERICAL ANSWER to the equation, or if the student LABELS INCORRECTLY the correct numerical answer.

There is also a SPELLING BRANCH which checks for the *spelling* of the correct label; if more than 75% of the letters of the label are typed correctly, this special branch advises that the label has been misspelled.

Samples of the specific branching schemes and the spelling branch follow on pages 5 to 7. Note that the second steps of problems, which are not shown here, use the same types of branching; however, explanations within these branches are built upon the information gained in Step One.

- **SCORING on a “points system”** which allows maximum designated points for a correct answer on a first attempt, less points for a correct answer on a second attempt, and zero points for a second incorrect response, which will cause the correct answer to display.

Also note that in the practice lessons (3, 5, and 7), the number of points for a correct answer on the second attempt is less than the points for second attempts on other lessons; the student is expected to know the material and thus give a passing performance in the practice lessons.

The points system has been carefully evaluated so students who take the teaching lessons (1, 2, 4, and 6) will still be able to get a passing score if they fail to answer correctly the earlier questions.

Points are then converted into a percentage score which is displayed for the student and retained on the management system for the teacher. A score of 70% or better allows the student to proceed to the next lesson in sequence. If the score is less than 70%, the student is told s/he needs more practice and is given the option to repeat the lesson. Since all numbers in the program are randomly generated, the lessons can be used over and over again with different numbers appearing in the problems.

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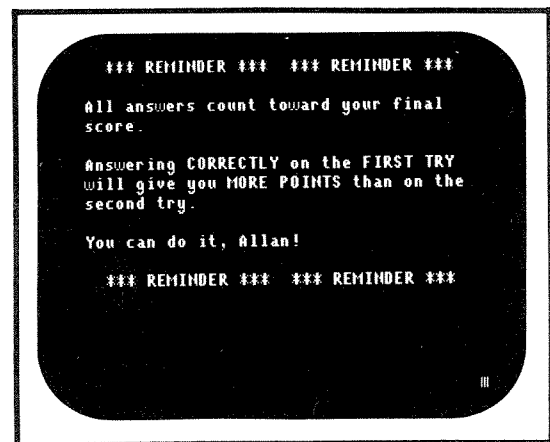
- **RANDOMLY GENERATED NUMBERS in all problems.** Due to the fact that this program is not menu-directed, and instead remediates the student to the next lesson or to a repeat of a lesson in which a failing grade was obtained, the unique feature of randomly generated numbers allows the student to repeat any lessons without receiving the same numbers in the problems. This eliminates memorization of the answers.

Also, in the practice lessons, if the student gets all equations and answers correct on first attempts in the first two problems, or in any two out of the first three problems, s/he will receive a higher range of numbers in the remaining problems in that lesson.

- Once the student enters his/her name at the beginning of the program, the computer will send this student sequentially through the lessons on that disk. If a student passes Lesson 1, and returns to the computer at another time, just the input of his/her name at the beginning of the program will automatically send that student to Lesson 2. If the student has failed Lesson 1, the next time s/he returns to the program and types his/her name, Lesson 1 will appear.

- **REMINDER of too many SECOND ATTEMPT CORRECT RESPONSES.** At the beginning of each lesson, students are told that correct responses on the first attempt count for more points than on the second attempt.

There are basically two types of two-step problems in this program. One type usually has four possible answers: a Step One equation, a Step One answer with its label, a Step Two equation, and a Step Two answer with its label. On this type of problem, if the student is answering two, three, or four out of the four possible answers correctly on the second attempt, a *reminder* will appear to let the student know that correct answers on the first attempt count for more points.



The other type of problem asks for the operation only, which means two possible answers: a Step One operation and a Step Two operation. On this type of problem, one or both responses correct on the second attempt will cause this reminder to be displayed.

The reminder will appear unobtrusively at the end of a complete problem and before the announcement of the next problem. This will eliminate any interruption of the student's thought process as s/he proceeds through the steps of a given problem.

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SAMPLE PROBLEM WITH SPECIFIC BRANCHES — STEP ONE (Equation)

Kim played 18 minutes in the first half and 20 minutes in the second half of the game. If Bob played only 22 minutes in the entire game, how many minutes less did Bob play than Kim?

STEP ONE

= N

Type the left side of the equation and then press RETURN.

Problem

Look again at the problem. Kim played 18 minutes in the first half and 20 minutes in the second half of the game.

Try typing the equation again.

Incorrect Numbers in Equation

First you must find how many minutes Kim played altogether. To do this, you ADD.

Try typing the equation again.

Wrong Operational Symbol

Kim played 18 minutes in the first half and 20 minutes in the second half of the game. If Bob played only 22 minutes in the entire game, how many minutes less did Bob play than Kim?

STEP ONE

18 + 22 = N

No, Allan.

The correct equation is $18 + 20 = N$ or $20 + 18 = N$.

If Answer is Incorrect on
Second Attempt

Note: The samples shown are from a two-step problem in which ADDITION is the first step. Problems with SUBTRACTION or DIVISION as the first step have the same type of branching; however, the text in the branch is applicable to that operation.

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SAMPLE PROBLEM WITH SPECIFIC BRANCHES — STEP ONE (Answer With Label)

Kim played 18 minutes in the first half and 20 minutes in the second half of the game. If Bob played only 22 minutes in the entire game, how many minutes less did Bob play than Kim?

STEP ONE

18 + 20 = N

Now type the answer with its label for Step One, and then press RETURN.

Problem

That's not it, Allan.
Check your addition and try again.

Incorrect Answer to Equation

No, Allan.
Read the problem again. It says,
"Kim played 18 MINUTES in the first half and 20 MINUTES in the second half of the game."
Try typing the answer and its label again.

Incorrect Label

Kim played 18 minutes in the first half and 20 minutes in the second half of the game. If Bob played only 22 minutes in the entire game, how many minutes less did Bob play than Kim?

STEP ONE

18 + 20 = N 35 minutes

The answer with its label is 38 minutes.

If Answer is Incorrect on
Second Attempt

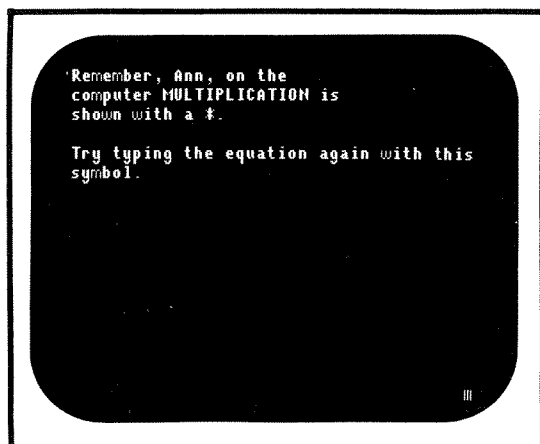
Note: The samples shown are from a two-step problem in which ADDITION is the first step. Problems with SUBTRACTION or DIVISION as the first step have the same type of branching; however, the text in the branch is applicable to that operation.

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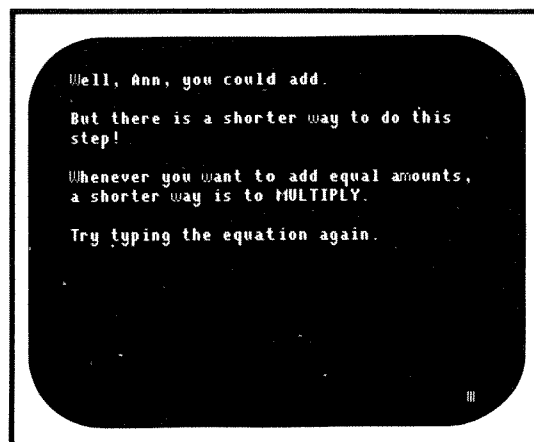


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TWO ADDITIONAL BRANCHES PROVIDED FOR MULTIPLICATION



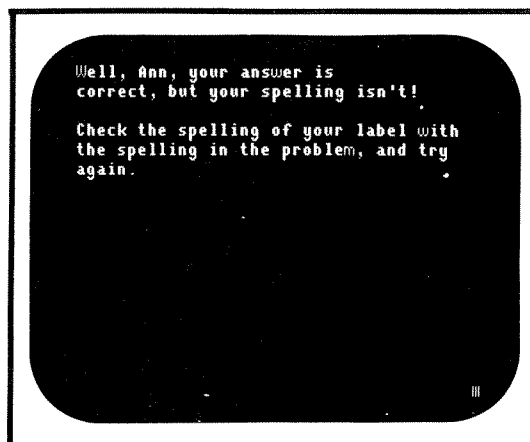
Using X or x Instead of *
in an Equation Involving
Multiplication



If Student Tries to ADD
the Correct Numbers instead
of MULTIPLY

Note: On all MULTIPLICATION steps, the above two branches can appear in addition to the Incorrect Numbers in Equation and Wrong Operational Symbol branches (see samples on page 5).

SPELLING BRANCH



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HOW THE PROGRAM WORKS

When the program begins, the Educational Activities logo appears first. Then the title frame of the series is displayed, and the student is asked to type in first and last name.

This information is entered on the Management System (see page 15). This name input also serves to place the student at the correct lesson. For instance, a student starting the program for the first time will automatically be sent to Lesson 1. A student who has previously and successfully completed Lessons 1, 2, and 3, upon typing his/her name, will be sent to Lesson 4. There is no lesson selection by menu.

After entering first and last name, the student is offered the option to work on the lesson with or without sound. (Note: Some computers do not have sound capability.) Sound is used sparingly throughout the program, and accompanies both correct responses on the first attempt and the graphic at the end of each lesson.

After the student is welcomed to the program, the title frame of the management-directed lesson appears first. The following pages contain the specific structures of each lesson.

LESSON 1: Introduction to Reading and Solving Two-Step Problems

Lesson 1 has been specifically designed to introduce students to two-step problems, and also shows how to solve problems in which addition is the first step.

After the title frame is displayed, the student is welcomed to the lesson and is immediately told the objective of this lesson—working with two-step word problems. At the same time, the student is offered an opportunity to review one-step problems.

Choosing not to review one-step problems takes the student to a sample two-step problem, which the student and the computer work together.

Choosing the one-step review (Y) will offer an immediate reinforcement of this action to the student and will at the same time lead into the review, which begins with a brief description of key words.

The sequential review of one-step problems is as follows:

Two separate screens of key words are displayed (one for addition and one for subtraction), and the student immediately participates by choosing whether the words displayed tell the user to ADD or to SUBTRACT. Correct answers bring brief text rewards; incorrect responses cause reinforcement of what these words mean to display.

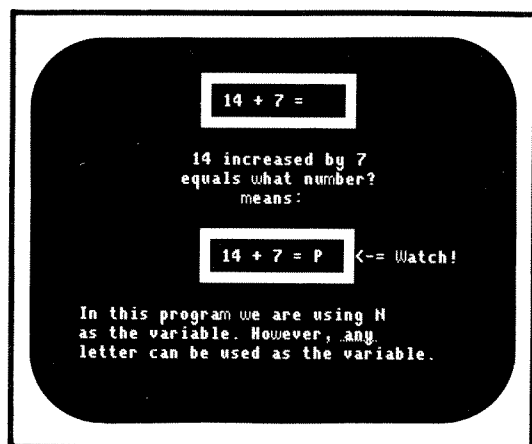
A word problem is then displayed and, in a special sequence, the key words and the specific numbers are brought down from the problem, centered on the screen, and highlighted. This leads into the structure of an equation.

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In this sequence, the student learns how to type the left side of the equation using this highlighted information, and told that the letter N or any other letter can represent the variable (missing answer).

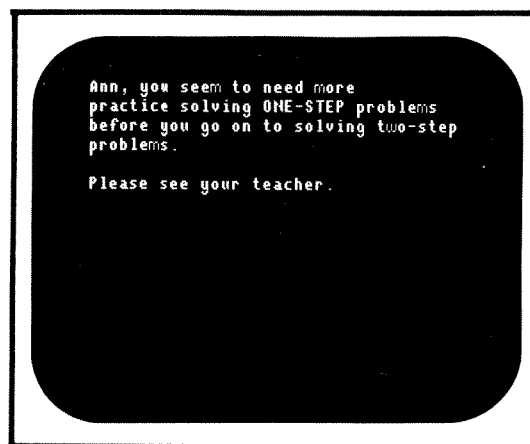


One addition and one subtraction problem are presented; the student participates by typing the equation to one problem, and the answer to $N =$ on the other.

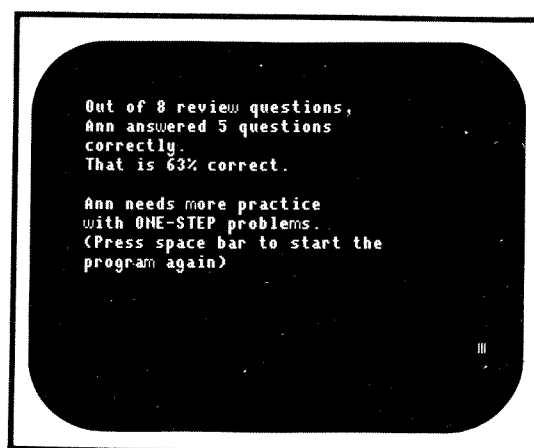
Another addition problem is then presented, and the shorter way of multiplying to reach the answer is explained. The student then completes the multiplication part of this example. All multiplication equations require the use of the asterisk (*) as the operator.

A division example is then given, and the student has the opportunity to input the answer with its label to this problem.

There are eight review questions in all. If the student got less than seven correct, the student is advised s/he needs more practice in solving one-step problems before learning to solve two-step problems.



At this point, the teacher is required to remediate the student to other material. If the teacher types **SCORES** and presses the RETURN or ENTER key (depending upon the computer), the following message appears specifically for the teacher:



Once the space bar is pressed, the program will start over again to allow another student to begin. (Note: See page 22 for information on READ AND SOLVE MATH PROBLEMS #1, which deals with One-Step problems.)

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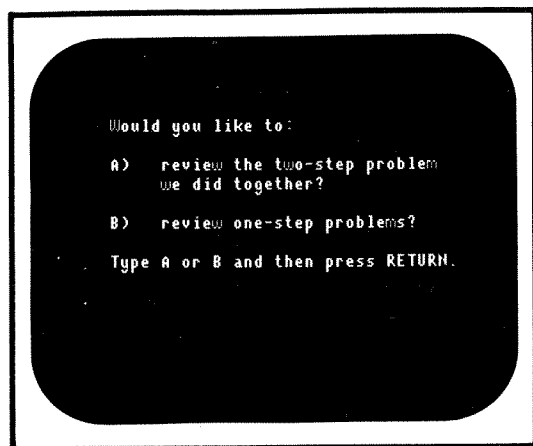
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If the student gets seven or eight out of eight review questions correct, s/he is then returned to the main section of Lesson 1 and is channeled through the sample two-step problem.

The computer will lead the student through this sample problem. Text prompts will advise the student what to look for, and very specific branching will lead to the correct answers.

Once this sample problem has been completed, the student is asked if s/he is ready to do some two-step problems.

If the student is *not* ready, pressing N will display a question targeted to ascertain the student's need to review.



Choosing A, to review the two-step problem done previously, presents no problem as the numbers within the problem have changed since all numbers are randomly generated.

Choosing B, to review one-step problems, returns the student to the beginning of that section of the program.

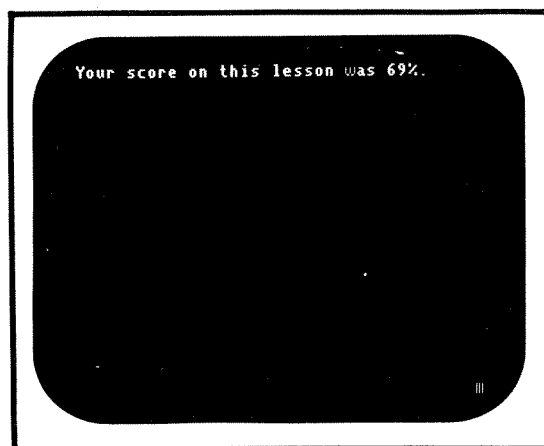
However, if the student *is* ready to continue, pressing Y will take the student to the two important screens which appear at the outset of each lesson—what the objective is for that lesson, and exactly how the scoring process works.

The three problems which follow are the only ones in this lesson which count toward the final score.

All problems are based on the points-to-percentage system. Students receive more points for a first correct response than for a second correct response, and zero points for two incorrect responses for each part of a problem. The problems all contain two to four specific instructional branches, depending on the type of problem (see pages 5 to 7 for samples of the specific branching schemes).

The total possible score for these three problems is 36 points (100%). A score of 26 points (70%) or more shows mastery of the concepts in that lesson.

At the end of Lesson 1, the percentage score is displayed.



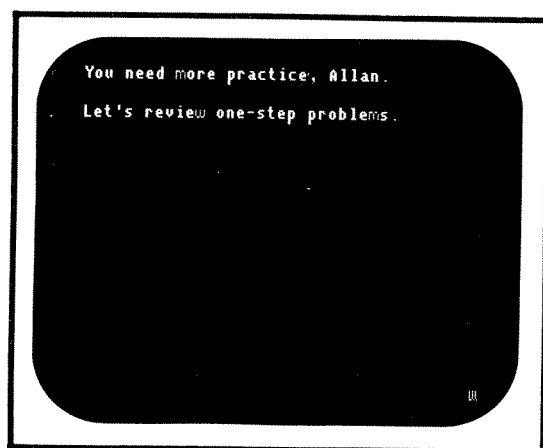
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If the student scored 70% or better, an appropriate graphic reward is presented, and the student is given an opportunity to continue on to the next lesson at this time.

If the score was less than 70% and the student chose *not* to review one-step problems at the beginning of the lesson, s/he is channeled back to the one-step review immediately. This leads to a repeat of Lesson 1.



If the score was less than 70% and the student *did* review one-step problems at the beginning of the lesson, the student is now advised to repeat Lesson 1.

If the student chooses not to repeat the lesson at this time, when s/he returns to the program and enters first and last name, Lesson 1 will automatically display.

LESSON 2: Two-Step Problems With Addition or Subtraction as the First Step

This lesson continues working with equations that have addition as the first step in a two-step problem, and introduces subtraction as the first step. Again, the problems contain very specific instructional branching (see pages 5 to 7 for branching schemes).

There are seven problems in this lesson. Three two-step problems requiring two equations and two answers with labels are presented first, followed by two operation-only problems. The last two two-step problems again require four answers per problem, but correct responses on the second attempt count for less points than in the earlier problems.

The total possible score for these seven problems is 76 points (100%). A score of 54 points (70%) or more shows mastery of the concepts in this lesson, and a score of 69 points represents 90%.

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LESSON 3: More Practice With Two-Step Problems: Addition or Subtraction as the First Step

This lesson presents six problems that reinforce through additional practice the concepts taught in Lessons 1 and 2. The first step is always addition or subtraction; the student has to decide which and then continue on to complete all four parts of each problem.

A unique feature in this and the other practice lessons (5 and 7) is the branching over to a higher range of numbers if the student is successful early in the lesson.

If the student gets all four parts of Problems One and Two correct, or all parts on any two out of the first three problems in the lesson, the student will continue to receive the other problems in the lesson; however, the numbers which appear in the problems will be of a higher range.

For example, Problem Four in Lesson 3 appears as follows:

In a factory, A cars are painted each day. On Monday, B of these cars were painted red. The remaining cars were placed in C equal groups. All the cars in one group were painted blue. How many cars were painted blue on Monday?

Values assigned to A, B, and C are as follows:

	EASY	HARDER
A:	61-99	251-500
B:	20-60	100-250
C:	2-9	10-50

If the student has gotten Problems One and Two totally correct on all first attempts, or Problems One and Three, or Two and Three, s/he would receive this problem with the harder random numbers appearing in place of A, B, and C. If not, the problem would contain numbers from the easy random range.

The total possible score for these six problems is 72 points (100%). A score of 51 points (70%) or more shows mastery of the concepts in this lesson, and a score of 65 points represents 90%.

LESSON 4: Two-Step Problems With Addition, Subtraction, or Multiplication as the First Step

This lesson continues working with equations that have addition or subtraction as the first step in a two-step problem, and introduces multiplication as the first step. Again, the problems contain very specific instructional branching (see pages 5 to 7 for branching schemes).

There are seven problems in this lesson. Three two-step problems requiring two equations and two answers with labels are presented first, followed by two operation-only problems. The last two two-step problems again require four answers per problem, but correct responses on the second attempt count for less points than in the earlier problems.

The total possible score for these seven problems is 76 points (100%). A score of 54 points (70%) or more shows mastery of the concepts in this lesson, and a score of 69 points represents 90%.

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LESSON 5: More Practice With Two-Step Problems: Addition, Subtraction, or Multiplication as the First Step

This lesson presents six problems that reinforce through additional practice the concepts taught in the previous lessons. The first step is always addition, subtraction, or multiplication; the student has to decide which and then continue on to complete all four parts of each problem.

A unique feature in this and the other practice lessons (3 and 7) is the branching over to a higher range of numbers if the student is successful early in the lesson.

See Lesson 3 (page 12) for information about this feature.

The total possible score for these six problems is 72 points (100%). A score of 51 points (70%) or more shows mastery of the concepts in this lesson, and a score of 65 points represents 90%.

LESSON 6: Two-Step Problems With Addition, Subtraction, Multiplication, or Division as the First Step

This lesson continues working with equations that have addition, subtraction, or multiplication as the first step in a two-step problem, and introduces division as the first step. Again, the problems contain very specific instructional branching (see pages 5 to 7 for branching schemes).

There are seven problems in this lesson. Three two-step problems requiring two equations and two answers with labels are presented first, followed by two operation-only problems. The last two two-step problems again require four answers per problem, but correct responses on the second attempt count for less points than in the earlier problems.

The total possible score for these seven problems is 76 points (100%). A score of 54 points (70%) or more shows mastery of the concepts in this lesson, and a score of 69 points represents 90%.

LESSON 7: More Practice With Two-Step Problems: Addition, Subtraction, Multiplication, or Division as the First Step

This lesson presents six problems that reinforce through additional practice the concepts taught in the previous lessons. The first step is always addition, subtraction, multiplication, or division; the student has to decide which and then continue on to complete all four parts of each problem.

A unique feature in this and the other practice lessons (3 and 5) is the branching over to a higher range of numbers if the student is successful early in the lesson.

See Lesson 3 (page 12) for further information about this feature.

The total possible score for these six problems is 72 points (100%). A score of 51 points (70%) or more shows mastery of the concepts in this lesson, and a score of 65 points represents 90%.

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LESSON 8: Two-Step Problems Without Numbers

Lesson 8 is different from the other lessons in the program. Word problems are presented, but there are no numbers in the problems. Blank lines represent where numbers would appear.

The student has to decide whether to ADD, SUBTRACT, MULTIPLY, or DIVIDE for Step One and for Step Two. The student will not actually do the mathematical calculations for the problems.

The student is allowed two attempts to answer correctly, and branches are very specific and instructional. Also, since there are no randomized numbers to vary the answers to the problems, the *problems themselves* are *randomized* to appear in a different order each time the lesson is run (i.e., Problem One might appear as Problem Six on the next run of this lesson). Samples of a problem and its branches for Step One follow.

The total possible score for these eight problems is 64 points (100%). A score of 45 points (70%) or more shows mastery of the concepts in this lesson, and a score of 58 points represents 90%.

SAMPLE PROBLEM FROM LESSON 8—STEP ONE

A train has ____ cars. Each car has ____ seats. If there are ____ people seated in the train, how many empty seats are there?

What do you do in Step One? Do you ADD, SUBTRACT, MULTIPLY, or DIVIDE?

Type A, S, M, or D and then press RETURN.

Problem

Look again at the problem. In Step One you want to find how many seats are in the train. You're given the number of cars and the number of seats in each car.

Try again.

If Incorrect on First Attempt

A train has ____ cars. Each car has ____ seats. If there are ____ people seated in the train, how many empty seats are there?

In Step One you would multiply the number of seats in a car by the number of cars. This would give you the total seats on the train.

The answer is MULTIPLY.

If Incorrect on Second Attempt

Note: The samples shown represent only the first step of a two-step problem. The second step also has two specific branches for first and second attempt responses.

READ AND SOLVE MATH PROBLEMS #2

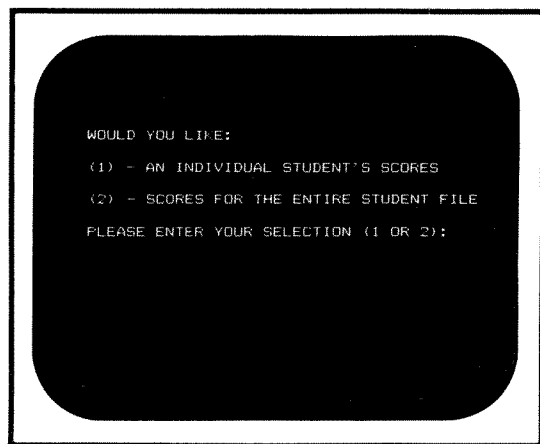
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MANAGEMENT SYSTEM

Each diskette contains a record of the students who have attempted and/or successfully completed each lesson on that diskette.

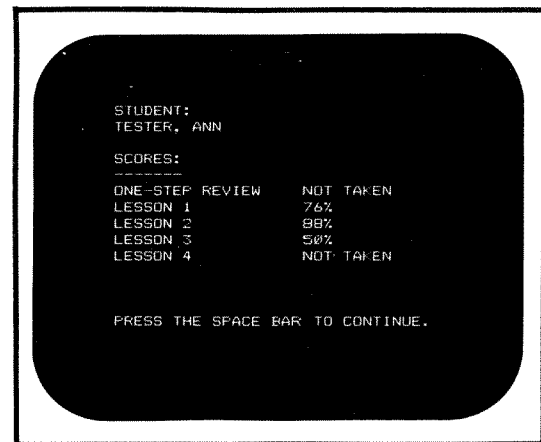
Teachers may view these records by typing in the command **SCORES** when the computer displays, "Please type in your first name and then press RETURN (or ENTER)."

The computer will then ask if you want an individual student's score or the scores for all students.



The computer will also give the option of viewing these results on the screen or having them printed out if a printer is available.

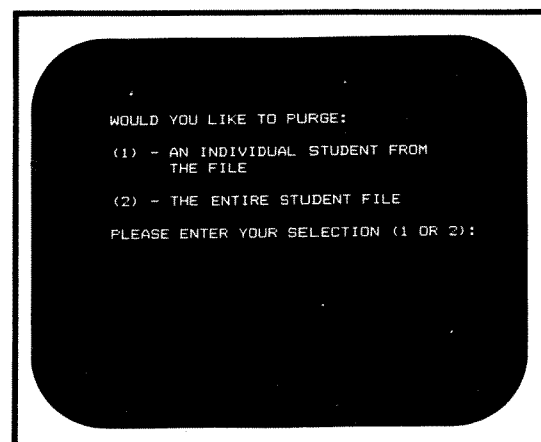
Once these options have been decided upon, the following information will be displayed: (1) the name of the student; (2) the lessons on that particular disk; and (3) the percentage score attained for each lesson.



Also note that the review of one-step problems appears as a separate score on the management.

As many as 50 students may be maintained on each disk. If the disk becomes full, a number of students must then be erased from the file.

The command **PURGE**, typed in when the computer asks, "Please type in your first name and then press RETURN (or ENTER)," will give the teacher the option to delete either an individual student file or the entire student file.



A message to the teacher will appear when the disk is full so the teacher can utilize the purging option.

READ AND SOLVE MATH PROBLEMS #2

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SUPPLEMENTARY ACTIVITY MASTERS

Supplementary Activity Masters are included with this program. These activity masters provide basic and supplementary correlation to the lessons. They can be completed before the start of a lesson or after a lesson has been completed. They can also be done another day prior to starting a new lesson. They can also be used to extend the learning session when the student returns to his/her seat or to the regular classroom. Teachers may wish to use these masters for independent skill instruction at other times.

A Diagnostic Pretest and an Evaluative Post Test are also included with the activity masters. The results of these tests enable the teacher to assess student abilities which are necessary to succeed in basic problem solving skills. Using these tests for diagnosis and prescription, the teacher can note the skills that the student has not mastered and can prescribe correlated reinforcement and practice activities.

After the teacher corrects the pretest by using the answer key provided in this guide, s/he can refer to the Individualized Educational Prescription (I.E.P.) Chart (page 21), which matches items on the pretest to lessons on the software. The teacher should pay particular attention to those lessons where a weakness has been indicated by the pretest.

After completing the entire program on software, the post test can be administered. This test parallels the items on the pretest and aids in measuring proficiency. After the teacher corrects the post test by using the answer key provided in this guide, the teacher can refer again to the Individualized Educational Prescription (I.E.P.) Chart for supplemental teaching strategies or the supplementary activity masters especially designed to be utilized for weaker areas.

CLASSROOM TEACHING STRATEGIES

Discuss the importance of word problems with your students. Point out that we use computational skills to solve problems in our daily lives.

You can introduce a problem by duplicating it and giving each student a copy. You can post the problem on the bulletin board, or put it on a transparency and project it on the overhead projector. Let students read the problem and then ask questions to make sure they understand the problem. List key words on a chart and tell them to look for these in each problem.

The objective is to have the students read a problem, think about what they have read, and ask themselves questions as they try to work out the problem. Students should learn to read, understand, and solve the problem independently.

Once students understand the problem, let them work on it independently for a while. Then check with students on an individual basis to see if each has found the solution.

As students are working on the problem, see if their mastery needs indicate insufficient or incorrect data. Then discuss the following steps with the students.

READ AND SOLVE MATH PROBLEMS #2



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Reviewing Steps in Solving a Word Problem

1 Read and understand the problem.	What are the facts? What is the question?
2 Make a plan.	What do I do first? What do I do next?
3 Do the work.	Use equations and compute.
4 Check your work.	Does my answer make sense? Did I label?

Checking Questions

1. What did the problem ask me to find out?
2. Does my answer make sense?
3. Is my answer complete?
4. Did I make any mistakes in math while solving the problem?

The program contains many word problems that help teach students how to apply the mathematics they have learned to everyday types of problems. These skills involve analyzing new problem situations, selecting methods and operations for solving the problems, carrying out the methods using equations, and evaluating the results.

Extension Activity: Have students write original two-step problems. A good technique for helping students to see the concepts and operations involved in a problem would be to have them use very simple numbers in formulating their problems.

After developing the structure of the problem, the simple numbers can be replaced by numbers that are more realistic in the context of the problem.

SKILLS NEEDS REINFORCEMENT

A. OBJECTIVE: Solving a Problem By Writing an Equation

Explain to students that equations are the sentences of mathematics. Students will find as they continue to study mathematics that even complicated problems can often be re-written as equations, and they will be learning special methods for solving such equations quickly and accurately.

Work with riddles by playing the game, "I'm thinking of a number." Ask the students to name the number by writing or reciting the equation. Some examples are:

- Twice this number is 20. ($N = 10$)
- The sum of this number plus 4 is 10. ($N = 6$)
- This number, divided by 5, is 4. ($N = 20$)
- When you subtract 8 from this number, the difference is 2. ($N = 10$)

After this activity is underway, have the student think up original riddles. You can let the student who names the number correctly be the next to present an original riddle.

READ AND SOLVE MATH PROBLEMS #2

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B. OBJECTIVE: Using Key Words to Solve an Addition Problem

Review some KEY WORDS that mean addition:

altogether	in all	more
total	together	increased

Problem: Rosa has 6 plants.
Jon has 4 plants.
How many plants do they have in all?

Read to Find the Facts: Rosa has 6 plants.
Jon has 4 plants.

Question: How many plants do they have in all?

Key Words: When you see "in all," ADD to solve.

Equation: $6 + 4 = N$

Compute: $N = 10$

Label: 10 plants

C. OBJECTIVE: Using Key Words to Solve a Subtraction Problem

Review some KEY WORDS that mean subtraction:

less	longer	decreased
left	shorter	fewer

Problem: Pat bought 24 tapes.
He gave away 13 tapes.
How many tapes did he have left?

Read to Find the Facts: Pat bought 24 tapes.
He gave away 13 tapes.

Question: How many tapes did he have left?

Key Word(s): When you see "left," SUBTRACT to solve.

Equation: $24 - 13 = N$

Compute: $N = 11$

Label: 11 tapes

D. OBJECTIVE: Using Key Words to Solve a Multiplication Problem

Review some KEY WORDS that mean multiplication:

product	times	twice
---------	-------	-------

Remind students that some multiplication problems do not contain key words, but rather ask the student to find multiples.

Problem: Jane can shoot 4 baskets in 5 minutes.
Sandy can shoot twice as many.
How many baskets can Sandy shoot in the same time?

Read to Find the Facts:

Jane can shoot 4 baskets in 5 minutes.
Sandy can shoot twice as many.

Question: How many baskets can Sandy shoot in the same time?

Key Word(s): When you see "twice," MULTIPLY to solve.

Equation: $4 * 2 = N$

Compute: $N = 8$

Label: 8 baskets

READ AND SOLVE MATH PROBLEMS #2



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E. OBJECTIVE: Using Key Words to Solve a Division Problem

Review some KEY WORDS that mean division:

average each divided by

Remind students that some division problems do not contain key words, but rather ask the student to separate a total into smaller equal groups.

Problem: Sam has 30 golf balls.
 How many boxes does he
 need if he keeps 6 golf balls
 in each box?

Read to Find the Facts:

Sam has 30 golf balls.

He keeps 6 golf balls in each box.

Question: How many boxes does he need?

Key Word(s): When you see "each," DIVIDE
 to solve.

Equation: $30 \div 6 = N$

Compute: $N = 5$

Label: 5 boxes

F. OBJECTIVE: Solving a Problem By Choosing the Correct Operation

Explain to students that in order to understand and solve a problem, they must look at the numbers given, look for key words, and decide what operation is needed to find the answer. Present these four short problems, noting that the same numbers are involved in each of them. Have students READ the problems, look for the key word(s), and then tell whether they would add, subtract, multiply, or divide, and why. Then have them solve the problems and label the answers.

- Juan plants 6 bushes and 30 trees. How many more trees than bushes does he plant? (Subtract: $30 - 6 = 24$ trees)
- Rosa has 6 boxes, each containing 30 seedlings. How many seedlings does she have? (Multiply: $6 \times 30 = 180$ seedlings)
- Bill bought 6 large shovels and 30 small shovels for the school. How many shovels did he buy?(Add: $6 + 30 = 36$ shovels)
- Sue planted 30 tomato plants in rows of 6 plants each. How many rows were there? (Divide: $30 \div 6 = 5$ rows)

Have students use key words and question clues to decide which operation should be used to solve each problem.

When this has been completed, write the numbers 8 and 24 on the chalkboard. Then ask students to make up a problem using these two numbers and involving one of the four basic operations. Let other students take turns solving the problems.

READ AND SOLVE MATH PROBLEMS #2



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G. OBJECTIVE: Solving a Problem by Choosing the Correct Operation

Introduce the theme of sports as a hobby. Discuss the different categories of sports—baseball, basketball, swimming, skiing, jogging, tennis, golf, softball, football, gymnastics, etc.

Focus on collecting pictures to illustrate the different kinds of sports.

- Start with more than one group of pictures, each with a different number. How many pictures are there in all? (Add)
- Start with one group of pictures. Take some of the pictures away. How many are left? (Subtract)
- Start with more than one group, all with the same number. How many pictures are there in all ? (Multiply)
- Start with one group of pictures. Separate them into smaller groups, each with the same number of pictures. How many pictures are there in each group? (Divide)

Arrange groups of students to illustrate the various problem-solving situations. Have students tell the operation illustrated.

Write number sentences and have students think of original word problems to illustrate each sentence.

Sample Sentences: 6 cats
4 legs on each cat
How many legs in all?

Question: What do you know? (number of cats—how many legs on each cat)

Question: What do you want to find out? (number of legs in all)

Question: Do you add, subtract, multiply, or divide?

H. OBJECTIVE: Solving a Problem Involving More than One Step

Tell students that today they are going to study word problems that involve more than one step. Stress that these problems are the kind people encounter and have to solve in everyday life.

Write the following problem on a chart or on the chalkboard and direct the students' attention to it.

- Rosa's family grew and harvested 50 pounds of tomatoes. The tomato plants cost \$12.25 and the fertilizer cost \$3.75. How much did the tomatoes cost per pound?

Ask students what they must do first. (Add to find the total cost of the tomatoes.) Use the facts: The tomato plants cost \$12.25 and the fertilizer cost \$3.75.

STEP ONE: Write the equation and compute.

$$\$12.25 + \$3.75 = N \quad N = \$16.00$$

What do you do next? (Divide to find the answer to the question, "How much did the tomatoes cost per pound?")

STEP TWO: Write the equation and compute.

$$\$16.00 / 50 = N \quad N = \$3.20$$

Emphasize that this problem takes two steps to solve, and can't be solved in one step.

A problem that requires two operations often contains a great deal of information. Encourage students to read carefully in order to simplify or break down the facts.

INDIVIDUALIZED EDUCATIONAL PRESCRIPTION CHART

PRETEST ITEMS	POST TEST ITEMS	SOFTWARE LESSONS	ACTIVITY MASTERS	OBJECTIVES	TEACHING STRATEGIES
Page A 1, 2	Page A 1, 2	1	1	Two-Step Problems With Addition as the First Step	A - H
3, 4	3, 4	2, 3	2, 3	Two-Step Problems With Addition or Subtraction as the First Step	F, G, H
Page B 5, 6	Page B 5, 6	4, 5	4, 5	Two-Step Problems With Addition, Subtraction, or Multiplication as the First Step	F, G, H
7, 8	7, 8	6, 7	6, 7	Two-Step Problems With Addition, Subtraction, Multiplication, or Division as the First Step	F, G, H
9, 10	9, 10	8	8	Two-Step Problems Without Numbers	F, G, H

READ AND SOLVE MATH PROBLEMS #2

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Additional materials for this subject are also available:

FOR THE COMPUTER

READ AND SOLVE MATH PROBLEMS #1

Grades 4-6, Remedial Secondary

A progressive **tutorial and drill** program that teaches your students the important elements of word problems and the conversion of written problems to number problems. The program allows interaction between the student and the computer, provides reinforcement of all concepts, and reteaching where necessary. Interesting animated graphics reward the student when he/she is correct. The program is self-scoring and will not allow the student to progress to higher level concepts until the previous lesson has been mastered.

Programs include:

- Key Words in Addition Problems
- Key Words in Subtraction or Addition Problems
- Writing Equations
- Using Equations to Solve Addition or Subtraction Problems
- More Addition and Subtraction Problems
- Using Equations to Solve Multiplication, Addition, and Subtraction Problems
- More Multiplication, Addition, and Subtraction Problems
- Using Equations to Solve Division, Multiplication, Addition, and Subtraction Problems
- More Division, Multiplication, Addition, and Subtraction Problems
- Problems Without Numbers

Included with the program are 10 Reproducible Activity Masters to reinforce concepts and 4 Reproducible Activity Masters for a pre and post test.

CP-319D1—5 CASSETTES, 14 Reproducible Activity MASTERS (specify model)

DK-319D1—2 DISKETTES, 14 Reproducible Activity MASTERS (specify model)

NON-COMPUTER

READ AND SOLVE MATH PROBLEMS

Two systematic, individualized cassette-workbook/cassette-ditto units teach reading and solving mathematic problems. Introduces and reinforces the use of key words and selection of correct mathematical operations to solve problems.

AKC/DC 301—"Action Vehicle"
(Levels 2-4, Remedial 5-6)

Includes story problems; facts and questions: finding and writing number sentences +, -, X; more, fewer, less; using tables and graphs; more than one question; more than one step, too many facts, etc.

AKC/DC 319—Sports Theme
(Levels 4-6, Remedial Secondary)

Includes word problems; writing equations; using maps, tables and graphs; problems without numbers; hidden information; too much information; two-step problems, etc.

AKC—Please specify number
5 CASSETTES, 10 Activity BOOKS, Guide
DC—Please specify number
5 CASSETTES, 74 DITTOS, Guide

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READ AND SOLVE MATH PROBLEMS #2

DK 320D1

Lesson 1: Introduction to Reading and Solving Two-Step Problems

Directions: Find who scored the most points. Each of the problems for a team gives information for the next problem, in order.

Who scored more points in this seven game series — Pat or Chris? Pat

THE FLAMES

1. Ray scored 40 points last season and 60 points this season. John scored 30 points less than Ray scored in these two seasons. How many points did John score?

STEP ONE

A. $40 + 60 = N$ B. 100 points

STEP TWO

C. $100 - 30 = N$ D. 70 points

2. Bill scored 80 points in these two seasons. Jamie scored 20 more points than Bill and John scored altogether. How many points did Jamie score?

STEP ONE

A. $80 + 70 = N$ B. 150 points

STEP TWO

C. $150 + 20 = N$ D. 170 points

3. Jamie scored 30 points in the season before last. If Jamie scored the same number of points in each of the 50 games played during this year, last year, and the season before last year, how many points did Jamie score in each game?

STEP ONE

A. $170 + 30 = N$ B. 200 points

STEP TWO

C. $200 / 50 = N$ D. 4 points

4. Pat always scored 2 more points in each game than Jamie. In the seven game series against the Stars last season, how many points did Pat score?

STEP ONE

A. $2 + 4 = N$ B. 6 points

STEP TWO

C. $6 \times 7 = N$ D. 42 points

THE STARS

1. Dave scored 70 points last season and 40 points this season. Allie scored 30 fewer points than Dave scored in these two seasons. How many points did Allie score?

STEP ONE

A. $70 + 40 = N$ B. 110 points

STEP TWO

C. $110 - 30 = N$ D. 80 points

2. Allie scored 20 points in the soccer season before last. Allie scored his points equally in each game. If Allie scored 5 points in each game, in how many games did Allie play?

STEP ONE

A. $20 + 80 = N$ B. 100 points

STEP TWO

C. $100 / 5 = N$ D. 20 games

3. Bill played in 30 more games than Allie. Bill scored the same number of points in each game he played. If he scored 100 points in all, how many points did he score in each game?

STEP ONE

A. $20 + 30 = N$ B. 50 games

STEP TWO

C. $100 / 50 = N$ D. 2 points

4. Chris scored 3 more points in each game than Bill. In the seven game series against the Flames, how many points did Chris score?

STEP ONE

A. $2 + 3 = N$ B. 5 points

STEP TWO

C. $5 \times 7 = N$ D. 35 points

READ AND SOLVE MATH PROBLEMS #2

DK 320D1

Lessons 2 and 3: Two-Step Problems With Addition or Subtraction as the First Step

Directions: To find the hidden word, first complete the problems. Then shade in only those numbers in the puzzle that match the answers in Boxes B and D of each problem. Numbers will appear more than once in the puzzle. Be sure to shade in all of the same number.

1. Clyde was 218 centimeters tall. Jim, the smallest player on the volleyball team, was 42 centimeters shorter than Clyde. Billy was 26 centimeters taller than Jim. How many centimeters tall was Billy?

STEP ONE

A. $218 - 42 = N$ B. 176 Centimeters C. $176 + 26 = N$ D. 202 Centimeters

STEP TWO

2. Since the Rocket team was formed, it has won 103 volleyball games. The Rockets lost 16 less games than they won. If the team lost the same number of games in each of the 3 years since it was formed, how many games did it lose each year?

STEP ONE

A. $103 - 16 = N$ B. 87 games C. $87 / 3 = N$ D. 29 games

STEP TWO

3. During the month of November, Peggy scored 113 points. Marta scored 8 more points than Peggy. The rest of the team scored 3 times as many points as Marta. How many points did the rest of the team score?

STEP ONE

A. $113 + 8 = N$ B. 121 points C. $121 \times 3 = N$ D. 363 points

STEP TWO

4. The number of players at the first tryout was 58. At the second tryout this number decreased by 13. The players that were left were then placed into five equal groups. How many players were in each group?

STEP ONE

A. $58 - 13 = N$ B. 45 players C. $45 / 5 = N$ D. 9 players

STEP TWO

11	22	33	44	55	66	77	88	99	00	11	22	33	44	55	66	77	88	99	00
22	11	33	44	55	66	77	88	99	00	11	22	33	44	55	66	77	88	99	00
33	44	55	66	77	88	99	00	11	22	33	44	55	66	77	88	99	00	11	22
44	55	66	77	88	99	00	11	22	33	44	55	66	77	88	99	00	11	22	33
55	66	77	88	99	00	11	22	33	44	55	66	77	88	99	00	11	22	33	44
66	77	88	99	00	11	22	33	44	55	66	77	88	99	00	11	22	33	44	55
77	88	99	00	11	22	33	44	55	66	77	88	99	00	11	22	33	44	55	66
88	99	00	11	22	33	44	55	66	77	88	99	00	11	22	33	44	55	66	77
99	00	11	22	33	44	55	66	77	88	99	00	11	22	33	44	55	66	77	88

READ AND SOLVE MATH PROBLEMS #2

DK 320D1

Lessons 2 and 3: Two-Step Problems With Addition or Subtraction as the First Step

Directions: To find the hidden word, first do the problems. Match the answers from the problems to the numbers in the Code Box. As you find each matching number, cross out the letter below. The letters that are not crossed out should be placed, in order, on the blank lines below. These letters spell out the hidden word.

INFORMATION BOX

- Bob's scores for the first week were 145, 150, and 209 points.
- Margo's scores for the first week were 205, 160, and 130 points.
- Bob's highest score for the 12 weeks was 212 points. His lowest score was 138 points.
- Margo's highest score was 205 points for the 12 weeks. Her lowest score was 125 points.
- Kim's scores for the second week were 160, 145, and 192 points.
- Julio's scores for the second week were 180, 191, and 198 points.
- Kim's highest score was 223 points for the 12 weeks. Her lowest score was 140 points.
- Julio's highest score for the 12 weeks was 198 points. His lowest score was 160 points.

PROBLEMS

1. Bob's highest score bowled in the first week was how many points higher than Kim's highest score bowled in the second week?

A. $209 - 192 = N$ B. 17 points

2. What was the total number of points in Margo's lowest game in the first week and Julio's highest game in the second week?

A. $130 + 198 = N$ B. 328 points

3. What was the difference between Margo's middle score in the first week and Kim's middle score in the second week?

A. $160 - 145 = N$ B. 15 points

CODE BOX

15	35	111	17	19	114	127	328	238
X	S	T	X	R	I	K	X	E

S T R I K E

READ AND SOLVE MATH PROBLEMS #2

DK 320D1

Lessons 4 and 5: Two-Step Problems With Addition, Subtraction, or Multiplication as the First Step

Directions: To find the hidden sentence which answers the puzzle, first complete the problems. You will find the same numbers as the answers in Boxes B and D of each problem in the Code Box. The answer to Problem 1, Box B, is 22. In the Code Box below 22 is the letter S. Go to the Puzzle Box. Find any empty box with 1B (for Problem 1, Box B) above it, and write the S in each empty box. Complete the other boxes in the same way.

Puzzle: What has 18 legs and catches flies?

1. The left fielder stole twice as many bases as the catcher. The catcher stole 11 bases. The shortstop stole 3 times as many bases as the left fielder. How many bases did the shortstop steal?

STEP ONE

A. $2 \times 11 = N$ B. 22 bases C. $22 \times 3 = N$ D. 66 bases

STEP TWO

2. Jennie scored triple the number of runs scored by Bobby. Bobby scored 13 runs. Rosie scored 11 fewer runs than Jennie. How many runs did Rosie score?

STEP ONE

A. $13 \times 3 = N$ B. 39 runs C. $39 - 11 = N$ D. 28 runs

STEP TWO

3. Jeff struck out 6 times as often as did Pete. Tom struck out 3 more times than Jeff. If Pete struck out 16 times, how many times did Tom strike out?

STEP ONE

A. $16 \times 6 = N$ B. 96 times C. $96 + 3 = N$ D. 99 times

STEP TWO

4. Sandy won 6 more games than Walter. Walter won 21 games. Cy won 11 fewer games than Sandy. How many games did Cy win?

STEP ONE

A. $21 + 6 = N$ B. 27 games C. $27 - 11 = N$ D. 16 games

STEP TWO

Puzzle: What has 18 legs and catches flies?

CODE BOX

15	16	22	25	27	28	39	66	68	96	99
R	A	S	H	E	L	M	T	O	I	B

PUZZLE BOX

3B	1D	1B	4D	3D	4D	1B	4B	3D	4D	2D	2D	1D	4B	4D	2B
I	T	S	A	B	A	S	E	B	A	L	L	T	E	A	M

READ AND SOLVE MATH PROBLEMS #2

DK320D1

Lessons 4 and 5: Two-Step Problems With Addition, Subtraction, or Multiplication as the First Step

Directions: To find the missing words, first do the problems. Each problem gives information for the next problem. You will find the same numbers as the answers in Boxes B and D of each problem in the Code Box. As you find each matching number, cross out the letter below. The letters that are not crossed out should be placed, in order, on the blank lines below. These letters will spell out the answer to the puzzle.

Puzzle: What did the sheriff say to the outlaw?

1. In an office building there are 40 offices with 22 employees in each. One day 619 employees were present. How many employees were absent?

STEP ONE

A $40 \times 22 = N$

STEP TWO

C $880 - 619 = N$

B 880 employees D 261 employees

2. There were 65 employees home sick and 37 others were out for personal reasons. The rest took vacation days. How many employees took vacation days?

STEP ONE

A $65 + 37 = N$

STEP TWO

C $261 - 102 = N$

B 102 employees D 159 employees

3. The employees who took vacation days traveled to various places. Of these, 11 left the country. The remaining employees who did not leave the country went in equal numbers to four states. How many employees went to each state?

STEP ONE

A $159 - 11 = N$

STEP TWO

C $148 / 4 = N$

B 148 employees D 37 employees

Puzzle: What did the sheriff say to the outlaw?

CODE BOX

37	24	88	102	112	128	138	148	152	155	159	169	215	232	261	361	780	880
X	G	E	X	T	O	X	T	O	X	F	T	O	X	W	N	X	X

G E T O U T O F T O W N

READ AND SOLVE MATH PROBLEMS #2

DK 320D1

Lessons 6 and 7: Two-Step Problems With Addition, Subtraction, Multiplication, or Division as the First Step

Directions: Complete the following two-step problems. In Boxes A and C, write the equations. In Boxes B and D, write the answers with labels.

1. Ginger practiced for 360 minutes. Bob practiced for 7 hours more than Ginger. How many hours did Bob practice?

STEP ONE

A $360 / 6 = N$

STEP TWO

C $6 + 7 = N$

B 6 hours D 13 hours

2. The team bought 78 special table tennis balls. These balls came in packages of 3 each. Each package cost 2 dollars. How much did these balls cost in all?

STEP ONE

A $78 / 3 = N$

STEP TWO

C $26 \times 2 = N$

B 26 packages D 52 dollars

3. Sara won 3 times as many table tennis matches as Kenny. Rita won 14 more matches than Sara. If Kenny won 17 matches, how many matches did Rita win?

STEP ONE

A $17 \times 3 = N$

STEP TWO

C $51 + 14 = N$

B 51 matches D 65 matches

4. The Nets table tennis team won 96 matches. The team won 12 matches a week. They plan to play 17 more weeks. How many weeks will they play in all?

STEP ONE

A $96 / 12 = N$

STEP TWO

C $8 + 17 = N$

B 8 weeks D 25 weeks

5. Jose won 6 times as many points using topspin as using backspin. He won 12 points using backspin. He won 14 fewer points using sidespin. How many points did he win using sidespin?

STEP ONE

A $12 \times 6 = N$

STEP TWO

C $72 - 14 = N$

B 72 points D 58 points

6. James scored 105 points in 5 games. He scored the same number of points in each game. Eddie scored 6 points less than James scored in each game. How many points did Eddie score?

STEP ONE

A $105 / 5 = N$

STEP TWO

C $21 - 6 = N$

B 21 points D 15 points

READ AND SOLVE MATH PROBLEMS #2

DK 320D1

Lessons 6 and 7: Two-Step Problems With Addition, Subtraction, Multiplication, or Division as the First Step

Directions: To find the missing words, first do the problems. You will find the same numbers as the answers in Boxes B and D of each problem in the Code Box. As you find each matching number, cross out the letter below. The letters that are not crossed out should be placed, in order, on the blank lines below. These letters will spell out the answer to the puzzle.

Puzzle: What could be a nickname for a champion tennis player? It's a table

1. Maria won 45 matches this season. Paula won 8 less matches than Maria. Curt won 12 fewer matches than Paula. How many matches did Curt win?

STEP ONE

A $45 - 8 = N$

STEP TWO

C $37 - 12 = N$

B 37 matches D 25 matches

2. Eric played on 3 teams this year. Bob played on 6 times as many teams as Eric. Tim played on 3 more teams than Bob. On how many teams did Tim play?

STEP ONE

A $3 \times 6 = N$

STEP TWO

C $18 + 3 = N$

B 18 teams D 21 teams

3. The Smashers table tennis team played 102 matches in 3 weeks. They played an equal number of matches each week. Each week they won the same number of matches that they lost. How many matches did they win each week?

STEP ONE

A $102 / 3 = N$

STEP TWO

C $34 / 2 = N$

B 34 matches D 17 matches

4. There were 6 table tennis paddles packed in a box. The team has 12 boxes of paddles. 18 of these paddles are blue. How many paddles are not blue?

STEP ONE

A $6 \times 12 = N$

STEP TWO

C $72 - 18 = N$

B 72 paddles D 54 paddles

CODE BOX

17	21	72	75	35	34	58	24	25	26	39	10	70	18	82	63	54	37	45	89
X	X	X	T	E	X	N	N	X	I	S	M	E	X	N	A	X	X	C	E

T E N N I S M E N A C E

READ AND SOLVE MATH PROBLEMS #2

DK 320D1

Lesson 8: Two-Step Problems Without Numbers

Directions: To solve the puzzle and find the missing word, first circle the letter that tells the correct steps to solve each problem. Look at the number below each circled letter. Find and circle that number with its letter in the Code Box. The circled letters, in order, spell out the missing word.

Puzzle: What do you find in supermarkets, ballparks, and theaters?

1. In a supermarket there are crates filled with melons. Each crate has melons. There are melons that are not ripe. How many melons are ripe?

STEP ONE

A	S	M	D
1	2	3	4

STEP TWO

A	S	M	D
5	6	7	8

2. In the same supermarket there are apples to be packed in boxes that can hold apples each. The boxes are stored in piles of each. How many piles are there?

STEP ONE

A	S	M	D
9	10	11	12

STEP TWO

A	S	M	D
13	14	15	16

3. In one section of the supermarket there are cans of fruits and vegetables. Of these, are filled with vegetables. The cans of fruit are placed equally on shelves. How many cans of fruit are on each shelf?

STEP ONE

A	S	M	D
17	18	19	20

STEP TWO

A	S	M	D
21	22	23	24

1	2	3	4	5	6	7	8	9	10
S	M	A	L	L	G	L	O	O	
11	12	13	14	15	16	17	18	19	20
A	S	T	E	E	L	B	E	L	T
		21	22	23	24				
		M	A	D	S				

A I S L E S

READ AND SOLVE MATH PROBLEMS #2

DK 320D1

Diagnostic Pretest

Complete the following two-step problems. The information from Step One is needed to do Step Two. In Box A write an equation using the letter N for the missing answer. In Box B write the Box A answer with the correct label. In Box C write the equation for the second step using an N for the missing answer. In Box D write the Box C answer with the correct label.

1. Billy scored 25 points and Jamie scored 21 points. The total number of points scored by Sam was 8 less than the points scored by those players. How many points did Sam score?

STEP ONE

A. $25 + 21 = N$ B. 46 points C. $46 - 8 = N$ D. 38 points

STEP TWO

2. Jenerita practiced 30 minutes using her feet, practiced 40 minutes using her head, 50 minutes using her thighs and 120 minutes using her chest. How many hours did she practice altogether?

STEP ONE

A. $30 + 40 + 50 + 120 = N$ B. 240 minutes C. $240 / 60 = N$ D. 4 hours

STEP TWO

3. Fifty-seven players entered the bowling tournament. In the first round, 9 players were dropped. The remaining players were placed in teams of 4 each. How many teams were there?

STEP ONE

A. $57 - 9 = N$ B. 48 players C. $48 / 4 = N$ D. 12 teams

STEP TWO

4. Didi played 43 minutes and Sandy played 31 minutes in every game of volleyball this season. If they both played in 7 games how many more minutes did Didi play than Sandy?

STEP ONE

A. $43 - 31 = N$ B. 12 minutes C. $12 \times 7 = N$ D. 84 minutes

STEP TWO

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READ AND SOLVE MATH PROBLEMS #2

DK320D1

Diagnostic Pretest

5. Sara swam in 5 times as many swim meets as Perry. Perry swam in 6 meets. Sara swam in the same number of meets in each of 10 months. In how many meets did Sara swim each month?

STEP ONE

A. $5 \times 6 = N$ B. 30 meets C. $30 / 10 = N$ D. 3 meets

STEP TWO

6. Mara played in 4 times as many games as José. José played in only 26 games. Bob played in 19 more games than Mara. How many games did Bob play?

STEP ONE

A. $26 \times 4 = N$ B. 104 games C. $104 + 19 = N$ D. 123 games

STEP TWO

7. The goalie played in 36 hockey games. He played in 3 games each week. He plans to play for 11 more weeks. How many weeks will he play in all?

STEP ONE

A. $36 / 3 = N$ B. 12 weeks C. $12 + 11 = N$ D. 23 weeks

STEP TWO

8. Jan won 42 games in 3 weeks. She won the same number of games each week. Ted won 3 less games than Jan won in a week. How many games did Ted win in a week?

STEP ONE

A. $42 / 3 = N$ B. 14 games C. $14 - 3 = N$ D. 11 games

STEP TWO

Directions: Complete each example by circling the letter that shows the correct steps for Step One and Step Two. Circle A for addition, S for subtraction, M for multiplication, or D for division.

9. There are ____ cans of fruit which are to be packed in boxes that hold ____ each. The filled boxes will be placed in a room that contains ____ boxes already. How many boxes will be in the room then?

STEP ONE

A S M **D**

STEP TWO

A S M D

10. There are ____ people on a plane. Of these ____ are children. The adults pay ____ dollars for a ticket. How much do the adults pay in all for their tickets?

STEP ONE

A **S** M D

STEP TWO

A S **M** D

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Name _____
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READ AND SOLVE MATH PROBLEMS #2

DK 320D1

Evaluative Post Test

Complete the following two-step problems. The information from Step One is needed to do Step Two. In Box A write an equation using the letter N for the missing answer. In Box B write the Box A answer with the correct label. In Box C write the equation for the second step using an N for the missing answer. In Box D write the Box C answer with the correct label.

1. Rosa played in 19 games and Melissa played in 14 other games. The total of games played by Geri was 6 fewer than the games played by both Rosa and Melissa. How many games were played by Geri?

STEP ONE

A. $19 + 14 = N$ B. 33 games C. $33 - 6 = N$ D. 27 games

STEP TWO

2. Jan scored 38 points and Tonio scored 39 points. The total points scored by these players was 42 points more than the points scored by Mike. How many points did Mike score?

STEP ONE

A. $38 + 39 = N$ B. 77 points C. $77 - 42 = N$ D. 35 points

STEP TWO

3. Eighty-six players tried out for the football team. Thirty-eight players were dropped. The remaining players were placed in groups of 6 each. How many groups were formed?

STEP ONE

A. $86 - 38 = N$ B. 48 players C. $48 / 6 = N$ D. 8 groups

STEP TWO

4. Two hundred players tried out for the teams. Of these, 32 players were not picked. The remaining players were divided into teams of 6 players each. How many teams were there?

STEP ONE

A. $200 - 32 = N$ B. 168 players C. $168 / 6 = N$ D. 28 teams

STEP TWO

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READ AND SOLVE MATH PROBLEMS #2

DK 320D1

Evaluative Post Test

5. In one game Maria sank 8 times as many jump shots as hook shots. She sank 3 hook shots. If Maria sank the same number of jump shots in each of the 4 quarters of the game, how many jump shots did she sink in one quarter?

STEP ONE

A. $3 \times 8 = N$ B. 24 jump shots C. $24 / 4 = N$ D. 6 jump shots

STEP TWO

6. Five times as many players rode in cars as walked to the game. Only 8 players walked to the game. If the players who rode came in 10 cars, with the same number of players in each car, how many players rode in each car?

STEP ONE

A. $8 \times 5 = N$ B. 40 players C. $40 / 10 = N$ D. 4 players

STEP TWO

7. The Raiders played 48 games. They played 12 games each month. They plan to play for 15 more months. How many months will they play in all?

STEP ONE

A. $48 / 12 = N$ B. 4 months C. $4 + 15 = N$ D. 19 months

STEP TWO

8. The team had 48 rackets. These rackets were either black or tan. There were the same number of each color racket. The team decided to buy 3 times as many blue rackets as the black rackets they already had. How many new rackets will they buy?

STEP ONE

A. $48 / 2 = N$ B. 24 rackets C. $24 \times 3 = N$ D. 72 rackets

STEP TWO

Directions: Complete each example by circling the letter that shows the correct steps for Step One and Step Two. Circle A for addition, S for subtraction, M for multiplication, or D for division.

9. There are ____ apricots which are to be packed in jars that hold ____ each. If ____ jars are to be sold, how many will be left?

STEP ONE

A S M **D**

STEP TWO

A **S** M D

10. There are ____ people on a train. Each person paid ____ dollars for their ticket. Also ____ dollars were paid for freight collected on this train. How much was collected in all?

STEP ONE

A S **M** D

STEP TWO

A S M D

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Lesson 1: Introduction to Reading and Solving Two-Step Problems

Directions: Find who scored the most points. Each of the problems for a team gives information for the next problem, in order.

Who scored more points in this seven game series — Pat or Chris?

THE FLAMES

THE STARS

1. Ray scored 40 points last season and 60 points this season. John scored 30 points less than Ray scored in these two seasons. How many points did John score?

STEP ONE

A. B.

STEP TWO

C. D.

2. Bill scored 80 points in these two seasons. Jamie scored 20 more points than Bill and John scored altogether. How many points did Jamie score?

STEP ONE

A. B.

STEP TWO

C. D.

3. Jamie scored 30 points in the season before last. If Jamie scored the same number of points in each of the 50 games played during this year, last year, and the season before last year, how many points did Jamie score in each game?

STEP ONE

A. B.

STEP TWO

C. D.

4. Pat always scored 2 more points in each game than Jamie. In the seven game series against the Stars last season, how many points did Pat score?

STEP ONE

A. B.

STEP TWO

C. D.

1. Dave scored 70 points last season and 40 points this season. Allie scored 30 fewer points than Dave scored in these two seasons. How many points did Allie score?

STEP ONE

A. B.

STEP TWO

C. D.

2. Allie scored 20 points in the soccer season before last. Allie scored his points equally in each game. If Allie scored 5 points in each game, in how many games did Allie play?

STEP ONE

A. B.

STEP TWO

C. D.

3. Bill played in 30 more games than Allie. Bill scored the same number of points in each game he played. If he scored 100 points in all, how many points did he score in each game?

STEP ONE

A. B.

STEP TWO

C. D.

4. Chris scored 3 more points in each game than Bill. In the seven game series against the Flames, how many points did Chris score?

STEP ONE

A. B.

STEP TWO

C. D.



Lessons 2 and 3: Two-Step Problems With Addition or Subtraction as the First Step

Directions: To find the hidden word, first complete the problems. Then shade in only those numbers in the puzzle that match the answers in Boxes B and D of each problem. Numbers will appear more than once in the puzzle. Be sure to shade in all of the same number.

1. Clyde was 218 centimeters tall. Jim, the smallest player on the volleyball team, was 42 centimeters shorter than Clyde. Billy was 26 centimeters taller than Jim. How many centimeters tall was Billy?

STEP ONE

STEP TWO

A. B. C. D.

2. Since the Rocket team was formed, it has won 103 volleyball games. The Rockets lost 16 less games than they won. If the team lost the same number of games in each of the 3 years since it was formed, how many games did it lose each year?

STEP ONE

STEP TWO

A. B. C. D.

3. During the month of November, Peggy scored 113 points. Marta scored 8 more points than Peggy. The rest of the team scored 3 times as many points as Marta. How many points did the rest of the team score?

STEP ONE

STEP TWO

A. B. C. D.

4. The number of players at the first tryout was 58. At the second tryout this number decreased by 13. The players that were left were then placed into five equal groups. How many players were in each group?

STEP ONE

STEP TWO

A. B. C. D.

176	202	6	45	363	7	29	$\frac{8}{7}$	202	1	121	11	45	7	363	9
87	221	2	9	67	3	176	10	121	61	363	3	9	17	121	263
29	121	4	121	29	5	45	9	45	$\frac{6}{3}$	29	202	$\frac{2}{0}$	87	202	
78	363	1	87	20	8	176	$\frac{8}{1}$	87	54	87	263	176	19		
9	45	3	176	202	6	202	$\frac{2}{1}$	29	$\frac{3}{6}{0}$	176	99	9	121		



Lessons 2 and 3: Two-Step Problems With Addition or Subtraction as the First Step

Directions: To find the hidden word, first do the problems. Match the answers from the problems to the numbers in the Code Box. As you find each matching number, cross out the letter below. The letters that are not crossed out should be placed, in order, on the blank lines below. These letters spell out the hidden word.

INFORMATION BOX

1. Bob's scores for the first week were 145, 150, and 209 points.
2. Margo's scores for the first week were 205, 160, and 130 points.
3. Bob's highest score for the 12 weeks was 212 points. His lowest score was 138 points.
4. Margo's highest score was 205 points for the 12 weeks. Her lowest score was 125 points.
5. Kim's scores for the second week were 160, 145, and 192 points.
6. Julio's scores for the second week were 180, 191, and 198 points.
7. Kim's highest score was 223 points for the 12 weeks. Her lowest score was 140 points.
8. Julio's highest score for the 12 weeks was 198 points. His lowest score was 160 points.

PROBLEMS

1. Bob's highest score bowled in the first week was how many points higher than Kim's highest score bowled in the second week?

A. B.

2. What was the total number of points in Margo's lowest game in the first week and Julio's highest game in the second week?

A. B.

3. What was the difference between Margo's middle score in the first week and Kim's middle score in the second week?

A. B.

CODE BOX

15	35	111	17	19	114	127	328	238
E	S	T	O	R	I	K	M	E



Lessons 4 and 5: Two-Step Problems With Addition, Subtraction, or Multiplication as the First Step

Directions: To find the hidden sentence which answers the puzzle, first complete the problems. You will find the same numbers as the answers in Boxes B and D of each problem in the Code Box. The answer to Problem 1, Box B, is 22. In the Code Box below 22 is the letter S. Go to the Puzzle Box. Find any empty box with 1B (for Problem 1, Box B) above it, and write the S in each empty box. Complete the other boxes in the same way.

Puzzle: What has 18 legs and catches flies?

1. The left fielder stole twice as many bases as the catcher. The catcher stole 11 bases. The shortstop stole 3 times as many bases as the left fielder. How many bases did the shortstop steal?

STEP ONE

STEP TWO

A. B. C. D.

2. Jennie scored triple the number of runs scored by Bobby. Bobby scored 13 runs. Rosie scored 11 fewer runs than Jennie. How many runs did Rosie score?

STEP ONE

STEP TWO

A. B. C. D.

3. Jeff struck out 6 times as often as did Pete. Tom struck out 3 more times than Jeff. If Pete struck out 16 times, how many times did Tom strike out?

STEP ONE

STEP TWO

A. B. C. D.

4. Sandy won 6 more games than Walter. Walter won 21 games. Cy won 11 fewer games than Sandy. How many games did Cy win?

STEP ONE

STEP TWO

A. B. C. D.

Puzzle: What has 18 legs and catches flies?

CODE BOX

15	16	22	25	27	28	39	66	68	96	99
R	A	S	H	E	L	M	T	O	I	B

PUZZLE BOX

3B	1D	1B	4D	3D	4D	1B	4B	3D	4D	2D	2D	1D	4B	4D	2B
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



Lessons 4 and 5: Two-Step Problems With Addition, Subtraction, or Multiplication as the First Step

Directions: To find the missing words, first do the problems. Each problem gives information for the next problem. You will find the same numbers as the answers in Boxes B and D of each problem in the Code Box. As you find each matching number, cross out the letter below. The letters that are not crossed out should be placed, in order, on the blank lines below. These letters will spell out the answer to the puzzle.

Puzzle: What did the sheriff say to the outlaw?

1. In an office building there are 40 offices with 22 employees in each. One day 619 employees were present. How many employees were absent?

STEP ONE

STEP TWO

A. B. C. D.

2. There were 65 employees home sick and 37 others were out for personal reasons. The rest took vacation days. How many employees took vacation days?

STEP ONE

STEP TWO

A. B. C. D.

3. The employees who took vacation days traveled to various places. Of these, 11 left the country. The remaining employees who did not leave the country went in equal numbers to four states. How many employees went to each state?

STEP ONE

STEP TWO

A. B. C. D.

Puzzle: What did the sheriff say to the outlaw?

CODE BOX

37	24	88	102	112	128	138	148	152	155	159	169	215	232	261	361	780	880
A	G	E	D	T	O	U	P	T	O	W	F	T	O	E	W	N	Y



Lessons 6 and 7: Two-Step Problems With Addition, Subtraction, Multiplication, or Division as the First Step

Directions: Complete the following two-step problems. In Boxes A and C, write the equations. In Boxes B and D, write the answers with labels.

1. Ginger practiced for 360 minutes. Bob practiced for 7 hours more than Ginger. How many hours did Bob practice?

STEP ONE

STEP TWO

A. B. C. D.

2. The team bought 78 special table tennis balls. These balls came in packages of 3 each. Each package cost 2 dollars. How much did these balls cost in all?

STEP ONE

STEP TWO

A. B. C. D.

3. Sara won 3 times as many table tennis matches as Kenny. Rita won 14 more matches than Sara. If Kenny won 17 matches, how many matches did Rita win?

STEP ONE

STEP TWO

A. B. C. D.

4. The Nets table tennis team won 96 matches. The team won 12 matches a week. They plan to play 17 more weeks. How many weeks will they play in all?

STEP ONE

STEP TWO

A. B. C. D.

5. Jose won 6 times as many points using topspin as using backspin. He won 12 points using backspin. He won 14 fewer points using sidespin. How many points did he win using sidespin?

STEP ONE

STEP TWO

A. B. C. D.

6. James scored 105 points in 5 games. He scored the same number of points in each game. Eddie scored 6 points less than James scored in each game. How many points did Eddie score?

STEP ONE

STEP TWO

A. B. C. D.



Lessons 6 and 7: Two-Step Problems With Addition, Subtraction, Multiplication, or Division as the First Step

Directions: To find the missing words, first do the problems. You will find the same numbers as the answers in Boxes B and D of each problem in the Code Box. As you find each matching number, cross out the letter below. The letters that are not crossed out should be placed, in order, on the blank lines below. These letters will spell out the answer to the puzzle.

Puzzle: What could be a nickname for a champion tennis player? It's a
table _____.

1. Maria won 45 matches this season. Paula won 8 less matches than Maria. Curt won 12 fewer matches than Paula. How many matches did Curt win?

STEP ONE

STEP TWO

A. B. C. D.

2. Eric played on 3 teams this year. Bob played on 6 times as many teams as Eric. Tim played on 3 more teams than Bob. On how many teams did Tim play?

STEP ONE

STEP TWO

A. B. C. D.

3. The Smashers table tennis team played 102 matches in 3 weeks. They played an equal number of matches each week. Each week they won the same number of matches that they lost. How many matches did they win each week?

STEP ONE

STEP TWO

A. B. C. D.

4. There were 6 table tennis paddles packed in a box. The team has 12 boxes of paddles. 18 of these paddles are blue. How many paddles are not blue?

STEP ONE

STEP TWO

A. B. C. D.

CODE BOX

17	21	72	75	35	34	58	24	25	26	39	10	70	18	82	63	54	37	45	89
R	A	S	T	E	A	N	N	B	I	S	M	E	A	N	A	T	S	C	E



Lesson 8: Two-Step Problems Without Numbers

Directions: To solve the puzzle and find the missing word, first circle the letter that tells the correct steps to solve each problem. Look at the number below each circled letter. Find and circle that number with its letter in the Code Box. The circled letters, in order, spell out the missing word.

Puzzle: What do you find in supermarkets, ballparks, and theaters?

1. In a supermarket there are ____ crates filled with melons. Each crate has ____ melons. There are ____ melons that are not ripe. How many melons are ripe?

STEP ONE

A	S	M	D
1	2	3	4

STEP TWO

A	S	M	D
5	6	7	8

2. In the same supermarket there are ____ apples to be packed in boxes that can hold ____ apples each. The boxes are stored in piles of ____ each. How many piles are there?

STEP ONE

A	S	M	D
9	10	11	12

STEP TWO

A	S	M	D
13	14	15	16

3. In one section of the supermarket there are ____ cans of fruits and vegetables. Of these, ____ are filled with vegetables. The cans of fruit are placed equally on ____ shelves. How many cans of fruit are on each shelf?

STEP ONE

A	S	M	D
17	18	19	20

STEP TWO

A	S	M	D
21	22	23	24

1	2	3	4	5	6	7	8	9	10
S	M	A	L	L	I	G	L	O	O
11	12	13	14	15	16	17	18	19	20
A	S	T	E	E	L	B	E	L	T
			21	22	23	24			
			M	A	D	S			



Evaluative Post Test

Complete the following two-step problems. The information from Step One is needed to do Step Two. In Box A write an equation using the letter N for the missing answer. In Box B write the Box A answer with the correct label. In Box C write the equation for the second step using an N for the missing answer. In Box D write the Box C answer with the correct label.

1. Rosa played in 19 games and Melissa played in 14 other games. The total of games played by Geri was 6 fewer than the games played by both Rosa and Melissa. How many games were played by Geri?

STEP ONE

A.

B.

STEP TWO

C.

D.

2. Jan scored 38 points and Tonio scored 39 points. The total points scored by these players was 42 points more than the points scored by Mike. How many points did Mike score?

STEP ONE

A.

B.

STEP TWO

C.

D.

3. Eighty-six players tried out for the football team. Thirty-eight players were dropped. The remaining players were placed in groups of 6 each. How many groups were formed?

STEP ONE

A.

B.

STEP TWO

C.

D.

4. Two hundred players tried out for the teams. Of these, 32 players were not picked. The remaining players were divided into teams of 6 players each. How many teams were there?

STEP ONE

A.

B.

STEP TWO

C.

D.



Evaluative Post Test

5. In one game Maria sank 8 times as many jump shots as hook shots. She sank 3 hook shots. If Maria sank the same number of jump shots in each of the 4 quarters of the game, how many jump shots did she sink in one quarter?

STEP ONE

STEP TWO

- A. B. C. D.

6. Five times as many players rode in cars as walked to the game. Only 8 players walked to the game. If the players who rode came in 10 cars, with the same number of players in each car, how many players rode in each car?

STEP ONE

STEP TWO

- A. B. C. D.

7. The Raiders played 48 games. They played 12 games each month. They plan to play for 15 more months. How many months will they play in all?

STEP ONE

STEP TWO

- A. B. C. D.

8. The team had 48 rackets. These rackets were either black or tan. There were the same number of each color racket. The team decided to buy 3 times as many blue rackets as the black rackets they already had. How many new rackets will they buy?

STEP ONE

STEP TWO

- A. B. C. D.

Directions: Complete each example by circling the letter that shows the correct steps for Step One and Step Two. Circle A for addition, S for subtraction, M for multiplication, or D for division.

9. There are ___ apricots which are to be packed in jars that hold ___ each. If ___ jars are to be sold, how many will be left?

STEP ONE

STEP TWO

A S M D

A S M D

10. There are ___ people on a train. Each person paid ___ dollars for their ticket. Also ___ dollars were paid for freight collected on this train. How much was collected in all?

STEP ONE

STEP TWO

A S M D

A S M D

