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ABSTRACT

The Objective-Item Bank presented covers 16 sections of four subject areas in each of four grade levels. The four areas are: Language Arts, Math, Social Studies, and Science. The four grade levels are: Primary, Intermediate, Junior High, and High School. The Objective-Item Bank provides school administrators with an initial starting point for curriculum development and with the instrumentation for program evaluation, and offers a mechanism to assist teachers in stating more specifically the goals of their instructional program. In addition, it provides the means to determine the extent to which the objectives are accomplished. This document presents the Objective Item Bank for primary mathematics.

(CK)

# PRIMARY MATHEMATICS BEHAVIORAL OBJECTIVES AND TEST ITEMS

EVALUATION FOR INDIVIDUALIZED INSTRUCTION

A Title III ESEA project  
administered by  
Downers Grove, Illinois  
School District 99

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 U.S.A. 66



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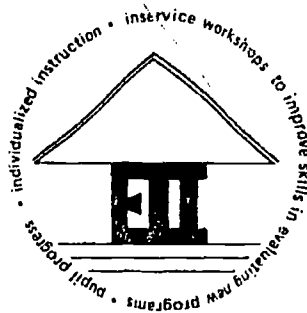
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	Lang. Arts	Math.	Soc. Stud.	Science
Primary		X		
Intermediate				
Junior High				
High School				

ED U06474

# PRIMARY MATHEMATICS

## BEHAVIORAL OBJECTIVES AND TEST ITEMS



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Evaluation for Individualized Instruction Project

AN ESEA TITLE III PROJECT

Administered

by

Downers Grove Public School District 99

## BEHAVIORAL OBJECTIVE - TEST ITEM BANK

### BACKGROUND

The Evaluation for Individualized Instruction Project, an ESEA Title III project administered by the Downers Grove, Illinois, School District 99, has developed an Objective-Item Bank covering sixteen sectors of four subject areas in each of four grade levels.

		Subject Area			
		LA	MA	SS	SC
1		11	12	13	14
2		21	22	23	24
3		31	32	33	34
4		41	42	43	44

LA = Language Arts  
MA = Math  
SS = Social Studies  
SC = Science

1 = Primary  
2 = Intermediate  
3 = Junior High  
4 = High School

Nearly 5000 behavioral objectives and over 27,000 test items based on these objectives were recently published as the culmination of this three-year project. The complete output of seventeen volumes totals over 4500 pages. These publications have been reproduced by the Institute for Educational Research to make them available at cost to teachers and administrators.

The objectives and items were written by over 300 elementary and secondary teachers, representing forty Chicago suburban school districts, who participated in workshops of three to nine weeks duration throughout the project. In these workshops they learned to write effective behavioral objectives and test items based on the objectives. The results of their work were edited for content and measurement quality to compile the largest pool of objectives and test items ever assembled.

### PRINCIPLES AND MERITS

Unfortunately, the Objective-Item Bank is often viewed mainly as a source of test items. Although this is an important function, its greatest potential impact lies not in the availability of a multitude of test items, but rather in the ability of these items to measure carefully selected educational goals.

The almost frenetic search for test items on the part of some educators has been spurred by the current emphasis on measurement. Some educators have become so enamored with measurement that they seem more interested in obtaining a numerical index than examining what they are really trying to measure. Further, it is

not unusual for teachers to speak about a child obtaining a score of 95% on a particular test. Frequently, they encounter considerable difficulty in interpreting the real meaning of a score and are content to just accept its numeral value. A much more important question would seem to be: What are our goals of measurement? Unless we can answer this question precisely, the only real purpose that testing serves is to gather data concerning pupils to facilitate the marking of report cards. This is not to say that this function is not legitimate - it is rather to say that such a view of measurement is much too constricting. The goal of measurement should be to provide feedback both to the teacher and the child regarding the success or failure of the learning experiences in realizing specifically stated objectives.

One of the main strengths of the EII Objective and Item Bank is that all the items are directly tied to specifically stated objectives. Each group of items is designed to measure a specific objective and therefore provides the means whereby the teacher can obtain feedback on the success of the educational program.

It is disheartening to observe so many districts attacking the complex problem of curriculum development independently. One cannot help reflecting on the mammoth duplication of efforts involved. The Objective-Item Bank offers a possible alternative to this duplication. Utilizing its resources, the curriculum committee is provided with some point of departure. The efforts of three hundred teachers participating in the Evaluation Project's workshops and the thoughts of forty districts can be evaluated and utilized. This is not to suggest that any set of objectives should be viewed as the "answer" to an individual district's curricular problem but rather the efforts of others offer a convenient point of departure and may serve to stimulate diverse opinions about the direction of curricular thrust within the individual district. The words of Sir Isaac Newton seem appropriate; "If I have seen further, it is by standing upon the shoulder of giants." The efforts of others, whether we consider them giant-like or pygmyish do offer a threshold to view the immense, complicated problem of curricular development in better perspective.

The title of an article in a recent educational journal, "If You're Not Sure Where You're Going, You're Liable to End up Someplace Else," succinctly describes a continuing dilemma in our educational system. The vagueness of our goals often promotes the idea that "anything goes." Without a guiding beacon many classrooms become activity-centered rather than goal-oriented. One educator recently compared the all-too-typical classroom with Henry Ford's observation concerning history. He defined history as, "One damned thing after another." Is this true of the succession of activities within our classrooms? Does the teacher really know the educational purpose of each activity? Perhaps, even more importantly, do the children know the purpose?

The Objective-Item Bank offers a mechanism to assist teachers in stating more specifically the goals of their instructional program and further provides the means to determine the extent to which the objectives are accomplished. The specification of goals assists the teacher in discovering whether favored activities advance learning, or are merely time fillers; whether they get the "materials" across, or are merely perfunctory exercises.

Much discussion has been devoted to the topic of "why individualized instruction?" and occasionally some dialogue has even centered on the "how." But an even more basic question is one that is often ignored: "Individualize what?"

Many school districts mention their individualized programs in reading or mathematics. What is individualized within these programs? Are certain skills definitely identified? Is the practice of pretesting to determine the child's level of proficiency when he enters the program a guideline?

The Objective-Item Bank has two potential contributions to make to all school districts embarking on or presently engaged in individualized instruction programs. These contributions are: 1. A group of well-specified objectives which could form the "what" of the program. 2. A set of items designed to provide information on the degree of mastery of the objective.

#### APPLICATIONS AND TECHNIQUES

The versatility of the Objective-Item Bank is evident in the value and usability by both teachers and administrators.

To the Administration the Objective-Item Bank:

1. Provides an initial starting point for curriculum development. The existence of many objectives avoids the necessity of each district duplicating the efforts of another. The task of the curriculum committee becomes one of selecting and/or rejecting objectives from the Objective - Item Bank and then supplementing them with objectives developed at the local level. Past-participants of the Evaluation Project workshops would be valuable resource people in this endeavor.
2. Provides the instrumentation for program evaluation. The selection of items from those objectives representative of the main emphases of the local district provides the framework for the evaluation of the stated goals.

To the Teacher the Objective-Item Bank:

1. Provides the pooling of talent and imagination of teachers of varied experience and interests, thus avoiding the present duplication of effort.
2. Provides resources for more highly sensitized program evaluation instead of a battery of standardized tests. Since the objectives are tailored to the program, the associated test items can be used to determine precisely the efficacy of the instructional materials.
3. Provides the means whereby the teacher can become more acutely aware of that which he is seeking to have occur in his classroom and that which he will accept as evidence of its occurrence. Hopefully, as teachers become more aware of their goals, they will share these

objectives with children and let the pupils become acutely aware of that which is expected of them, ergo allowing them to seek their own modality of instruction for the realization of the stated goals.

4. Provides the nucleus of an individualized instruction program.
  - a. It provides for more precise curriculum planning by differentiating those goals specific to each grade and even to each student. With the bank at their disposal, teachers are encouraged to become aware of their responsibilities in developing a set of basic objectives which every child must attain and a further set which can be pursued according to the students' abilities and interests.
  - b. It provides several items per objective, some of which may be used as a pre-test to discover whether a student should undertake that objective while the remainder may be employed to measure the mastery of those students who do tackle the objective.

#### NOTES

Several of the volumes have been reproduced from punched cards by the IBM 407, a machine which does not print all characters exactly as they appear on a typewriter. Thus:

% is actually (

∩ is actually )

0 is actually ? or !

Apostrophes cannot be printed.

The number immediately after the statement of each objective represents the number of items measuring attainment of that objective.

Information on the EII publications or purchase requests can be directed to:

INSTITUTE FOR EDUCATIONAL RESEARCH  
1400 West Maple Avenue  
Downers Grove, Illinois 60515

### NOTES TO USERS:

Even though the objectives and test questions included here have undergone numerous editings and proof readings, it is likely that a small number of errors still exist.

If any user reports an error (an incorrect answer, a misspelled word, etc.), the staff will be pleased to compile an errata sheet and make the necessary corrections for all subsequent printings.

In addition:

1. The number immediately after the statement of each objective represents the number of items measuring attainment of that objective.
2. The IBM 407 we used does not print all characters exactly as they appear on a typewriter; thus,

% is actually (

□ is actually )

0 is actually ? or !

apostrophes cannot be printed



PRIMARY MATHEMATICS

1974

NUMBERS AND NUMERATION

COUNTING

THE STUDENT DEMONSTRATES KNOWLEDGE OF SKIP COUNTING BY SKIP  
COUNTING BY 2, 5, 10, 100, 1000.

0019

Directions: What is the next skip counting number? Circle  
the letter.

2 4 6 8 10 12.....

0001

- a. 13
- \*b. 14
- c. 15
- d. 16

5 10 15 20 25 30.....

0002

- a. 31
- b. 32
- c. 40
- \*d. 35

10 20 30 40 50 60 70.....

0003

- \*a. 80
- b. 90
- c. 71
- d. 75

100 200 300 400 500.....

0004

- a. 501
- b. 510
- \*c. 600
- d. 700

1000 2000 3000 4000.....

0005

- a. 4001
- b. 4010
- \*c. 5000
- d. 6000

THE CHILD WILL DISPLAY HIS ABILITY TO COUNT OBJECTS BY CHOOSING A NUMERAL TO REPRESENT THE NUMBER OF MEMBERS OF SETS UP TO TEN.

0036

Directions: The teacher makes sets, one at a time, on the flannel-board and provides three choices in felt numerals at the side of the board. The child chooses the numeral and places it next to the set.

[ △ △ △ △ ]

0006

Child chooses:

- a. 6
- b. 2
- \*c. 4
- d. no response

[ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ]

0007

Child chooses:

- \*a. 10
- b. 7
- c. 3
- d. no response

[ □ □ □ □ □ □ □ □ ]

0008

Child chooses:

- a. 6
- \*b. 8
- c. 10
- d. no response

[ □ □ □ □ □ ]

0009

Child chooses:

- \*a. 5
- b. 3
- c. 6
- d. no response

GIVEN A FLANNELBOARD ON WHICH ARE NUMERALS ONE THROUGH FIVE TO CHOOSE FROM, THE CHILD WILL DEMONSTRATE HIS KNOWLEDGE OF COUNTING NUMBERS BY WRITING THE NEXT NUMERAL AT THE END OF THE SERIES WHICH THE TEACHER WRITES ON THE CHALKBOARD.

0047

Directions: Teacher says, "Write the numeral that comes next."

Teacher writes 1 2 3

0010

- a. child writes 1
- b. child writes 2
- c. child writes 3
- \*d. child writes 4
- e. child writes 5

Teacher writes 1 2 3 4

0011

- a. child writes 1
- b. child writes 2
- c. child writes 3
- d. child writes 4
- \*e. child writes 5

Teacher writes 1 2

0012

- a. child writes 1
- b. child writes 2
- \*c. child writes 3
- d. child writes 4
- e. child writes 5

Teacher writes 1

0013

- a. child writes 1
- \*b. child writes 2
- c. child writes 3
- d. child writes 4
- e. child writes 5

GIVEN A FLANNELBOARD ON WHICH ARE NUMERALS SIX THRU TEN TO CHOOSE FROM, THE CHILD WILL DEMONSTRATE HIS KNOWLEDGE OF COUNTING NUMBERS BY WRITING THE NEXT NUMERAL AT THE END OF THE SERIES WHICH THE TEACHER WRITES ON THE CHALKBOARD.

0048

Directions: Teacher says, "Write the number that comes next."

Teacher writes 1 2 3 4 5 6 7

0014

- a. child writes 6
- b. child writes 7
- \*c. child writes 8
- d. child writes 9
- e. child writes 10

Teacher writes 1 2 3 4 5 6 7 8

0015

- a. child writes 6
- b. child writes 7
- c. child writes 8
- \*d. child writes 9
- e. child writes 10

Teacher writes 1 2 3 4 5

0016

- \*a. child writes 6
- b. child writes 7
- c. child writes 8
- d. child writes 9
- e. child writes 10

Teacher writes 1 2 3 4 5 6

0017

- a. child writes 6
- \*b. child writes 7
- c. child writes 8
- d. child writes 9
- e. child writes 10

Teacher writes 1 2 3 4 5 6 7 8 9

0018

- a. child writes 6
- b. child writes 7
- c. child writes 8
- d. child writes 9
- \*e. child writes 10

THE CHILD WILL SHOW HIS KNOWLEDGE OF THE ORDERED SET OF COUNTING NUMBERS BY SUPPLYING THE CORRECT NUMERALS IN THE CORRECT POSITIONS TO AN INCOMPLETE SET OF COUNTING NUMBERS.

0060

2\_\_4

0019

- a. child fills in numeral 6
- \*b. child fills in numeral 3
- c. child fills in numeral 5
- d. no response

3\_\_5

0020

- \*a. child fills in numeral 4
- b. child fills in numeral 6
- c. child fills in numeral 2
- d. no response

7\_\_9

0021

- a. child fills in 2
- b. child fills in 10
- \*c. child fills in 8
- d. no response



PLACE HOLDERS AND VALUE

THE STUDENT CAN SHOW COMPREHENSION OF PLACEHOLDERS BY USING FASTER  
WAYS THAN COUNTING TO SOLVE PLACEHOLDER PROBLEMS.

0017

Directions: Which is the slowest way to find the missing number?  
Circle the correct letter.

$$+ 6 = 15$$

0022

- a.  $6 + 4 + 5 = 15$
- b.  $15 - 6 = 9$
- c.  $6 + 9 = 15$
- \*d. Count from 6 to 15

$$17 - \quad = 9$$

0023

- a.  $9 + 8 = 17$
- \*b. Count back from 17 to 9...
- c.  $17 - 9 = 8$
- c.  $17 - 9 = 8$
- d.  $17 - 7 - 2 = 8$

THE STUDENT DEMONSTRATES KNOWLEDGE OF PLACE VALUE BY IDENTIFYING  
PLACE VALUES IN FOUR DIGIT NUMERALS.

0018

Directions: Circle the correct letter.

9527 In this number the 2 means 2...

0024

- a. ones
- \*b. tens
- c. hundreds
- d. thousands

6341 In this number the 6 means 6...

0025

- a. ones
- b. tens
- c. hundreds
- \*d. thousands

1857 In this number the 8 means 8...

0026

- a. ones
- b. tens
- \*c. hundreds
- d. thousands

2796 In this number the 6 means 6...

0027

- \*a. ones
- b. tens
- c. hundreds
- d. thousands

THE CHILD WILL DEMONSTRATE HIS UNDERSTANDING OF PLACE VALUE BY BEING ABLE TO SELECT THE APPROPRIATE VALUE FOR A SPECIFIED NUMBER.

0075

In the number 572 the 7 stands for \_\_\_\_\_. Circle the correct answer.

0028

- a. 7 ones
- \*b. 7 tens
- c. 7 hundreds

In the number 674 there are \_\_\_\_\_ hundreds. Circle the correct answer.

0029

- a. 7
- b. 4
- \*c. 6

In the number 403 there are \_\_\_\_\_ tens. Circle the correct answer.

0030

- a. 4
- b. 3
- \*c. 0

**ORDER**

THE CHILD WILL SHOW HIS KNOWLEDGE OF THE ORDERED SET OF COUNTING NUMBERS BY SUPPLYING THE CORRECT NUMERALS IN THE CORRECT POSITIONS TO AN INCOMPLETE SET OF COUNTING NUMBERS.

0034

**Directions:** The child sees the flannelboard on which are two numerals in a row, between which one is missing to make a complete part of the counting set. The teacher places three other numerals on the flannelboard in a list apart from the two numerals given. Teacher says: "Fill in the missing numeral by choosing one from this list."

1 \_\_\_ 3

0031

- \*a. child fills in numeral 2
- b. child fills in numeral 5
- c. child fills in numeral 6
- d. child fills in no numeral

5 \_\_\_ 7

0032

- a. child fills in numeral 3
- \*b. child fills in numeral 6
- c. child fills in numeral 9
- d. child fills in no numeral

6 \_\_\_ 8

0033

- a. child fills in numeral 1
- \*b. child fills in numeral 7
- c. child fills in numeral 10
- d. child fills in no numeral

4 \_\_\_ 6

0034

- \*a. child fills in numeral 5
- b. child fills in numeral 8
- c. child fills in numeral 2
- d. child fills in no numeral

8 \_\_\_ 10

0035

- a. child fills in numeral 6
- b. child fills in numeral 3
- \*c. child fills in numeral 9
- d. child fills in no numeral

THE CHILD WILL DISPLAY HIS KNOWLEDGE OF ORDINAL WORDS -- FIRST, SECOND, THIRD, FOURTH, FIFTH, BY NAMING THE ORDER POSITION OF AN OBJECT IN A LINEAR SEQUENCE OF FIVE OBJECTS.

0037

Directions: There is a row of five blocks.

The teacher points to the second block and asks the child, "Is this the first, second, third, fourth, or fifth block?"

0036

- a. child says "first"
- \*b. child says "second"
- c. child says "third"
- d. child says "fourth"
- e. child says "fifth"
- f. no response

Teacher points to fourth block and asks, "Is this, etc.?"

0037

- a. child says "first"
- b. child says "second"
- c. child says "third"
- \*d. child says "fourth"
- e. child says "fifth"
- f. no response

Teacher points to first block .....

0038

- \*a. child says "first"
- b. child says "second"
- c. child says "third"
- d. child says "fourth"
- e. child says "fifth"
- f. no response

GIVEN THREE NUMERALS, THE CHILD WILL DEMONSTRATE HIS KNOWLEDGE OF THE NUMERALS ONE TO TEN BY CHOOSING THE NUMERAL WHICH REPRESENTS THE GREATEST OR SMALLEST NUMBER. 0066

3, 5, 8 Teacher says, "Which numeral tells the greatest number?" 0039

- a. child says, "Three"
- b. child says, "Five"
- \*c. child says, "Eight"
- d. no response

4, 7, 10 "Which numeral tells the greatest number?" 0040

- a. child says, "Four"
- b. child says, "Seven"
- \*c. child says, "Ten"
- d. no response

10, 2, 4 "Which numeral tells the smallest number?" 0041

- a. child says, "Ten"
- \*b. child says, "Two"
- c. child says, "Four"
- d. no response

6, 9, 3 "Which numeral tells the greatest number?" 0042

- a. child says, "Six"
- \*b. child says, "Nine"
- c. child says, "Three"
- d. no response

6, 8, 9 "Which numeral tells the smallest number?" 0043

- \*a. child says, "Six"
- b. child says, "Eight"
- c. child says, "Nine"
- d. no response



4, 5, 3 "Which numeral tells the smallest number?"

0044

- a. child says, "Four."
- b. child says, "Five."
- \*c. child says, "Three."
- d. no response

THE CHILD WILL DEMONSTRATE HIS KNOWLEDGE OF THE ORDER OF NUMBERS  
1 - 100 BY BEING ABLE TO SELECT A GROUP OF NUMBERS WHICH IS IN THE  
CORRECT ORDER FROM AMONG SEVERAL GROUPS OF NUMBERS.

0069

Circle the group of numbers below which is in the right order  
from smallest to largest.

0045

- |    |    |    |    |    |    |     |    |
|----|----|----|----|----|----|-----|----|
| a. | 29 | b. | 79 | c. | 81 | *d. | 23 |
|    | 31 |    | 78 |    | 80 |     | 25 |
|    | 43 |    | 80 |    | 79 |     | 27 |
|    | 40 |    | 81 |    | 78 |     | 29 |

Circle the group of numbers below which is in the correct order  
from largest to smallest.

0046

- |     |    |    |    |    |    |    |    |
|-----|----|----|----|----|----|----|----|
| *a. | 99 | b. | 18 | c. | 16 | d. | 18 |
|     | 97 |    | 17 |    | 17 |    | 27 |
|     | 96 |    | 15 |    | 18 |    | 46 |
|     | 90 |    | 16 |    | 19 |    | 32 |

Circle the group of numbers which is NOT in the correct order.

0047

- |    |    |    |    |     |    |    |    |
|----|----|----|----|-----|----|----|----|
| a. | 87 | b. | 91 | *c. | 95 | d. | 74 |
|    | 88 |    | 92 |     | 96 |    | 76 |
|    | 89 |    | 93 |     | 98 |    | 78 |
|    | 90 |    | 94 |     | 97 |    | 80 |

**COMPARISON**

THE STUDENT DEMONSTRATES KNOWLEDGE OF THE CONCEPT OF COMPARISON BY COMPARING NUMBERS TO HUNDREDS PLACE USING THE SIGNS FOR COMPARISON.

0020

Directions: Find the one that is not correct and circle the letter.

- a. 65 > 60
- b. 38 > 33
- c. 49 < 59
- \*d. 82 < 75
- e. 51 > 43

0048

- a. 427 < 515
- \*b. 913 < 678
- c. 835 > 822
- d. 365 < 761
- e. 598 > 588

0049

THE STUDENT DEMONSTRATES KNOWLEDGE OF COMPARISON BY COMPARING EQUATIONS INVOLVING COMBINATIONS THROUGH 18 USING THE SIGNS FOR COMPARISON.

0021

Directions: Find the one that is not correct and circle the letter.

- a. 5 + 3 > 1 + 6
- b. 4 + 2 < 8 + 1
- c. 6 + 2 = 1 + 7
- \*d. 4 + 5 < 3 + 6
- e. 2 + 8 > 6 + 3

0050

- a. 18 - 9 = 16 - 7
- \*b. 9 + 4 < 7 + 5
- c. 14 - 5 > 12 - 6
- d. 15 - 9 < 8 + 9
- e. 6 + 6 > 11 - 6

0051

**FEWEST, MOST**

GIVEN THREE SETS OF DIFFERENT NUMBERS, THE CHILD WILL DEMONSTRATE HIS KNOWLEDGE OF THE MEANING OF "FEWEST" AND "MOST" BY CHOOSING A SET AT THE DIRECTION OF THE TEACHER.

0031

Directions: On the flannel board is a set of two, a set of four, and a set of five objects. The teacher says, \_\_\_\_\_

"Choose the set that has the fewest members."

0052

- \*a. child points at [  $\triangle$  ,  $\triangle$  ]
- b. child points at [ x x x x ]
- c. child points at [  $\star$   $\star$   $\star$   $\star$   $\star$  ]
- d. child points at none

On the same flannel board: "Choose the set that has the most members."

0053

- a. child points at [  $\triangle$   $\triangle$  ]
- b. child points at [ X X X X ]
- \*c. child points at [  $\star$   $\star$   $\star$   $\star$   $\star$  ]
- d. child points at none

PAIRS

GIVEN SIX ISOLATED OBJECTS, THE CHILD WILL DEMONSTRATE HIS KNOWLEDGE OF THE MEANING OF THE WORD "PAIR" BY MAKING A PAIR FROM THE SIX OBJECTS.

0032

Directions: The child is presented with a row of six objects on the floor in front of him. The teacher says, —

"Choose enough objects to make a pair."

0054

- a. child chooses three
- b. child chooses one
- \*c. child chooses two
- d. child chooses four
- e. child chooses five
- f. child chooses six
- g. no response

ROMAN



THE PUPIL CAN DEMONSTRATE KNOWLEDGE OF ROMAN NUMERALS BY IDENTIFY-  
ING ROMAN NUMERALS THRU XII.

0024

Directions: Sometimes we use Roman Numerals on a clock. Circle  
the letter by the Roman numeral that stands

for 4

0055

- a. I
- b. III
- \*c. IV
- d. II

for 8

0056

- \*a. VIII
- b. VI
- c. VII
- d. V

for 10

0057

- a. XI
- \*b. X
- c. IX
- d. XII

PROPERTIES

THE STUDENT CAN SHOW COMPREHENSION OF THE COMMUTATIVE PROPERTY OF ADDITION BY IDENTIFYING EXAMPLES.

0004

Which equation shows the commutative property of addition. This means the order of the numbers has been changed. Circle the letter.

0058

- a.  $3 + 2 = 5$
- \*b.  $3 + 2 = 2 + 3$
- c.  $(3 + 2) + 3 = 3 + (2 + 3)$
- d.  $5 = 3 + 2$

- a.  $(3 + 4) + 3 = 3 + (4 + 3)$
- b.  $3 + 4 = 7$
- \*c.  $3 + 4 = 4 + 3$
- d.  $7 = 3 + 4$

0059

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF THE ASSOCIATIVE PROPERTY BY IDENTIFYING EXAMPLES OF THE ASSOCIATIVE (OR GROUPING) PROPERTY OF ADDITION.

0005

Which equation shows the associative property of addition. This means the grouping has been changed. Circle the letter.

0060

- a.  $2 + 6 = 6 + 2$
- b.  $2 + 6 = 8$
- \*c.  $(2 + 6) + 1 = 2 + (6 + 1)$
- d.  $6 + 1 = 7$

- a.  $5 + 2 + 3 = 10$
- b.  $5 + (2 + 3) = 5 + (3 + 2)$
- c.  $3 + 2 + 5 = 10$
- \*d.  $5 + (2+3) = (5 + 2) + 3$

0061

GIVEN AN ARRAY THE STUDENT WILL APPLY HIS KNOWLEDGE OF THE DISTRIBUTIVE PROPERTY OF MULTIPLICATION BY PARTITIONING AN ARRAY INTO SPECIFIED PARTS.

0085

Which one of the following arrays shows the distributive property for a  $2 \times 5$  array?

0062

a.  $\begin{array}{ccccc} x & x & x & x & x \\ x & x & x & x & x \end{array}$

\*b.  $\begin{array}{ccccc} x & x & x & x & x \\ x & x & x & x & x \end{array}$

c.  $\begin{array}{cc} x & x \\ x & x \\ x & x \\ x & x \\ x & x \end{array}$

Which one of the following arrays does NOT show the distributive property for a  $3 \times 4$  array?

0063

\*a.  $\begin{array}{cccc} x & x & x & x \\ x & x & x & x \\ x & x & x & x \end{array}$

b.  $\begin{array}{ccc} x & x & x \\ x & x & x \\ x & x & x \\ x & x & x \end{array}$

c.  $\begin{array}{cccc} x & x & x & x \\ & & & \\ x & x & x & x \\ x & x & x & x \end{array}$

Which one of the following arrays shows the distributive property for a  $1 \times 4$  array?

0064

a.  $\begin{array}{cc} x & x \\ x & x \end{array}$

b.  $\begin{array}{c} x \\ x \\ x \\ x \end{array}$

Which one of the following arrays shows the distributive property for a  $5 \times 6$  array?

0065

\*a.  $\begin{array}{cc} x & x & x \\ x & x & x \\ x & x & x \\ x & x & x \\ x & x & x \end{array}$

b.  $\begin{array}{cc} x & x & x & x \\ x & x & x & x \\ x & x & x & x \\ x & x & x & x \\ x & x & x & x \\ x & x & x & x \end{array}$

c.  $\begin{array}{cccccc} x & x & x & x & x & x \\ x & x & x & x & x & x \\ x & x & x & x & x & x \\ x & x & x & x & x & x \\ x & x & x & x & x & x \end{array}$

Which one of the following arrays does NOT show the distributive property for a  $2 \times 3$  array?

0066

a.  $\begin{array}{cc} x & x & x \\ x & x & x \end{array}$

b.  $\begin{array}{cc} x & x & x \\ x & x & x \\ x & x & x \end{array}$

\*c.  $\begin{array}{cc} x & x & x \\ x & x & x \end{array}$

Which product shows the distributive property of the following array?

$\begin{array}{cc} x & x & x \\ x & x & x \end{array}$

0067

- a.  $(2 \times 2) + (1 \times 3)$   
 \*b.  $(2 \times 2) + (3 \times 2)$   
 c.  $2 \times 3$

Which product shows the distributive property of the following array?

0068

```

x x x x
x x x x
x x x x

```

- a.  $(1 \times 3) + (2 \times 3)$   
 b.  $4 \times 3$   
 \*c.  $(3 \times 3) + (1 \times 3)$

The product  $5 \times 6$  can be partitioned to show the distributive property in all of the following arrays except:

0069

a. 

```

x x x x x
x x x x x
x x x x x
x x x x x
x x x x x

```

\*b. 

```

x x x x x
x x x x x
x x x x x
x x x x x

```

c. 

```

x x x x x
x x x x x
x x x x x
x x x x x
x x x x x

```

The product  $2 \times 4$  can be partitioned to show the distributive property in all of the following arrays except:

0070

a. 

```

x x x x
x x x x

```

b. 

```

x x x x
x x x x

```

\*b. 

```

x x x x
x x x x
x x x x

```

The product  $5 \times 7$  can be partitioned to show the distributive property in all of the following arrays except:

0071

a.  $\begin{array}{cc} xxx & xxxx \\ xxx & xxxx \\ xxx & xxxx \\ xxx & xxxx \\ xxx & xxxx \end{array}$

b.  $\begin{array}{cc} xx & xxxxx \\ xx & xxxxx \\ xx & xxxxx \\ xx & xxxxx \\ xx & xxxxx \end{array}$

\*c.  $\begin{array}{cc} xxxx & xxxx \\ xxxx & xxxx \\ xxxx & xxxx \\ xxxx & xxxx \end{array}$

32

**FRACTIONS**

39



THE STUDENT CAN DEMONSTRATE AN UNDERSTANDING OF COMMON FRACTIONS BY  
 RECOGNIZING EXAMPLES OF THE FRACTIONAL NUMBERS  $1/2$ ,  $2/3$ ,  $1/4$  AND  
 $3/4$ . 0010

Directions: A set of 6: XXXXXX

$\frac{1}{2}$  of 6 is 0072

- a. 2
- \*b. 3
- c. 4
- d. 5

$1/3$  of 6 is 0073

- \*a. 2
- b. 3
- c. 4
- d. 5

$2/3$  of 6 is 0074

- a. 2
- b. 3
- \*c. 4
- d. 5

Directions: A set of 8: XXXXXXXX

$\frac{1}{2}$  of 8 is 0075

- a. 2
- b. 3
- \*c. 4
- d. 5
- e. 6

0076

 $\frac{1}{4}$  of 8 is

- \*a. 2
- b. 3
- c. 4
- d. 5
- e. 6

0077

 $\frac{3}{4}$  of 8 is

- a. 2
- b. 3
- c. 4
- d. 5
- \*e. 6

**MATHEMATICAL SYMBOLS**

THE CHILD WILL DEMONSTRATE HIS UNDERSTANDING OF THE MATHEMATICAL SYMBOLS +, -, x,  $\div$  BY BEING ABLE TO SUPPLY THE APPROPRIATE SYMBOL WHICH HAS BEEN DELETED FROM A SPECIFIED PROBLEM.

0067

Circle the symbol below which would give you the right answer to the problem  $7 \Delta 6 = 1$

0078

- a. +
- \*b. -
- c. x
- d.  $\div$

Circle the symbol which would belong in the problem  $8 \Delta 2 = 16$

0079

- \*a. x
- b. +
- c.  $\div$
- d. -

THE CHILD WILL DEMONSTRATE HIS UNDERSTANDING OF MATHEMATICAL SYMBOLS BY SUPPLYING THE APPROPRIATE SYMBOL WHICH HAS BEEN DELETED FROM A SPECIFIED PROBLEM.

0068

Circle the symbol below which would belong in the problem  $(3 + 7) + 3 \bigcirc 6 + 7$

0080

- a. >
- b. <
- \*c. =

The symbol > would appear in which group of problems below? Circle the correct group.

0081

a.  $7 \bigcirc 10$   
 $4 \bigcirc 6$   
 $5 \bigcirc 5$

b.  $10 \bigcirc 7$   
 $4 \bigcirc 4$   
 $7 \bigcirc 10$

\*c.  $9 \bigcirc 2$   
 $4 \bigcirc 1$   
 $1 \bigcirc 0$

The symbol  $\frac{\square}{\square}$  would appear in which group of problems below? Circle the correct group. 0082

- a.  $\frac{(3 + 7) + 2}{16}$      $\frac{(4 + 2) + 1}{(3 + 2) + 6}$   
 $\frac{(7 + 1) + 3}{11}$
- \*b.  $\frac{(2 + 1) + 2}{13}$      $\frac{14}{10 + (2 + 3)}$   
 $\frac{(2 + 2) + 1}{7 + 1}$
- c.  $\frac{(6 + 6) + 2}{13}$      $\frac{(2 + 6) + 6}{24}$   
 $\frac{18}{16}$

**ADDITION AND SUBTRACTION OF WHOLE NUMBERS**

39

**ADDITION**

46

THE STUDENT CAN DEMONSTRATE AN UNDERSTANDING OF THE PROCESS OF SUMMING BY SOLVING COMBINATIONS AND EQUATIONS WHOSE SUMS ARE LESS THAN TEN.

0001

Directions: Circle the answers.

$$\begin{array}{r} 2 \\ +3 \\ \hline \end{array}$$

A	B	C	D	E
3	4	(5)	6	7

0083

$$\begin{array}{r} 4 \\ +3 \\ \hline \end{array}$$

6	(7)	8	9	10
---	-----	---	---	----

0084

$$\begin{array}{r} 7 \\ +2 \\ \hline \end{array}$$

6	7	8	(9)	10
---	---	---	-----	----

0085

$$\begin{array}{r} 4 \\ +4 \\ \hline \end{array}$$

5	6	7	(8)	9
---	---	---	-----	---

0086

$$\begin{array}{r} 2 \\ +8 \\ \hline \end{array}$$

6	7	8	9	(10)
---	---	---	---	------

0087

$$\begin{array}{r} 5 \\ +1 \\ \hline \end{array}$$

4	5	(6)	7	8
---	---	-----	---	---

0088

Directions: Circle the Answers.

$$1 + 2 = 1$$

A	B	C	D
2	(3)	4	5

0089



$7 + 3 = 6 \quad 7 \quad 8 \quad 9 \quad (10)$ 
0090

$2 + 5 = 4 \quad 5 \quad 6 \quad (7) \quad 8$ 
0091

$6 + 2 = 6 \quad 7 \quad (8) \quad 9 \quad 10$ 
0092

$3 + 3 = 5 \quad (6) \quad 7 \quad 8 \quad 9$ 
0093

$5 + 4 = 6 \quad 7 \quad 8 \quad (9) \quad 10$ 
0094

THE STUDENT CAN DEMONSTRATE AN UNDERSTANDING OF PLACEHOLDERS BY SOLVING PLACEHOLDER EQUATIONS WITH ADDEND AND SUM PLACEHOLDERS. 0002

Directions: Circle the answers.

	A	B	C	D	E	
$2 + 2 = \square$	1	2	3	(4)	5	0095

$9 + 1 = \square$	6	7	8	9	(10)	0096
-------------------	---	---	---	---	------	------

$3 + 5 = \square$	5	6	7	(8)	9	0097
-------------------	---	---	---	-----	---	------

$4 + 2 = \square$	4	5	(6)	7	8	0098
-------------------	---	---	-----	---	---	------

$6 + 3 = \square$	6	7	8	(9)	10	0099
-------------------	---	---	---	-----	----	------

$1 + 6 = \square$

5 6 (7) 8 9

0100

Directions:

Circle the answers.

$4 + \square = 5$

A	B	C	D	E
(1)	2	3	4	5

0101

$6 + \square = 10$

2 3 (4) 5 6

0102

$1 + \square = 8$

6 (7) 8 9 10

0103

$8 + \square = 9$

(1) 2 3 4 5

0104

$1 + \square = 10$

6 7 8 (9) 10

0105

$2 + \square = 6$

3 (4) 5 6 7

0106

Directions:

Circle the answers.

$\square + 5 = 10$

A	B	C	D	E
3	4	(5)	6	7

0107

$\square + 1 = 3$

1 (2) 3 4 5

0108

$\square + 4 = 7$

2 (3) 4 5 6

0109

$$\square + 2 = 10 \quad 5 \quad 6 \quad 7 \quad (8) \quad 9$$

0110

$$\square + 1 = 4 \quad 2 \quad (3) \quad 4 \quad 5 \quad 6$$

0111

$$\square + 8 = 9 \quad (1) \quad 2 \quad 3 \quad 4 \quad 5$$

0112

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF THE ADDITION PROCESS BY SOLVING ADDITION ALGORITHMS WITH ADDEND AND SUM PLACEHOLDERS.

0003

Directions:

Circle the answer.

$$\begin{array}{r} 4 \\ \square \\ +6 \\ \hline \square \end{array}$$

A B C D E  
6 7 8 9 (10)

0113

$$\begin{array}{r} 1 \\ \square \\ +3 \\ \hline \square \end{array}$$

3 (4) 5 6 7

0114

$$\begin{array}{r} 2 \\ \square \\ +7 \\ \hline \square \end{array}$$

5 6 7 8 (9)

0115

$$\begin{array}{r} 1 \\ \square \\ +1 \\ \hline \square \end{array}$$

1 (2) 3 4 5

0116

$$\begin{array}{r} 5 \\ \square \\ +3 \\ \hline \square \end{array}$$

6 7 (8) 9 10

0117

$$\frac{\square}{6} + \frac{5}{6}$$

(1) 2 3 4 5

0118

$$\frac{\square}{8} + \frac{1}{8}$$

6 (7) 8 9 10

0119

$$\frac{\square}{9} + \frac{6}{9}$$

2 (3) 4 5 6

0120

$$\frac{\square}{5} + \frac{2}{5}$$

1 2 (3) 4 5

0121

$$\frac{\square}{5} + \frac{4}{5}$$

(1) 2 3 4 5

0122

$$\frac{3}{10} + \frac{\square}{10}$$

4 5 6 (7) 8

0123

$$\frac{5}{7} + \frac{\square}{7}$$

1 (2) 3 4 5

0124

$$\frac{4}{9} + \frac{\square}{9}$$

3 4 (5) 6 7

0125

$$\begin{array}{r} 6 \\ + \square \\ \hline 7 \end{array}$$

(1) 2 3 4 5

0126

$$\begin{array}{r} 2 \\ + \square \\ \hline 8 \end{array}$$

5 (6) 7 8 9

0127

THE STUDENT CAN DEMONSTRATE AN UNDERSTANDING OF THE ADDITION PROCESS BY SOLVING ADDITION PROBLEMS INVOLVING SUMS BETWEEN 11 AND 18 BY MAKING THE SECOND ADDEND A DIFFERENT NUMERAL. HE THEN ADDS THE AMOUNT NEEDED TO MAKE 10 TO THE FIRST ADDEND.

0011

Directions: Choose the letter next to the missing number.

$$5 + 7 = 5 + (5 + \square) =$$

0128

$$(5 + 5) + 2 = 10 + 2 = 12$$

- a. 5
- \*b. 2
- c. 10
- d. 7

$$9 + 9 = 9 + (\square + 8) =$$

0129

$$(9 + 1) + 8 = 10 + 8 = 18$$

- a. 10
- b. 8
- c. 9
- \*d. 1

$$8 + 6 = 8 + (2 + 4) =$$

0130

$$(8 + \square) + 4 = 10 + 4 = 14$$

- \*a. 2
- b. 8
- c. 4
- d. 6

$$7 + 9 = 7 + (3 + 6) =$$

0131

$$(7 + 3) + \square = 10 + 6 = 16$$

- a. 3
- b. 9
- \*c. 6
- d. 7

THE STUDENT CAN DEMONSTRATE AN UNDERSTANDING OF THE ADDITION PROCESS BY SOLVING ADDITION PROBLEMS INVOLVING CARRYING AND USING THE THREE-STEP APPROACH.

0013

1. FIND THE NUMBER OF ONES WHICH CAN BE ADDED TO TENS TO GIVE THE SUM.
2. GROUP THE TENS.
3. TENS ADDED TO ONES.

Directions: Choose the letter next to the missing number.

$$\begin{array}{r} 20 + 5 \\ +60 + 8 \\ \hline 80 + 13 = \underline{\hspace{2cm}} \end{array}$$

$$\begin{array}{r} 25 \\ +68 \\ \hline \end{array}$$

0132

- a. 84
- \*b. 93
- c. 12

$$\begin{array}{r} 40 + 7 \\ +20 + 4 \\ \hline 60 + 11 = \underline{\hspace{2cm}} \end{array}$$

$$\begin{array}{r} 47 \\ +24 \\ \hline \end{array}$$

0133

- a. 8
- b. 62
- \*c. 71

WHEN PRESENTED WITH TWO SETS OF OBJECTS WHICH WHEN ADDED TOGETHER EQUAL 5 OR LESS, AND ASKED TO JOIN THE TWO SETS TO MAKE ONE NEW SET, THE CHILD WILL APPLY HIS UNDERSTANDING OF ADDITION BY CHOOSING A NUMERAL TO REPRESENT THE NUMBER IN THE NEW SET.

0054

Directions: The teacher will make two different sets on the flannel-board. The child will be asked to name the set and then choose a numeral 1 through 5, to tell the sum of the two sets.

The teacher makes two sets, [  $\infty$   $\infty$  ] and [  $\triangle$   $\triangle$   $\triangle$  ] and asks a child to tell the number of each set. Then the teacher says, "Choose a numeral that tells how many members are in the new set, when we join the two sets together."

0134

- a. Child chooses 1
- b. Child chooses 2
- c. Child chooses 3
- d. Child chooses 4
- \*e. Child chooses 5
- f. no response

The teacher makes two sets: [  $\circ$   $\circ$   $\circ$  ] and [  $\star$  ]. "Choose a numeral that tells how many members are in the new set when you join them."

0135

- a. Child chooses 1
- b. Child chooses 2
- c. Child chooses 3
- \*d. Child chooses 4
- e. Child chooses 5
- f. no response

The teacher makes two sets [ ] and [  $\circ$   $\circ$   $\circ$   $\circ$   $\circ$  ]. "Choose the numeral to name the new set."

0136

- a. Child chooses 1
- b. Child chooses 2
- c. Child chooses 3
- d. Child chooses 4
- \*e. Child chooses 5
- f. no response

The teacher makes two sets: [□ □] and [○]. "Choose the numeral that names the new set." 0137

- a. Child chooses 1
- b. Child chooses 2
- \*c. Child chooses 3
- d. Child chooses 4
- e. Child chooses 5
- f. no response

The teacher makes two sets: [△] and [□]. "Choose the numeral that names the new set." 0138

- a. Child chooses 1
- \*b. Child chooses 2
- c. Child chooses 3
- d. Child chooses 4
- e. Child chooses 5
- f. no response

The teacher makes two new sets: [ ] and [♀♀]. "Choose the numeral that names the new set." 0139

- a. Child chooses 1
- \*b. Child chooses 2
- c. Child chooses 3
- d. Child chooses 4
- e. Child chooses 5
- f. no response

THE CHILD WILL DEMONSTRATE HIS UNDERSTANDING OF CARRYING INTO THE NEXT COLUMN IN ADDITION BY BEING ABLE TO CHOOSE THE CORRECT COLUMN IN WHICH A NUMBER HAS TO BE CARRIED IN A GIVEN PROBLEM. 0070

In the problem 
$$\begin{array}{r} 213 \\ +327 \\ \hline 540 \end{array}$$
 I had too many ones in the ones column. Circle the name of the column into which I would carry the extra group of ones. 0140

- a. the ones column
- \*b. the tens column
- c. the hundreds column



In the problem 
$$\begin{array}{r} 24,912 \\ +14,327 \\ \hline 39,239 \end{array}$$
 I had to carry from the \_\_\_\_\_ column 0141  
into the \_\_\_\_\_ column. Circle the correct paired choice below.

- a. ones to tens
- b. tens to hundreds
- \*c. hundreds to thousands
- d. thousands to ten thousands

THE CHILD WILL DEMONSTRATE HIS UNDERSTANDING OF CARRYING INTO THE NEXT COLUMN IN ADDITION BY BEING ABLE TO CHOOSE THE PROBLEM IN WHICH A MISTAKE IN CARRYING HAS BEEN MADE FROM AMONG A GROUP OF PROBLEMS. 0071

Circle the problem below in which there is a mistake in carrying. 0142

a. 
$$\begin{array}{r} 1,796 \\ + 279 \\ \hline 2,075 \end{array}$$

\*b. 
$$\begin{array}{r} 2,712 \\ +1,219 \\ \hline 4,021 \end{array}$$

c. 
$$\begin{array}{r} 672 \\ +1,000 \\ \hline 1,672 \end{array}$$

THE CHILD WILL DEMONSTRATE HIS KNOWLEDGE THAT MANY DIFFERENT COMBINATIONS OF NUMERALS ADDED TOGETHER CAN EQUAL THE SAME SPECIFIC NUMBER BY SELECTING A COMBINATION OF NUMERALS THAT WOULD BE THE SAME AS A SPECIFIED NUMBER. 0078

4 + 4 stands for the same numeral as \_\_\_\_\_. Circle the correct answer. 0143

- a. 3 + 2
- \*b. 2 + 6
- c. 4 + 5

Circle the group of numerals below which is the same as the numeral 9. 0144

a. 
$$\begin{array}{l} 4 + 2 + 2 \\ 6 + 2 \\ 9 + 1 \end{array}$$

b. 
$$\begin{array}{l} 6 + 1 + 1 \\ 3 + 2 + 1 \\ 5 + 2 \end{array}$$

\*c. 
$$\begin{array}{l} 3 + 3 + 3 \\ 7 + 2 \\ 8 + 1 \end{array}$$

1000  
1000  
1000  
1000  
1000

1000

**SUBTRACTION**

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF THE SUBTRACTION PROCESS BY SOLVING SUBTRACTION COMBINATIONS AND EQUATIONS WHOSE DIFFERENCES ARE LESS THAN TEN.

0014

Directions: Circle the answers.

$$\begin{array}{r} 5 \\ \square \\ \square \end{array}$$

1 (2) 3 4 5

0145

$$\begin{array}{r} 7 \\ \square \\ \square \end{array}$$

1 2 3 (4) 5

0146

$$\begin{array}{r} 9 \\ \square \\ \square \end{array}$$

4 5 6 (7) 8

0147

$$\begin{array}{r} 8 \\ \square \\ \square \end{array}$$

2 3 (4) 5 6

0148

$$\begin{array}{r} 10 \\ \square \\ \square \end{array}$$

(2) 3 4 5 6

0149

$$\begin{array}{r} 6 \\ \square \\ \square \end{array}$$

1 2 3 4 (5)

0150

$$3 - 2 = \square \quad (1) 2 \quad 3 \quad 4 \quad 5$$

0151

$$10 - 3 = \square \quad 5 \quad 6 \quad (7) \quad 8 \quad 9$$

0152

$7 - 5 = \square$  1 (2) 3 4 5

0153

$8 - 2 = \square$  3 4 5 (6) 7

0154

$6 - 3 = \square$  1 2 (3) 4 5

0155

$9 - 4 = \square$  3 4 (5) 6 7

0156

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF THE SUBTRACTION PROCESS BY SOLVING SUBTRACTION EQUATIONS WHOSE DIFFERENCES ARE LESS THAN TEN WITH PLACEHOLDERS IN ALL POSITIONS.

0015

Directions: Circle the answers.

$4 - 2 = \square$  1 (2) 3 4 5

0157

$10 - 1 = \square$  5 6 7 8 (9)

0158

$8 - 5 = \square$  1 2 (3) 4 5

0159

$6 - 2 = \square$  1 2 3 (4) 5

0160

$9 - 3 = \square$  4 5 (6) 7 8

0161

$7 - 6 = \square$  (1) 2 3 4 5

0162

$5 - \square = 4$	(1) 2 3 4 5	0163
$10 - \square = 6$	1 2 3 (4) 5	0164
$8 - \square = 1$	3 4 5 6 (7)	0165
$9 - \square = 8$	(1) 2 3 4 5	0166
$10 - \square = 1$	5 6 7 8 (9)	0167
$6 - \square = 2$	1 2 3 (4) 5	0168
$\square - 5 = 5$	6 7 8 9 (10)	0169
$\square - 1 = 2$	1 2 (3) 4 5	0170
$\square - 4 = 3$	6 (7) 8 9 10	0171
$\square - 8 = 1$	6 7 8 (9) 10	0172
$\square - 2 = 3$	6 7 8 9 (10)	0173
$\square - 1 = 3$	1 2 3 (4) 5	0174

THE STUDENT CAN DEMONSTRATE UNDERSTANDING OF THE SUBTRACTION PROCESS BY SOLVING SUBTRACTION ALGORITHMS WHOSE DIFFERENCES ARE LESS THAN TEN WITH PLACEHOLDERS IN ALL POSITIONS.

0016

Directions:

Circle the answers.

$$\begin{array}{r} 10 \\ \square \overline{) 6} \\ \square \end{array}$$

- 2 3 (4) 5 6

0175

$$\begin{array}{r} 4 \\ \square \overline{) 3} \\ \square \end{array}$$

- (1) 2 3 4 5

0176

$$\begin{array}{r} 9 \\ \square \overline{) 4} \\ \square \end{array}$$

- 1 (2) 3 4 5

0177

$$\begin{array}{r} 2 \\ \square \overline{) 1} \\ \square \end{array}$$

- (1) 2 3 4 5

0178

$$\begin{array}{r} 8 \\ \square \overline{) 3} \\ \square \end{array}$$

- 2 3 4 (5) 6

0179

$$\begin{array}{r} 1 \\ \square \overline{) 5} \\ \square \end{array}$$

- 5 (6) 7 8 9

0180

$$\begin{array}{r} 3 \\ \square \overline{) 6} \\ \square \end{array}$$

- 6 7 8 (9) 10

0181

$$\begin{array}{r} 1 \\ \square \overline{) 7} \\ \square \end{array}$$

- 6 7 (8) 9 10

0182

$$\begin{array}{r} \square \\ -2 \\ \hline 3 \end{array}$$

4 (5) 6 7 8

0183

$$\begin{array}{r} \square \\ -4 \\ \hline 1 \end{array}$$

4 (5) 6 7 8

0184

$$\begin{array}{r} 10 \\ -\square \\ \hline 3 \end{array}$$

4 5 6 (7) 8

0185

$$\begin{array}{r} 7 \\ -\square \\ \hline 5 \end{array}$$

1 (2) 3 4 5

0186

$$\begin{array}{r} 9 \\ -\square \\ \hline 4 \end{array}$$

3 4 (5) 6 7

0187

$$\begin{array}{r} 7 \\ -\square \\ \hline 6 \end{array}$$

(1) 2 3 4 5

0188

$$\begin{array}{r} 8 \\ -\square \\ \hline 2 \end{array}$$

2 3 4 5 (6)

0189

THE CHILD WILL DEMONSTRATE HIS UNDERSTANDING OF BORROWING BY BEING ABLE TO SELECT THE CORRECT COLUMN FROM WHICH A NUMBER HAS TO BE BORROWED IN A SPECIFIED PROBLEM.

0072

In the problem  $\begin{array}{r} 902 \\ -311 \\ \hline 591 \end{array}$  I had to borrow from which column? Circle the correct answer.

0190

- a. the ones column
- b. the tens column
- \*c. the hundreds column

THE CHILD WILL DEMONSTRATE HIS UNDERSTANDING OF BORROWING BY BEING ABLE TO SELECT THE PROBLEM IN WHICH A MISTAKE IN BORROWING HAD BEEN MADE FROM AMONG A GROUP OF CORRECT PROBLEMS.

0073

Circle the problem below in which there is a mistake in borrowing.

0191

$$\begin{array}{r} *a. \quad 00,032 \\ - \quad 920 \\ \hline 00,112 \end{array}$$

$$\begin{array}{r} b. \quad 7,312 \\ - \quad 92 \\ \hline 7,220 \end{array}$$

$$\begin{array}{r} c. \quad 8,416 \\ - 2,210 \\ \hline 6,206 \end{array}$$

Circle the problem below in which there is a mistake in borrowing.

0192

$$\begin{array}{r} a. \quad 6,198 \\ - 3,212 \\ \hline 2,986 \end{array}$$

$$\begin{array}{r} *b. \quad 7,316 \\ - 2,435 \\ \hline 3,971 \end{array}$$

$$\begin{array}{r} c. \quad 1,089 \\ - \quad 999 \\ \hline 0,090 \end{array}$$



**ADDITION AND SUBTRACTION**

THE STUDENT DEMONSTRATES UNDERSTANDING OF THE RELATION BETWEEN ADDITION AND SUBTRACTION BY RECOGNIZING RELATED ADDITION AND SUBTRACTION COMBINATIONS.

0022

Here are three equations.

$$\begin{aligned} 3 + 5 &= 8 \\ 5 + 3 &= 8 \\ 8 - 3 &= 5 \end{aligned}$$

Which one of these equations is like the above three?

0193

- a.  $8 - 4 = 4$
- \*b.  $8 - 5 = 3$
- c.  $6 + 2 = 8$
- d.  $8 - 6 = 2$

Here are three equations.

$$\begin{aligned} 10 - 4 &= 6 \\ 4 + 6 &= 10 \\ 10 - 6 &= 4 \end{aligned}$$

Which one of these is like the above three?

0194

- a.  $10 - 3 = 7$
- b.  $5 + 5 = 10$
- c.  $10 - 5 = 5$
- \*d.  $6 + 4 = 10$

Here are three equations.

$$\begin{aligned} 14 - 8 &= 6 \\ 14 - 6 &= 8 \\ 6 + 8 &= 14 \end{aligned}$$

Which one of these is like the above three?

0195

- a.  $9 + 5 = 14$
- b.  $14 - 7 = 7$
- \*c.  $8 + 6 = 14$
- d.  $7 + 7 = 14$

THE PUPIL CAN DEMONSTRATE UNDERSTANDING OF THE ADDITION AND SUBTRACTION PROCESSES BY USING ADDITION AND SUBTRACTION TO FIND A FINAL MISSING NUMBER.

0023

Directions: Find the missing numbers. Circle the letter beside the last missing number.

$$8 + 8 \underline{\quad} - 3 \underline{\quad} + 2 \underline{\quad} - 9 \underline{\quad} + 4 = \underline{\quad}$$

0196

- a. 8
- b. 9
- \*c. 10
- d. 11
- e. 12

$$3 + 7 \underline{\quad} + 4 \underline{\quad} - 6 \underline{\quad} + 10 \underline{\quad} - 9 = \underline{\quad}$$

0197

- a. 6
- b. 7
- c. 8
- \*d. 9
- e. 10

$$12 + 33 \underline{\quad} + 54 \underline{\quad} - 76 \underline{\quad} - 11 \underline{\quad} + 76 = \underline{\quad}$$

0198

- a. 44
- b. 55
- c. 66
- d. 77
- \*e. 88

$$6 + 19 \underline{\quad} + 18 \underline{\quad} - 14 \underline{\quad} + 36 = \underline{\quad}$$

0199

- a. 63
- \*b. 65
- c. 72
- d. 86
- e. 55

THE STUDENT CAN SHOW COMPREHENSION OF THE ADDITION AND SUBTRACTION PROCESSES BY SOLVING ADDITION AND RELATED SUBTRACTION ALGORITHMS THRU 19 INVOLVING A TWO-DIGIT ADDEND AND A ONE-DIGIT ADDEND. 0025

Directions: Addition. Circle the answer.

$\begin{array}{r} 11 \\ + 4 \\ \hline \end{array}$	*15	16	17	18	19	0200
--	-----	----	----	----	----	------

$\begin{array}{r} 14 \\ + 2 \\ \hline \end{array}$	15	*16	17	18	19	0201
--	----	-----	----	----	----	------

$\begin{array}{r} 17 \\ + 2 \\ \hline \end{array}$	15	16	17	18	*19	0202
--	----	----	----	----	-----	------

$\begin{array}{r} 12 \\ + 6 \\ \hline \end{array}$	15	16	17	*18	19	0203
--	----	----	----	-----	----	------

$\begin{array}{r} 15 \\ + 2 \\ \hline \end{array}$	15	16	*17	18	19	0204
--	----	----	-----	----	----	------

$\begin{array}{r} 12 \\ + 7 \\ \hline \end{array}$	15	16	17	18	*19	0205
--	----	----	----	----	-----	------

$\begin{array}{r} 13 \\ + 5 \\ \hline \end{array}$	15	16	17	*18	19	0206
--	----	----	----	-----	----	------

$\begin{array}{r} 12 \\ + 3 \\ \hline \end{array}$	*15	16	17	18	19	0207
--	-----	----	----	----	----	------

$$\begin{array}{r} 11 \\ + 6 \\ \hline \end{array}$$

15 16 \*17 18 19

0208

$$\begin{array}{r} 14 \\ + 4 \\ \hline \end{array}$$

15 16 17 \*18 19

0209

Subtraction. Circle the answer.

$$\begin{array}{r} 19 \\ - 8 \\ \hline \end{array}$$

\*11 12 13 14 15

0210

$$\begin{array}{r} 16 \\ - 3 \\ \hline \end{array}$$

11 12 \*13 14 15

0211

$$\begin{array}{r} 14 \\ - 3 \\ \hline \end{array}$$

\*11 12 13 14 15

0212

$$\begin{array}{r} 18 \\ - 3 \\ \hline \end{array}$$

11 12 13 14 \*15

0213

$$\begin{array}{r} 17 \\ - 5 \\ \hline \end{array}$$

11 \*12 13 14 15

0214

$$\begin{array}{r} 19 \\ - 4 \\ \hline \end{array}$$

11 12 13 14 \*15

0215

$$\begin{array}{r} 17 \\ - 3 \\ \hline \end{array}$$

11 12 13 \*14 15

0216

$\begin{array}{r} 18 \\ - 7 \\ \hline \end{array}$	*11	12	13	14	15	0217
--	-----	----	----	----	----	------

$\begin{array}{r} 16 \\ - 4 \\ \hline \end{array}$	11	*12	13	14	15	0218
--	----	-----	----	----	----	------

$\begin{array}{r} 19 \\ - 6 \\ \hline \end{array}$	11	12	*13	14	15	0219
--	----	----	-----	----	----	------

THE STUDENT DEMONSTRATES UNDERSTANDING OF THE ADDITION AND SUBTRACTION PROCESSES BY SOLVING STORY PROBLEMS INVOLVING ADDITION AND SUBTRACTION COMBINATIONS THRU 19 WITH A TWO DIGIT ADDEND AND A ONE DIGIT ADDEND. 0027

Directions: The second grade likes to play games. Here are the scores for one game. Add the scores and circle the letter that shows who won.

Team 1

1  
2  
4  
2  
3  
4  
1  
2

---

Team 2

4  
1  
3  
1  
4  
2  
3  
1

---

- a. Team 1
- \*b. A tie
- c. Team 2

0220

The next day the class played another game. It had three teams.  
Who won?

<u>Team 1</u>	<u>Team 2</u>	<u>Team 3</u>
3	2	4
5	3	1
1	5	2
4	3	4
3	2	3
<u>1</u>	<u>3</u>	<u>5</u>

- a. Team 1
- b. A tie
- c. Team 2
- \*d. Team 3

0221

THE STUDENT DEMONSTRATES UNDERSTANDING OF ADDITION AND SUBTRACTION PROCESSES BY SOLVING STORY PROBLEMS INVOLVING TWO DIGIT ADDITION AND SUBTRACTION COMBINATIONS WITH CARRYING.

0026

Directions: Read the story problems and circle the letter with the correct answer.

Jack's family drove to the lake on Saturday. They drove 135 miles on the way to the lake and 139 miles on the way back. How many miles did they drive both ways?

0222

- a. 264
- b. 374
- \*c. 274
- d. 263

The family went for a boat ride. They could be out on the lake for 60 minutes. After 35 minutes how many more minutes did they have to stay out?

0223

- a. 35
- b. 15
- c. 95
- \*d. 25

Jack's mother bought some things to take home. She bought apples for 55¢ and some corn for 37¢. How much did she spend?

0224

- a. 82¢
- \*b. 92¢
- c. 93¢
- d. 72¢

Jack's sister bought some candy to eat on the way home. She had 50¢. She spent 36¢. How much did she have left?

0225

- \*a. 14¢
- b. 24¢
- c. 86¢
- d. 15¢

THE PUPIL DEMONSTRATES UNDERSTANDING OF SUBTRACTION BY SOLVING STORY PROBLEMS INVOLVING 2 DIGIT ADDITION AND SUBTRACTION COMBINATIONS WITHOUT CARRYING OR BORROWING.

0030

Directions: Work the story problems and circle the letter with the answer.

One second grade has many good books. There are 32 readers and 65 trade books. How many books are in their library?

0226

- a. 33
- b. 87
- \*c. 97
- d. 96

By spring one boy read 78 books. His friend read 53. How many more books did one boy read?

0227

- a. 35
- b. 26
- c. 14
- \*d. 25



One girl read 85 books. Her friend read 41 books. How many fewer books did her friend read?

0228

- a. 53
- \*b. 44
- c. 54
- d. 45

One book was well liked. 23 children read it once. 16 children read it again. How many times was the book read?

0229

- \*a. 39
- b. 49
- c. 38
- d. 57

**MULTIPLICATION AND DIVISION OF WHOLE NUMBERS**

**MULTIPLICATION**

THE PUPIL CAN SHOW UNDERSTANDING OF MULTIPLICATION FACTS BY COMPARING MULTIPLICATION FACTS THROUGH 5 USING THE SIGNS FOR COMPARISON.

0026

Directions: The sign is missing. Circle the sign that is missing. Do not write in the problem.

> greater than

< less than

= equals

$$2 + 2 + 2 \quad \bigcirc \quad 3 \times 2 \quad =^* \quad > \quad <$$

0230

$$4 \times 4 \quad \bigcirc \quad 3 \times 3 \quad =^* \quad > \quad <$$

0231

$$2 \times 2 \quad \bigcirc \quad 1 \times 5 \quad =^* \quad > \quad <$$

0232

$$2 \times 4 \quad \bigcirc \quad 4 \times 2 \quad =^* \quad > \quad <$$

0233

$$1 + 1 + 1 + 1 \quad \bigcirc \quad 3 \times 1 \quad =^* \quad > \quad <$$

0234

$$5 \times 5 \quad \bigcirc \quad 25 \quad =^* \quad > \quad <$$

0235

$$4 \times 3 \quad \bigcirc \quad 3 \times 4 \quad =^* \quad > \quad <$$

0236

$$2 \times 3 \quad \bigcirc \quad 5 \times 1 \quad =^* \quad > \quad <$$

0237

$$5 \times 2 \quad \bigcirc \quad 5 \times 3 \quad =^* \quad > \quad <$$

0238

$$5 \times 4 \quad \bigcirc \quad 4 \times 5 \quad =^* \quad > \quad <$$

0239

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF AN ARRAY BY SELECTING ITS DEFINITION. 0079

What is an array? 0240

- a. A scattered arrangement of like objects.
- \*b. An orderly arrangement of like objects.
- c. A random arrangement of like objects.

What is the number of an array called? 0241




- \*a. The product
- b. The sum
- c. The difference

What kind of objects must an array have? 0242

- a. All different objects
- \*b. All the same objects
- c. It doesn't matter

THE STUDENT WILL BE ABLE TO DEMONSTRATE HIS KNOWLEDGE OF AN ARRAY BY IDENTIFYING ARRANGEMENTS OF ARRAYS. 0080

Which one of the following arrangements is an array? 0243

- a. 
- b. 
- \*c. 

Which one of the following arrangements is not an array?

0244

- \*a.  $\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$
- b.  $\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$
- c.  $\cdot \cdot \cdot \cdot \cdot \cdot$

Which one of the following arrangements shows an array?

0245

- a.  $\begin{matrix} \text{oxo} \\ \text{oxo} \end{matrix}$
- \*b.  $\begin{matrix} \text{XXXX} \\ \text{XXXX} \end{matrix}$
- c.  $\begin{matrix} \text{OZXO} \\ \text{XOZX} \end{matrix}$

Which one of the following is NOT an example of an array?

0246

- \*a. The apples on a tree
- b. The rows of desk
- c. The tiles on the floor

THE STUDENT WILL BE ABLE TO DEMONSTRATE HIS COMPREHENSION OF AN ARRAY BY TRANSLATING AN ARRAY INTO TWO FORMS FOR THE PRODUCT.

0081

What are the 2 forms for the product of the following array?

0247

$$\begin{matrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{matrix}$$

- a.  $3 \times 6$  and  $6 \times 3$
- \*b.  $2 \times 3$  and  $3 \times 2$
- c.  $2 \times 3$  and  $6 \times 1$

Which alternative is not a form for the following array?

$$\begin{matrix} \circ & \circ & \circ & \circ & \circ \\ \circ & \circ & \circ & \circ & \circ \end{matrix}$$

0248

- a.  $2 \times 5$
- b.  $5 \times 2$
- \*c. 10

What are the 2 forms for the product of 6 rows of desks with 4 desks in each row?

0249

- \*a.  $6 \times 4$  or  $4 \times 6$
- b.  $2 \times 6$  or  $6 \times 2$
- c.  $2 \times 6$  or  $6 \times 4$

What are the 2 forms for the product of the following array?

0250

```

. . . .
. . . .
. . . .

```

- a.  $3 \times 5$  and  $5 \times 3$
- b.  $3 \times 3$  and  $4 \times 4$
- \*c.  $3 \times 4$  and  $4 \times 3$

THE CHILD WILL APPLY HIS KNOWLEDGE OF AN ARRAY BY CORRECTLY IDENTIFYING THE PRODUCT OF A GIVEN ARRAY.

0082

What is the product of the following array?

```

XXX
XXX

```

0251

- \*a.  $2 \times 3$  or  $3 \times 2$
- b.  $3 \times 5$  or  $5 \times 0$
- c.  $2 \times 4$  or  $4 \times 2$

What is the product of the following array?

```

XXXXX

```

0252

- a.  $1 \times 5$  or  $5 \times 0$
- \*b.  $1 \times 5$  or  $5 \times 1$
- c.  $1 \times 5$  or  $0 \times 5$

Which array would show the product  $6 \times 2$ ?

0253

- \*a. XXXXXX  
XXXXXX
- b. 12
- c. XXXXX  
XXXXX

Which alternative is not the product of the following array?

0254

00  
00  
00

- a.  $2 \times 3$
- b.  $3 \times 2$
- \*c.  $3 \times 1$

Which one of the following products is the same as a  $2 \times 4$  array?

0255

- \*a.  $8 \times 1$
- b.  $3 \times 2$
- c.  $4 \times 3$

Which one of the following products is the same as a  $6 \times 2$  array?

0256

- a. 15
- \*b. 12
- c. 62

Which one of the following is the product and array of the number 6?

0257

- a.  $6 \times 0$     XXXXXX
- b.  $6 \times 1$     XXXXXX
- \*c.  $3 \times 2$     XXX  
              XXX

Which one of the following is not the product and array of the number 4?

0258

- a.  $1 \times 4$     . . . .
- b.  $2 \times 2$     . .  
              . .
- \*c.  $4 \times 0$     . . . .



Which one of the following is not the product and array of the number 2?

0259

- a.  $1 \times 2$  . .
- \*b.  $2 \times 0$  :
- c.  $2 \times 1$  . .

THE STUDENT WILL APPLY HIS KNOWLEDGE OF AN ARRAY BY IDENTIFYING FACTORS IN A GIVEN ARRAY.

0083

What are the factors of the following array?

XXX  
XXX

0260

- a. 2 and 4
- \*b. 3 and 2
- c. 3 and 1

What are the factors of the following array?

☆☆☆☆  
☆☆☆☆

0261

- \*a. 4 and 2
- b. 2 and 5
- c. 4 and 3

Which one of these alternatives is not a factor of the following array?

88888  
88888

0262

- a. 2
- b. 5
- \*c. 10

Which one of these alternatives is not a factor of the following array?

XXXXXX  
XXXXXX  
XXXXXX

0263

- a. 3
- b. 6
- \*c. 18

What are the factors of the following array?

☆☆☆  
☆☆☆  
☆☆☆

0264

- \*a. 3 and 3
- b. 9 and 1
- c. 3 x 3

What are the factors of the following array?

ZZZZZZ

0265

- a. 6 and 7
- \*b. 6 and 1
- c. 6 and 0

Which array would contain the factors 6 and 2?

0266

- a. XXXXXX
- b. XXX  
XXX
- \*c. XXXXXX  
XXXXXX

Which array would not contain the factors 5 and 2?

0267

- a. . . . .  
. . . . .
- b. . .  
. . .  
. . .
- \*c. . . . .

What are the factors of the following array?

XXX  
XXX

0268

- \*a. 2 and 3
- b. 2 + 3
- c. 2 x 3

GIVEN A PRODUCT, THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF THE DISTRIBUTIVE PROPERTY OF MULTIPLICATION IN AN ARRAY BY IDENTIFYING THE EQUAL SUM OF TWO OR MORE PRODUCTS.

0084

The product  $3 \times 5$  of the array  $x \ x \ x$  is equal to:

0269

$x \ x \ x$   
 $x \ x \ x$   
 $x \ x \ x$   
 $x \ x \ x$

- \*a.  $(1 \times 5) + (2 \times 5)$
- b.  $(1 \times 4) + (1 \times 1)$
- c.  $(5 \times 3) + (1 \times 1)$

The product  $6 \times 2$  of the array  $x \ x \ x \ x \ x \ x$  is equal to:

0270

$x \ x \ x \ x \ x \ x$   
 $x \ x \ x \ x \ x \ x$

- a.  $(2 \times 2) + (4 \times 2)$
- b.  $(1 \times 1) + (5 \times 2)$
- \*c.  $(3 \times 2) + (3 \times 2)$

The product  $4 \times 2$  of the array  $x \ x \ x \ x$  is equal to:

0271

$x \ x \ x \ x$   
 $x \ x \ x \ x$

- a.  $(2 + 2) + (2 \ 2)$
- b.  $(2 \times 4) + (2 \times 4)$
- \*c.  $(2 \times 2) + (2 \times 2)$

The product  $3 \times 3$  of the array  $x \ x \ x$  is equal to:

0272

$x \ x \ x$   
 $x \ x \ x$   
 $x \ x \ x$

- \*a.  $(2 \times 3) + (1 \times 3)$
- b.  $(2 + 3) + (3 \times 1)$
- c.  $(3 \times 3) + (2 \times 3)$

The product  $4 \times 1$  of the array  $\begin{matrix} x \\ x \\ x \\ x \end{matrix}$  is equal to:

0273

- a.  $(1 \times 2) \times (1 \times 2) = 4 \times 1$   
 \*b.  $(2 \times 1) + (2 \times 1) = 4 \times 1$   
 c.  $(4 \times 1) + (4 \times 1) = 4 \times 1$

The product  $5 \times 4$  of the array  $\begin{matrix} x & x & x & x & x \\ x & x & x & x & x \\ x & x & x & x & x \\ x & x & x & x & x \end{matrix}$  is equal to all  
 of the following equations  
except:

0274

- a.  $(3 \times 4) + (2 \times 4) = 5 \times 4$   
 b.  $(4 \times 3) + (4 \times 2) = 5 \times 4$   
 \*c.  $(3 + 4) + (2 + 4) = 5 \times 4$

The product  $2 \times 3$  of the array  $\begin{matrix} x & x & x \\ x & x & x \end{matrix}$  is equal to all of the  
 following equations except:

0275

- a.  $(1 \times 1) + (2 \times 2) = 2 \times 3$   
 \*b.  $(1 \times 2) + (2 \times 2) = 2 \times 3$   
 c.  $(2 \times 1) + (2 \times 2) = 2 \times 3$

The product  $4 \times 5$  of the array  $\begin{matrix} x & x & x & x & x \\ x & x & x & x & x \\ x & x & x & x & x \\ x & x & x & x & x \end{matrix}$  is equal to all of the  
 following equations except:

0276

- a.  $(2 \times 2) + (2 \times 2) + (3 \times 2) + (3 \times 2) = 4 \times 5$   
 b.  $(2 \times 3) + (2 \times 2) + (3 \times 2) + (2 \times 2) = 4 \times 5$   
 \*c.  $(3 \times 2) + (3 \times 2) + (2 \times 2) + (3 \times 2) = 4 \times 5$   
 d.  $(3 \times 2) + (2 \times 2) + (2 \times 2) + (2 \times 3) = 4 \times 5$

The product  $6 \times 2$  of the array  $\begin{array}{cc} x & x & x \\ x & x & x \end{array}$  is equal to all of the following equations  
EXCEPT:

- a.  $(3 \times 1) + (3 \times 1) + (3 \times 1) + (3 \times 1) = 6 \times 2$   
 b.  $(1 \times 3) + (1 \times 3) + (1 \times 3) + (1 \times 3) = 6 \times 2$   
 c.  $(1 \times 3) + (3 \times 1) + (1 \times 3) + (3 \times 1) = 6 \times 2$   
 \*d.  $(3 \times 6) + (3 \times 1) + (3 \times 6) + (3 \times 1) = 6 \times 2$

The product  $7 \times 3$  of the array  $\begin{array}{ccc} x & x & x \\ x & x & x & x \end{array}$  is equal to all of the following equations  
EXCEPT:

- \*a.  $(3 \times 1) + (2 \times 3) + (1 \times 4) + (2 \times 3) = 7 \times 3$   
 b.  $(1 \times 3) + (1 \times 4) + (2 \times 3) + (2 \times 4) = 7 \times 3$   
 c.  $(3 \times 1) + (3 \times 2) + (4 \times 1) + (4 \times 2) = 7 \times 3$   
 d.  $(3 \times 2) + (4 \times 2) + (3 \times 1) + (4 \times 1) = 7 \times 3$

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF A THREE DIMENSIONAL ARRAY BY CORRECTLY IDENTIFYING THE PRODUCT OF A GIVEN ARRAY. 0086

An array of 6 blocks wide, 3 blocks long and 2 blocks deep can be expressed by all of the following products except: 0279

- a.  $(3 \times 2) \times 6$   
 \*b.  $3 \times (4 \times 6)$   
 c.  $6 \times (3 \times 2)$   
 d.  $2 \times 6 \times 3$

An array of 7 cubes wide, 3 cubes deep and 18 cubes long can be expressed by all of the following products except: 0280

- a.  $18 \times (7 \times 3)$   
 b.  $7 \times 18 \times 3$   
 c.  $(3 \times 18) \times 7$   
 \*d.  $18 + (3 + 7)$

An array of 6 cans high, 1 can deep and 5 cans wide can be expressed by all of the following products except:

0281

- \*a.  $6 + (1 + 5)$
- b.  $(1 \times 5) \times 6$
- c.  $6 \times (1 \times 5)$
- d.  $6 \times 5 \times 1$

An array of 3 desks wide, 7 desks long and 2 desks high can be expressed by all of the following products except:

0282

- a.  $(2 \times 3) \times 7$
- b.  $7 \times (3 \times 2)$
- \*c.  $(2 + 3) \times 7$
- d.  $2 \times (7 \times 3)$

An array of 10 books high, 12 books long and 17 books deep can be expressed by all of the following products except:

0283

- a.  $(17 \times 12) \times 10$
- b.  $10 \times (12 \times 17)$
- c.  $12 \times 17 \times 12$
- \*d.  $10 \times (12 + 17)$

An array of 3 chairs deep, 6 chairs long and 8 chairs high would be expressed by the following product:

0284

- a.  $3 + 6 + 8$
- \*b.  $3 \times (6 \times 8)$
- c.  $3 \times (6 + 8)$
- d.  $(3 \times 6) + 8$

An array of 3 glasses high, 7 glasses wide and 11 glasses deep is expressed by the following product:

0285

- \*a.  $3 \times (7 \times 11)$
- b.  $(3 \times 7) + 11$
- c.  $3 \times (11 + 7)$
- d.  $7 \times (3 + 11)$

An array of 2 blocks wide, 7 blocks deep and 10 blocks high is expressed by the following product:

0286

- a.  $10 \times (2 + 7)$
- b.  $2 + 10 + 7$
- c.  $10 \times (7 + 2)$
- \*d.  $2 \times (10 \times 7)$

An array of 1 block wide, 1 block deep, and 1 block high can be expressed by all of the following products except:

0287

- a.  $1 \times 1 \times 1$
- b.  $1 \times (1 \times 1)$
- c.  $(1 \times 1) \times 1$
- \*d.  $(1 + 1) + 1$

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF THE COUNT OF AN ARRAY'S PRODUCT BY IDENTIFYING THE COUNT WITH A NUMERAL.

0088

Which numeral tells the count of the following array?  $\begin{matrix} x & x \\ x & x \end{matrix}$

0288

- a. 2
- \*b. 4
- c.  $2 \times 2$

Which numeral tells the count of the following array?  $\begin{matrix} x & x & x & x & x \\ x & x & x & x & x \end{matrix}$

0289

- \*a. 10
- b.  $2 \times 5$
- c. 5

Which numeral tells the count of the following array?  $\begin{matrix} x & x & x & x \\ x & x & x & x \end{matrix}$

0290

- a.  $4 \times 2$
- b. 7
- \*c. 8

Which numeral tells the count of the following array?

x x x  
x x x  
x x x

0291

- a. 3 x 3  
b. 3  
\*c. 9

Which numeral tells the count of the following array?

x x x x  
x x x x  
x x x x

0292

- a. 3 x 4  
\*b. 12  
c. 7

Which numeral tells the count of the following array?

x x x x x x x  
x x x x x x x  
x x x x x x x

0293

- a. 7 x 3  
b. 22  
\*c. 21

Which numeral tells the count of the following array?

x x x x x x x x  
x x x x x x x x

0294

- \*a. 16  
b. 15  
c. 8 x 2

Which numeral tells the count of the following array?

x x x x x  
x x x x x  
x x x x x

0295

- a. 3 x 5  
b. 14  
\*c. 15



Which numeral tells the count of the following array?

0296

x x x x x x x x x x  
x x x x x x x x x x

- \*a. 20
- b. 19
- c. 21

Which numeral tells the count of the following array?

0297

x x x x  
x x x x  
x x x x  
x x x x

- a.  $4 \times 4$
- \*b. 16
- c. 15

Which numeral tells the count of the following array?

0298

x x  
x x  
x x

- a. 2
- b. 3
- \*c. 6

Which numeral tells the count of the following array?

0299

x x x x x x  
x x x x x x  
x x x x x x

- \*a. 18
- b.  $3 \times 6$
- c. 17

Which numeral tells the count of the following array?

0300

x x x x x x x x x x x x x x  
x x x x x x x x x x x x x x

- \*a. 28
- b. 26
- c. 27

Which numeral tells the count of the following array?

0301

x x x x x x x x x x  
 x x x x x x x x x x  
 x x x x x x x x x x

- a. 34
- b. 35
- \*c. 33

THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE THAT MANY DIFFERENT COMBINATIONS OF NUMERALS MULTIPLIED TOGETHER CAN EQUAL THE SAME COUNT, BY SELECTING THE GROUP OF PRODUCTS THAT WOULD BE THE SAME AS A SPECIFIED COUNT.

0089

Choose the group of products below which is the same as the count 12.

0302

- a.  $12 \times 0$ ,  $7 \times 2$ ,  $3 \times 4$
- b.  $1 \times 12$ ,  $4 \times 3$ ,  $12 \times 2$
- \*c.  $3 \times 4$ ,  $12 \times 1$ ,  $6 \times 2$

Choose the group of products below which is the same as the count 15.

0303

- a.  $15 \times 0$ ,  $5 \times 3$ ,  $1 \times 15$
- \*b.  $3 \times 5$ ,  $15 \times 1$ ,  $5 \times 3$
- c.  $1 \times 15$ ,  $3 \times 6$ ,  $7 \times 2$

Choose the group of products below which is the same as the count 24.

0304

- \*a.  $12 \times 2$ ,  $6 \times 4$ ,  $8 \times 3$
- b.  $24 \times 1$ ,  $3 \times 8$ ,  $7 \times 4$
- c.  $6 \times 4$ ,  $12 \times 2$ ,  $24 \times 0$

Choose the group of products below which is the same as the count 16.

0305

- a.  $8 \times 2$ ,  $16 \times 0$ ,  $4 \times 4$
- b.  $4 \times 4$ ,  $1 \times 16$ ,  $6 \times 10$
- \*c.  $2 \times 8$ ,  $16 \times 1$ ,  $4 \times 4$

Choose the group of products below which is the same as the count 0306  
18.

- a.  $9 \times 2, 3 \times 6, 18 \times 0$
- \*b.  $6 \times 3, 18 \times 1, 2 \times 9$
- c.  $9 \times 2, 6 \times 4, 18 \times 1$

Choose the group of products below which is the same as the count 0307  
30.

- a.  $4 \times 7, 9 \times 3, 10 \times 3$
- b.  $10 \times 3, 6 \times 5, 8 \times 4$
- \*c.  $5 \times 6, 30 \times 1, 10 \times 3$

Choose the group of products below which is the same as the count 0308  
42.

- \*a.  $6 \times 7, (3 \times 2) \times (7 \times 1), 42 \times 1$
- b.  $7 \times 6, 6 \times 7, (5 \times 4) \times (2 \times 1)$
- c.  $42 \times 1, (5 \times 6) \times (4 \times 3)$

Choose the group of products below which is the same as the count 0309  
56.

- a.  $56 \times 1, (25 \times 2) \times (7 \times 1), 7 \times 8$
- \*b.  $8 \times 7, (4 \times 2) \times (1 \times 7), 56 \times 1$
- c.  $56 \times 0, 8 \times 7, (2 \times 4) \times (7 \times 1)$

Choose the group of products below which is the same as the count 0310  
49.

- a.  $7 \times 7, 49 \times 0, (1 \times 7) \times (1 \times 7)$
- \*b.  $49 \times 1, (7 \times 1) \times (7 \times 1), 7 \times 7$
- c.  $(2 \times 2) \times (3 \times 3), 7 \times 7, 49 \times 1$

Choose the group of products below which is the same as the count 48. 0311

- a.  $48 \times 1, 8 \times 6, (8 \times 5) \times (4 \times 2)$
- b.  $48 \times 0, 7 \times 8, (2 \times 4) \times (2 \times 3)$
- \*c.  $6 \times 8, (3 \times 2) \times (4 \times 2), 48 \times 1$

Choose the group of products below which is the same as the count 20. 0312

- \*a.  $4 \times 5, (1 \times 2) \times (5 \times 2), (5 \times 1) \times (2 \times 2)$
- b.  $10 \times 2, (2 \times 5) \times (2 \times 2), 5 \times 4$
- c.  $(2 \times 2) \times (1 \times 5), 4 \times 5, 20 \times 2$

THE STUDENT WILL DEMONSTRATE HIS COMPREHENSION OF MULTIPLICATION WORD PROBLEMS BY TRANSLATING WORD PROBLEMS INTO MULTIPLICATION EQUATIONS. 0090

At the post office Sally bought nine 6¢ stamps. How much money did she spend? 0313

- \*a.  $9 \times 6¢ = 54¢$
- b.  $6¢ \times 6¢ = 36¢$
- c.  $6¢ \times 9¢ = 56¢$

Robert bought 8 stamped envelopes. They were 9¢ each. How much did he spend? 0314

- a.  $9 \times 8¢ = 72¢$
- \*b.  $8 \times 9¢ = 72¢$
- c.  $8 \times 9 = 74¢$

Danny went to the bakery and bought 4 cupcakes. They were 7¢ each. How much did he spend? 0315

- a.  $7¢ \times 4 = 27¢$
- \*b.  $4 \times 7¢ = 38¢$
- c.  $4 \times 7 = 26$

There were only 5 pieces of paper left. Mrs. Brown needed 6 times as many for her class. How many did she need? 0316

- a.  $5 \times 6 = 29$
- b.  $6 \times 4 = 30$
- \*c.  $5 \times 6 = 30$

Jeffrey wanted to go on five rides at the carnival. Each ride costs 8¢. How much money did he have to bring? 0317

- \*a.  $5 \times 8¢ = 40$
- b.  $8¢ \times 5 = 36¢$
- c.  $5 \times 8¢ = 32¢$

Jack is 3 times older than Ken. Ken is five years old. How old is Jack? 0318

- a.  $3 \times 3 = 9$
- \*b.  $3 \times 5 = 15$
- c.  $5 \times 3 = 16$

Julia sent 7 invitations to her friends. Each stamp costs 6¢. How much did she spend for stamps? 0319

- \*a.  $7 \times 6¢ = 42¢$
- b.  $6¢ \times 7 = 24¢$
- c.  $7 \times 6¢ = 48¢$

Jerry lives six times as far from Bill's house as from Joe's house. Joe lives 3 blocks from Jerry's house. How many blocks does Bill live from Jerry? 0320

- \*a.  $3 \times 6 = 18$  blocks
- b.  $3 \times 6 = 16$  blocks
- c. Can't be solved

The wrestlers are lifting weights. Greg lifted a weight 4 times heavier than Randy. Roy lifted a weight 6 times heavier than Randy. Randy's weight weighed 9 pounds. How many pounds did Roy's weight weigh?

0321

- a.  $4 \times 9 = 36$
- b.  $4 \times 6 = 24$
- \*c.  $6 \times 9 = 54$
- d. Can't be solved

In the month of March the average temperature was twice as warm as the coldest day in the month of January. March was three times colder than July. The coldest day in January was  $25^{\circ}$ . What was the average temperature in March?

0322

- a. Can't be solved
- b.  $2 \times 3 = 6^{\circ}$
- \*c.  $25 \times 2 = 50^{\circ}$
- d.  $3 \times 25 = 75^{\circ}$

Bessie's mother paid twice as much for apples on Wednesday as she paid Saturday. Monday she paid three times more than she paid on Saturday. She paid 6¢ a pound on Wednesday. How much did she pay on Monday?

0323

- a. Can't be solved
- \*b.  $3 \times 3¢ = 9¢$  a pound
- c.  $2 \times 6¢ = 12¢$  a pound
- d.  $3 \times 6¢ = 18¢$  a pound

Judy is 3 times older than her younger brother Martin. Martin is twice as old as his younger brother David. David is 4 years old. How old is Judy?

0324

- \*a.  $4 \times 2 \times 3 = 24$  years old
- b.  $4 \times 3 \times 2 = 24$  years old
- c.  $4 \times 6 = 24$  years old
- d. Can't be solved.

Bill's seat is twice as far from the teacher's desk as Roger's seat. Roger's seat is 3 desks away from the teacher's desk. How much more trouble than Roger can Bill get away with?

0325

- \* a.  $2 \times 3 = 6$   
 b.  $6 = 3 \times 2$   
 c.  $2 \times 1 \times 3 = 6$   
 d. Can't be solved.

THE STUDENT WILL APPLY HIS KNOWLEDGE OF THE PRINCIPLE OF PARTIAL PRODUCTS BY CORRECTLY IDENTIFYING THE MISSING NUMERALS AND PRODUCTS.

0091

Circle the letter of the correct numeral and product in the following:

0326

$$\begin{array}{r} 8 = 5 + 3 \\ \times 6 = 3 + 3 \\ \hline \end{array}$$

= ( X )

$$\begin{array}{r} 15 = ( 3 \times 5 ) \\ 9 = ( 3 \times 3 ) \\ 15 = ( 3 \times 5 ) \\ \hline 48 \end{array}$$

- a.  $15 = 3 \times 5$   
 \*b.  $9 = 3 \times 3$   
 c.  $48 = 8 \times 6$

Circle the letter of the correct numeral and product in the following?

0327

$$\begin{array}{r} 5 = 6 + 2 \\ \times 6 = 5 + 1 \\ \hline \end{array}$$

2 ( 1 x 2 )  
 6 ( 1 x 6 )

.

$$\begin{array}{r} 30 ( 5 \times 6 ) \\ \hline 48 \end{array}$$

- a. 2, 1  
 b. 10, (1 x 10)  
 \*c. 10 (5 x 2)

Circle the letter of the correct numeral and product in the following:

0328

$$\begin{array}{r}
 6 = 5 + 1 \\
 \underline{x4} = \underline{2 + 2} \\
 \quad 2 \{ 2 \times 1 \} \\
 \quad 10 \{ 2 \times 5 \} \\
 \quad 10 \{ 2 \times 5 \} \\
 \quad \quad \{ \quad \times \} \\
 \hline
 24
 \end{array}$$

- \*a. 2 (2 x 1)  
 b. 2 (2 x 0)  
 c. 10 (2 x 5)

Circle the letter of the correct numeral and product in the following:

0329

$$\begin{array}{r}
 7 = 2 + 5 \\
 \underline{x6} = \underline{1 + 5} \\
 \quad 2 \{ 1 \times 2 \} \\
 \quad 5 \{ 1 \times 5 \} \\
 \quad \quad \{ \quad \times \} \\
 \quad 25 \{ 5 \times 5 \} \\
 \hline
 42
 \end{array}$$

- a. 10 (10 x 1)  
 b. 12 (6 x 2)  
 \*c. 10 (5 x 2)

Circle the letter of the correct numeral and product in the following:

0330

$$\begin{array}{r}
 5 = 2 + 3 \\
 \underline{x6} = \underline{4 + 2} \\
 \quad 4 \{ 2 \times 2 \} \\
 \quad \quad \{ \quad \times \} \\
 \quad 8 \{ 4 \times 2 \} \\
 \quad 12 \{ 4 \times 3 \} \\
 \hline
 30
 \end{array}$$

- a. 6 (2 x 2)  
 b. 12 (4 x 3)  
 \*c. 6 (2 x 3)



Circle the letter of the correct numeral and product in the following:

0331

$$\begin{array}{r} 5 = 3 + 2 \\ \underline{x7} = \underline{\quad 7} \\ 14 \quad (7 \times 2) \\ \quad \quad \quad \underline{x} \\ 35 \end{array}$$

- \*a. 21 (7 x 3)  
 b. 21 (21 x 1)  
 c. 14 (7 x 2)

Circle the letter of the correct numeral and product in the following:

0332

$$\begin{array}{r} 7 = 4 + 3 \\ \underline{x7} + \underline{2 + 5} \\ 15 \quad (5 \times 3) \\ 20 \quad (5 \times 4) \\ 6 \quad (2 \times 3) \\ \quad \quad \quad \underline{x} \\ 49 \end{array}$$

- a. 20 (5 x 4)  
 b. 6 (2 x 4)  
 \*c. 8 (2 x 4)

Circle the letter of the correct numeral and product in the following:

0333

$$\begin{array}{r} 4 = 2 + 2 \\ \underline{x7} = \underline{4 + 3} \\ 6 \quad (3 \times 2) \\ \quad \quad \quad \underline{x} \\ 8 \quad (4 \times 2) \\ 8 \quad (4 \times 2) \\ 8 \end{array}$$

- a. 12 (4 x 3)  
 \*b. 6 (3 x 2)  
 c. 6 (4 x 2)

Circle the letter of the correct numeral and product in the following:

0334

$$\begin{array}{r} 6 = 2 + 4 \\ \underline{\times 7} \quad \underline{\quad 7} \\ \hline 14 \quad (7 \times 2) \\ \hline 42 \end{array}$$

- a. 14 (7 x 2)  
 \*b. 28 (2 x 4)  
 c. 28 (7 x 4)

Circle the letter of the correct numeral and product in the following:

0335

$$\begin{array}{r} 10 = 5 + 5 \\ \underline{\times 7} + \underline{3 + 4} \\ 20 \quad (4 \times 5) \\ 20 \quad (4 \times 5) \\ 15 \quad (3 \times 5) \\ \hline \hline 70 \end{array}$$

- \*a. 15 (3 x 5)  
 b. 30 (5 x 3)  
 c. 15 (4 x 5)

Circle the letter of the correct numeral and product in the following:

0336

$$\begin{array}{r} 9 = 5 + 4 \\ \underline{\times 6} = \underline{4 + 2} \\ 8 \quad (2 \times 4) \\ \quad \quad \quad \times \\ \hline 16 \quad (4 \times 4) \\ 20 \quad (4 \times 5) \\ \hline 56 \end{array}$$

- a. 8 (2 x 4)  
 b. 16 (4 x 4)  
 \*c. 10 (2 x 5)

THE STUDENT WILL APPLY HIS KNOWLEDGE OF THE PRINCIPLE OF PARTIAL PRODUCTS BY CORRECTLY IDENTIFYING THE MISSING NUMERALS IN THE CORRECT ORDER.

0092

Circle the letter of the correct numerals for each of the partial products in the following problem.

0337

$$\begin{array}{r} 9 = 5 + 4 \\ \underline{x8 = 6 + 2} \\ \hline \hline \hline \hline \hline 56 \end{array}$$

- a. 8, 20, 12, 30
- \*b. 8, 10, 24, 30
- c. 12, 30, 12, 20

Circle the letter of the correct numerals for each of the partial products in the following problem.

0338

$$\begin{array}{r} 7 = 4 + 3 \\ \underline{x8 = 5 + 3} \\ \hline \hline \hline \hline \hline 56 \end{array}$$

- a. 20, 15, 12, 6
- b. 12, 9, 25, 15
- \*c. 9, 12, 15, 20

Circle the letter of the correct numerals for each of the partial products in the following problem.

0339

$$\begin{array}{r} 9 = 7 + 2 \\ \underline{x9 = 5 + 4} \\ \hline \hline \hline \hline \hline 81 \end{array}$$

- a. 14, 20, 35, 10
- \*b. 8, 28, 10, 35
- c. 8, 35, 20, 14

Circle the letter of the correct numerals for each of the partial products in the following problem. 0340

$$\begin{array}{r}
 8 = 5 + 3 \\
 \underline{x8 = 7 + 1} \\
 \underline{\quad} \\
 \underline{\quad} \\
 \underline{\quad} \\
 \underline{\quad} \\
 56
 \end{array}$$

- \*a. 3, 5, 21, 35
- b. 15, 7, 21, 35
- c. 3, 15, 21, 35

Circle the letter of the correct numerals for each of the partial products in the following problem. 0341

$$\begin{array}{r}
 6 = 3 + 3 \\
 \underline{x4 = 2 + 2} \\
 \underline{\quad} \\
 \underline{\quad} \\
 \underline{\quad} \\
 \underline{\quad} \\
 24
 \end{array}$$

- a. 9, 4, 6, 6
- \*b. 6, 6, 6, 6
- c. 6, 9, 4, 6

Circle the letter of the correct numerals for each of the partial products in the following problem. 0342

$$\begin{array}{r}
 15 = 10 + 5 \\
 \underline{x6 = 3 + 3} \\
 \underline{\quad} \\
 \underline{\quad} \\
 \underline{\quad} \\
 \underline{\quad} \\
 90
 \end{array}$$

- a. 50, 9, 15, 30
- b. 15, 30, 9, 50
- \*c. 15, 30, 15, 30

Circle the letter of the correct numerals for each of the partial products in the following problem.

0343

$$\begin{array}{r} 17 = 10 + 7 \\ \times 8 = \underline{3 + 5} \\ \hline \phantom{00} \\ \hline \phantom{00} \\ \hline \phantom{00} \\ \hline \phantom{00} \\ \hline \phantom{00} \\ \hline 136 \end{array}$$

- \*a. 35, 50, 21, 30
- b. 70, 15, 21, 30
- c. 35, 30, 30, 21

Circle the letter of the correct numerals for each of the partial products in the following problem.

0344

$$\begin{array}{r} 14 = 10 + 4 \\ \times 7 = \underline{3 + 4} \\ \hline \phantom{00} \\ \hline \phantom{00} \\ \hline \phantom{00} \\ \hline \phantom{00} \\ \hline \phantom{00} \\ \hline 98 \end{array}$$

- a. 40, 12, 12, 16
- b. 16, 30, 12, 40
- \*c. 16, 40, 12, 30

Circle the letter of the correct numerals for each of the partial products in the following problem.

0345

$$\begin{array}{r} 13 = 10 + 3 \\ \times 9 = \underline{5 + 4} \\ \hline \phantom{00} \\ \hline \phantom{00} \\ \hline \phantom{00} \\ \hline \phantom{00} \\ \hline \phantom{00} \\ \hline 117 \end{array}$$

- \*a. 12, 40, 15, 50
- b. 30, 20, 15, 40
- c. 30, 15, 50, 20

Circle the letter of the correct numerals for each of the partial products in the following problem.

0346

$$\begin{array}{r} 19 = 10 + 9 \\ \underline{\times 9} \quad \underline{6 = 3} \end{array}$$

- a. 27, 60, 30, 55  
 \*b. 27, 30, 54, 60  
 c. 27, 30, 60, 56

Circle the letter of the correct numerals for each of the partial products in the following problem.

0347

$$\begin{array}{r} 12 = 10 + 2 \\ \underline{\times 7} = \underline{6 + 1} \end{array}$$

$$\begin{array}{r} \text{---} \\ \text{---} \\ \text{---} \\ \text{---} \\ \text{---} \\ \hline 84 \end{array}$$

- a. 20, 6, 2, 60  
 \*b. 2, 10, 12, 60  
 c. 2, 20, 60, 12

Circle the letter of the correct numerals for each of the partial products in the following problem.

0348

$$\begin{array}{r} 19 = 10 + 9 \\ \underline{\times 9} = \underline{5 + 4} \end{array}$$

$$\begin{array}{r} \text{---} \\ \text{---} \\ \text{---} \\ \text{---} \\ \text{---} \\ \hline 171 \end{array}$$

- a. 90, 20, 45, 40  
 b. 40, 45, 50, 35  
 \*c. 36, 40, 45, 50

Circle the letter of the correct numerals for each of the partial products in the following problem.

0349

$$\begin{array}{r} 9 = 3 + 3 + 3 \\ \underline{\times 8} = \underline{\quad 2 + 6} \\ \hline \end{array}$$

—  
—  
—  
—  
—  
—

—————  
72

- \*a. 18, 18, 18, 12, 12, 12
- b. 9, 9, 9, 12, 12, 18
- c. 18, 18, 12, 12

Circle the letter of the correct numerals for each of the partial products in the following problem.

0350

$$\begin{array}{r} 9 = 3 + 3 + 3 \\ \underline{\times 9} = \underline{\quad \quad \times 9} \\ \hline \end{array}$$

—  
—  
—  
—  
—

—————  
81

- a. 9, 27, 9
- b. 9, 9, 9, 27, 27, 27
- \*c. 27, 27, 27

Circle the letter of the correct numerals for each of the partial products in the following problem.

0351

$$\begin{array}{r} 10 = 3 + 3 + 4 \\ \underline{\times 9} = \underline{\quad 3 + 3 + 3} \\ \hline \end{array}$$

- a. 9, 12, 9, 12, 9, 12, 9, 12, 9
- b. 12, 9, 9, 12, 12, 9, 9, 9, 9, 12
- \*c. 12, 9, 9, 12, 9, 9, 12, 9, 9

Circle the letter of the correct numerals for each of the partial products in the following problem.

0352

$$\begin{array}{r} 10 = 4 + 4 + 2 \\ \times 9 = \underline{6 + 2 + 1} \end{array}$$

$$\begin{array}{r} \text{---} \\ \text{---} \\ \text{---} \\ \text{---} \\ \text{---} \\ \text{---} \\ \text{---} \\ \text{---} \\ \text{---} \\ \text{---} \\ \hline 90 \end{array}$$

- a. 4, 4, 8, 2, 12, 24, 8, 6, 10  
 \*b. 2, 4, 4, 4, 8, 8, 12, 24, 24  
 c. 2, 4, 8, 12, 24, 2, 4, 10, 24

Circle the letter of the correct numerals for each of the partial products in the following problem.

0353

$$\begin{array}{r} 9 = 6 + 2 + 1 \\ \times 9 = \underline{3 + 4 + 2} \end{array}$$

$$\begin{array}{r} \text{---} \\ \text{---} \\ \text{---} \\ \text{---} \\ \text{---} \\ \text{---} \\ \text{---} \\ \text{---} \\ \text{---} \\ \text{---} \\ \hline 81 \end{array}$$

- \*a. 2, 4, 12, 4, 8, 24, 3, 6, 18  
 b. 2, 4, 12, 3, 6, 18, 4, 24, 8  
 c. 18, 12, 6, 12, 6, 18, 6, 2, 4



THE STUDENT WILL ANALYZE A LONG MULTIPLICATION PROBLEM BY FINDING THE ERROR IN THE GIVEN PARTIAL PRODUCTS.

0093

Which of the following partial products is wrong in this long multiplication problem?

0354

a.	64	28
b.	160	<u>x68</u>
c.	480	64
*d.	7200	160
		480
		<u>7200</u>
		7904

Which of the following partial products is wrong in this long multiplication problem?

0355

a.	2	51
*b.	50	<u>x62</u>
c.	60	2
d.	3000	50
		60
		<u>3000</u>
		3112

Which of the following partial products is wrong in this long multiplication problem?

0356

a.	16	28
b.	40	<u>x72</u>
*c.	5600	16
d.	1400	40
		5600
		<u>1400</u>
		7056

Which of the following partial products is wrong in this long multiplication problem?

0357

- |         |            |
|---------|------------|
| a. 9    | 41         |
| b. 360  | <u>x59</u> |
| c. 50   | 9          |
| *d. 200 | 360        |
|         | 50         |
|         | <u>200</u> |
|         | 609        |

Which of the following partial products is wrong in this long multiplication problem?

0358

- |         |            |
|---------|------------|
| a. 35   | 77         |
| b. 350  | <u>x55</u> |
| c. 350  | 35         |
| *d. 350 | 350        |
|         | 350        |
|         | <u>350</u> |
|         | 1085       |

Which of the following partial products is wrong in this long multiplication problem?

0359

- |          |            |
|----------|------------|
| a. 24    | 36         |
| b. 120   | <u>x24</u> |
| *c. 1200 | 24         |
| d. 600   | 120        |
|          | 1200       |
|          | <u>600</u> |
|          | 1944       |

Which of the following partial products is wrong in this long multiplication problem?

0360

- |         |            |
|---------|------------|
| a. 12   | 84         |
| b. 240  | <u>x83</u> |
| c. 320  | 12         |
| *d. 640 | 240        |
|         | 320        |
|         | <u>640</u> |
|         | 1212       |

Which of the following partial products is wrong in this long multiplication problem?

0361

*a.	40	92
b.	130	<u>x62</u>
c.	160	40
d.	7200	160
		160
		<u>7200</u>
		7500

Which of the following partial products is wrong in this long multiplication problem?

0362

a.	24	83
*b.	64	<u>x68</u>
c.	180	24
d.	4800	64
		180
		<u>4800</u>
		5068

Which of the following partial products is wrong in this long multiplication problem?

0363

*a.	20	54
b.	450	<u>x69</u>
c.	240	20
d.	3000	450
		240
		<u>3000</u>
		3710

Which of the following partial products is wrong in this long multiplication problem?

0364

a.	36	54
b.	450	<u>x69</u>
*c.	2400	36
d.	3000	450
		2400
		<u>3000</u>
		5896

Which of the following partial products is wrong in the long multiplication problem?

0365

- |     |      |                |
|-----|------|----------------|
| a.  | 36   | 46             |
| *b. | 240  | <del>276</del> |
| c.  | 420  | 36             |
| d.  | 2800 | 240            |
|     |      | 420            |
|     |      | <u>2800</u>    |
|     |      | 4496           |

Which of the following partial products is wrong in this long multiplication problem?

0366

- |     |      |                |
|-----|------|----------------|
| a.  | 21   | 97             |
| b.  | 270  | <del>253</del> |
| *c. | 3500 | 21             |
| d.  | 4500 | 270            |
|     |      | 3500           |
|     |      | <u>4500</u>    |
|     |      | 8291           |

Which of the following partial products is wrong in this long multiplication problem?

0367

- |     |     |                |
|-----|-----|----------------|
| a.  | 48  | 36             |
| b.  | 240 | <del>248</del> |
| c.  | 240 | 48             |
| *d. | 320 | 240            |
|     |     | 240            |
|     |     | <u>320</u>     |
|     |     | 848            |

Which of the following partial products is wrong in this long multiplication problem?

0368

- |     |      |                |
|-----|------|----------------|
| a.  | 6    | 73             |
| *b. | 14   | <del>262</del> |
| c.  | 1800 | 6              |
| d.  | 4200 | 14             |
|     |      | 180            |
|     |      | <u>4200</u>    |
|     |      | 4400           |

Which of the following partial products is wrong in this long multiplication problem?

0369

a.	30	96
b.	450	<u>x95</u>
c.	540	30
*d.	810	450
		540
		<u>810</u>
		1830

Which of the following partial products is wrong in this long multiplication problem?

0370

a.	64	98
b.	720	<u>x48</u>
c.	320	64
*d.	360	720
		320
		<u>360</u>
		1464

Which of the following partial products is wrong in this long multiplication problem?

0371

*a.	540	56
b.	450	<u>x69</u>
c.	360	540
d.	3000	450
		360
		<u>3000</u>
		4350

Which of the following partial products is wrong in this long multiplication problem?

0372

a.	12	33
b.	120	<u>x24</u>
c.	60	12
*d.	6000	120
		60
		<u>6000</u>
		6192

Which of the following partial products is wrong in this long multiplication problem?

0373

a.	9	53
b.	150	<u>x63</u>
c.	180	9
*d.	300	150
		180
		<u>300</u>
		639

Which of the following partial products is wrong in this long multiplication problem?

0374

a.	8	121
b.	160	<u>x98</u>
c.	800	8
*d.	900	160
		800
		900
		1800
		<u>9000</u>
		12668

Which of the following partial products is wrong in this long multiplication problem?

0375

*a.	360	412
b.	60	<u>x39</u>
c.	300	18
d.	12000	90
		360
		60
		300
		<u>12000</u>
		12828

Which of the following partial products is wrong in this long multiplication problem?

0376

- |     |       |              |
|-----|-------|--------------|
| a.  | 160   | 825          |
| *b. | 640   | <u>x78</u>   |
| c.  | 800   | 40           |
| d.  | 32000 | 160          |
|     |       | 640          |
|     |       | 200          |
|     |       | 800          |
|     |       | <u>32000</u> |
|     |       | 33840        |

Which of the following partial products is wrong in this long multiplication problem?

0377

- |     |      |             |
|-----|------|-------------|
| a.  | 3200 | 496         |
| b.  | 420  | <u>x78</u>  |
| c.  | 6300 | 48          |
| *d. | 2800 | 720         |
|     |      | 3200        |
|     |      | 420         |
|     |      | 6300        |
|     |      | <u>2800</u> |
|     |      | 13488       |

Which of the following partial products is wrong in this long multiplication problem?

0378

- |     |       |              |
|-----|-------|--------------|
| a.  | 3200  | 496          |
| b.  | 420   | <u>x78</u>   |
| *c. | 630   | 48           |
| d.  | 28000 | 720          |
|     |       | 3200         |
|     |       | 420          |
|     |       | 630          |
|     |       | <u>28000</u> |
|     |       | 33018        |

Which of the following partial products is wrong in this long multiplication problem?

0379

a.	1800	378
*b.	2400	<u>x36</u>
c.	2100	48
d.	9000	420
		1800
		2400
		2100
		<u>9000</u>
		15768

Which of the following partial products is wrong in this long multiplication problem?

0380

*a.	640	814
b.	80	<u>x28</u>
c.	200	32
d.	16000	80
		640
		80
		200
		<u>16000</u>
		17032

Which of the following partial products is wrong in this long multiplication problem?

0381

a.	70	612
b.	4200	<u>x47</u>
*c.	800	14
d.	24000	70
		4200
		800
		400
		<u>24000</u>
		29484

Which of the following partial products is wrong in this long multiplication problem?

0382

*a.	45	749
b.	2000	<u>x56</u>
c.	35000	54
d.	240	240
		4200
		45
		2000
		<u>35000</u>
		41539



Which of the following partial products is wrong in this long multiplication problem?

0383

a.	900	971
b.	70	<u>x71</u>
*c.	490	1
d.	63000	70
		900
		70
		490
		<u>63000</u>
		64531

Which of the following partial products is wrong in this long multiplication problem?

0384

a.	3500	518
*b.	2400	<u>x37</u>
c.	300	56
d.	15000	70
		3500
		2400
		300
		<u>15000</u>
		21326

Which of the following partial products is wrong in this long multiplication problem?

0385

*a.	50	148
b.	160	<u>x25</u>
c.	800	40
d.	2000	200
		50
		160
		800
		<u>2000</u>
		3250

Which of the following partial products is wrong in this long multiplication problem?

0386

a.	320	614
*b.	8000	<u>x282</u>
c.	48000	8
d.	800	20
		1200
		320
		8000
		48000
		800
		2000
		<u>120000</u>
		180348

Which of the following partial products is wrong in this long multiplication problem?

0387

a.	3600	897
b.	32000	<u>x647</u>
*c.	42000	49
d.	54000	630
		5600
		280
		3600
		32000
		42000
		54000
		<u>480000</u>
		618159

Which of the following partial products is wrong in this long multiplication problem?

0388

a.	1000	354
*b.	60000	<u>x427</u>
c.	1600	28
d.	20000	350
		2100
		80
		1000
		60000
		1600
		20000
		<u>120000</u>
		205158

Which of the following partial products is wrong in this long multiplication problem?

0389

- a. 20000  
 b. 3200  
 c. 32000  
 \*d. 16000

488  
 $\times 457$   
 56  
 560  
 2800  
 400  
 4000  
 20000  
 3200  
 32000  
16000  
 79016

Which of the following partial products is wrong in this long multiplication problem?

0390

- a. 56000  
 \*b. 400  
 c. 6000  
 d. 210000

721  
 $\times 389$   
 9  
 180  
 6300  
 80  
 1600  
 56000  
 400  
 6000  
210000  
 280469

Which of the following partial products is wrong in this long multiplication problem?

0391

- \*a. 2800  
 b. 4200  
 c. 30000  
 d. 240000

457  
 $\times 675$   
 35  
 250  
 2000  
 490  
 3500  
 2800  
 4200  
 30000  
240000  
 283175

Which of the following partial products is wrong in this long multiplication problem?

0392

a.	3000	317
b.	1400	<u>x218</u>
c.	2000	56
*d.	6000	80
		2400
		70
		100
		3000
		1400
		2000
		<u>6000</u>
		15106

Which of the following partial products is wrong in this long multiplication problem?

0393

*a.	20000	226
b.	1200	<u>x214</u>
c.	4000	24
d.	40000	80
		800
		60
		200
		20000
		1200
		4000
		<u>40000</u>
		66364

GIVEN THE COUNT AND ONE FACTOR, THE STUDENT WILL DEMONSTRATE HIS KNOWLEDGE OF THE BASIC MULTIPLICATION FACTS BY IDENTIFYING THE MISSING FACTOR FROM A LIST.

0094

Directions: Select the correct answer.

$$\underline{\quad} \times 6 = 24$$

- \*a. 4
- b. 3
- c. 7
- d. 2

0394

$$\underline{\quad} \times 4 = 36$$

- a. 7
- \*b. 9
- c. 8
- d. 4

0395

$$\underline{6} \times \underline{\quad} = 42$$

- a. 8
- b. 6
- c. 9
- \*d. 7

0396

$$8 \times \underline{\quad} = 81$$

- a. 6
- \*b. 9
- c. 7
- d. 8

0397

$$3 \times \underline{\quad} = 27$$

- a. 7
- b. 6
- c. 8
- \*d. 9

0398

$$28 = 4 \times \underline{\quad}$$

- a. 9
- \*b. 7
- c. 6
- d. 8

0399

$$30 = 5 \times \underline{\quad}$$

- a. 3
- b. 5
- \*c. 6
- d. 9

0400

$$24 = 3 \times \underline{\hspace{2cm}}$$

- \*a. 8
- b. 6
- c. 4
- d. 7

0401

$$\underline{\hspace{2cm}} \times 9 = 36$$

- a. 7
- b. 6
- c. 3
- \*d. 4

0402

$$6 \times \underline{\hspace{2cm}} = 60$$

- a. 1
- b. 0
- \*c. 10
- d. 5

0403

$$8 \times \underline{\hspace{2cm}} = 64$$

- a. 2
- b. 7
- \*c. 8
- d. 9

0404

$$7 \times \underline{\hspace{2cm}} = 35$$

- a. 3
- b. 7
- \*c. 5
- d. 6

0405

$$\underline{\hspace{2cm}} \times 4 = 28$$

- a. 6
- \*b. 7
- c. 9
- d. 8

0406

$$\underline{\hspace{2cm}} \times 5 = 20$$

- a. 6
- b. 3
- \*c. 4
- d. 5

0407

$$18 = 3 \times \underline{\hspace{2cm}}$$

- a. 4
- \*b. 6
- c. 5
- d. 8

0408

$$18 = 9 \times \underline{\hspace{2cm}}$$

- \*a. 2
- b. 3
- c. 4
- d. 5

0409

$$8 \times \underline{\hspace{2cm}} = 32$$

- \*a. 4
- b. 7
- c. 6
- d. 3

0410

$$3 \times \underline{\hspace{2cm}} = 6$$

- a. 1
- b. 4
- \*c. 2
- d. 3

0411

$$9 = 3 \times \underline{\hspace{2cm}}$$

- a. 9
- b. 0
- c. 1
- \*d. 3

0412

$$3 \times \underline{\hspace{2cm}} = 15$$

- a. 4
- \*b. 5
- c. 6
- d. 3

0413

$$12 = 3 \times \underline{\hspace{2cm}}$$

- a. 2
- b. 3
- c. 6
- \*d. 4

0414

$$21 = 7 \times \underline{\hspace{2cm}}$$

- a. 6
- b. 2
- \*c. 3
- d. 4

0415

$$4 \times \underline{\hspace{2cm}} = 16$$

- a. 2
- b. 3
- \*c. 4
- d. 5

0416

$$36 = \underline{\hspace{2cm}} \times 4$$

- \*a. 9
- b. 8
- c. 6
- d. 4

0417



$$70 = 10 \times \underline{\hspace{2cm}}$$

- \*a. 7
- b. 6
- c. 10
- d. 1

0418

$$25 = 5 \times \underline{\hspace{2cm}}$$

- a. 4
- \*b. 5
- c. 7
- d. 6

0419

$$6 \times \underline{\hspace{2cm}} = 30$$

- a. 4
- b. 3
- \*c. 5
- d. 6

0420

$$6 \times \underline{\hspace{2cm}} = 36$$

- a. 2
- b. 4
- \*c. 6
- d. 8

0421

$$7 \times \underline{\hspace{2cm}} = 28$$

- \*a. 4
- b. 2
- c. 6
- d. 3

0422

$$7 \times \underline{\hspace{2cm}} = 49$$

- a. 6
- \*b. 7
- c. 8
- d. 9

0423

$$\underline{\hspace{2cm}} \times 8 = 64$$

- a. 7
- b. 2
- c. 6
- \*d. 8

0424

$$72 = 9 \times \underline{\hspace{2cm}}$$

- a. 6
- b. 2
- c. 7
- \*d. 8

0425

$$81 = \underline{\hspace{2cm}} \times 9$$

- a. 7
- \*b. 9
- c. 5
- d. 6

0426

$$63 = \underline{\hspace{2cm}} \times 9$$

- \*a. 7
- b. 3
- c. 5
- d. 6

0427

$$6 \times \underline{\hspace{2cm}} = 36$$

- a. 2
- b. 4
- \*c. 6
- d. 8

0428

$$100 = 10 \times \underline{\hspace{2cm}}$$

- a. 0
- \*b. 10
- c. 1
- d. 100

0429

$$\underline{\quad} \times 9 = 27$$

0430

- a. 6
- b. 4
- c. 2
- \*d. 3

$$25 = \underline{\quad} \times 5$$

0431

- a. 4
- b. 6
- \*c. 5
- d. 7

THE STUDENT WILL ANALYZE A GIVEN PROBLEM OF COMBINED COMPUTATIONAL STEPS OF LONG MULTIPLICATION BY CHOOSING THE CORRECT COMBINATION OF PARTIAL PRODUCTS.

0095

$$\begin{array}{r} 21 \\ \times 34 \\ \hline 4 \\ 110 \\ 600 \\ \hline 714 \end{array}$$

In the above problem what combination of partial products was used to get 4 ones?

0432

- \*a. 1 ones x 4 ones = 4 ones
- b. 2 ones x 2 ones = 4 ones
- c. 4 ones x 2 ones = 4 ones

In the above problem what combination of partial products was used to get 11 tens?

0433

- a. 2 tens x 4 tens = 11 tens
- b. 3 tens + 4 tens + 4 tens = 11 tens
- \*c. 8 tens + 3 tens = 11 tens

In the above problem what combination of partial products was used to get 6 hundreds? 0434

- a. 30 ones x 20 tens = 6 hundreds
- \*b. 3 tens x 2 tens = 6 hundreds
- c. 3 tens x 2 ones = 6 hundreds

$$\begin{array}{r} 95 \\ \times 52 \\ \hline 190 \\ 4750 \\ \hline 4940 \end{array}$$

In the above problem what combination of partial products was used to get 10 ones? 0435

- \*a. 2 ones x 5 ones = 10 ones
- b. 2 tens x 5 tens = 10 ones
- c. 2 ones x 5 tens = 10 ones

In the above problem what combination of partial products was used to get 43 tens? 0436

- a. (3 tens x 9 ones) + (5 ones x 5 tens) = 43 tens
- b. (5 ones x 5 ones) + (9 tens x 2 ones) = 43 tens
- \*c. (9 tens x 2 ones) + (5 tens x 5 ones) = 43 tens

In the above problem what combination of partial products was used to get 43 tens? 0437

- a. 18 ones + 25 ones = 43 tens
- b. 25 ones + 18 tens = 43 tens
- \*c. 18 tens + 25 tens = 43 tens

In the above problem what combination of partial products was used to get 45 hundreds? 0438

- a. 9 tens x 5 ones = 45 hundreds
- \*b. 90 tens x 5 tens = 45 hundreds
- c. 90 ones x 50 tens = 45 hundreds

$$\begin{array}{r}
 59 \\
 \times 32 \\
 \hline
 118 \\
 370 \\
 \hline
 1500 \\
 18888
 \end{array}$$

In the above problem what combination of partial products was used to get 18 ones? 0439

- a. 9 tens x 2 ones = 18 ones
- \*b. 9 ones x 2 ones = 18 ones
- c. 2 ones x 9 tens = 18 ones

In the above problem what combination of partial products was used to get 37 tens? 0440

- a. (5 tens x 2 ones) x (3 tens x 9 ones)
- b. (3 tens x 9 ones) x (2 ones x 9 ones)
- \*c. (2 ones x 5 tens) + (3 tens x 9 ones)

In the above problem what combination of partial products was used to get 37 tens? 0441

- \*a. 10 tens + 27 tens = 37 tens
- b. 10 ones + 27 tens = 37 tens
- c. 10 tens + 27 ones = 37 tens

In the above problem what combination of partial products was used to get 15 hundreds? 0442

- a. 50 ones x 30 tens = 15 hundreds
- b. 3 ones x 5 ones = 15 hundreds
- \*c. 5 tens x 3 tens = 15 hundreds

$$\begin{array}{r}
 28 \\
 \times 61 \\
 \hline
 8 \\
 500 \\
 \hline
 1200 \\
 \hline
 1708
 \end{array}$$

In the above problem what combination of partial products was used to get 8? 0443

- a. 1 one x 8 tens = 8 ones
- b. 1 one + 8 ones = 8 tens
- \*c. 1 one x 8 ones = 8 ones

In the above problem what combination of partial products was used to get 500? 0444

- a. (1 one x 2 tens) x (6 tens x 8 ones) = 50 tens
- \*b. (8 ones x 6 tens) + (1 one x 2 tens) = 500 ones
- c. (1 one x 2 tens) + (6 ones x 8 tens) = 50 tens

In the above problem what combination of partial products was used to get 500? 0445

- a. 48 tens x 2 tens = 50 tens
- \*b. 2 tens + 48 tens = 500 ones
- c. 48 ones + 2 ones = 50 tens

In the above problem what combination of partial products was used to get 1200? 0446

- \*a. 2 tens x 6 tens = 120 tens
- b. 6 tens x 2 tens = 120 hundreds
- c. 2 hundreds x 6 tens = 1200 ones

$$\begin{array}{r} 32 \\ \times 54 \\ \hline 1728 \end{array}$$

In the above problem what combination of partial products was used to get 8? 0447

- \*a. 2 ones x 4 ones = 8 ones
- b. 4 ones x 2 tens = 8 ones
- c. 4 tens x 2 ones = 8 ones

In the above problem what combination of partial products was used to get 2 tens? 0448

- a. (3 tens x 4 tens) + (5 tens x 2 tens) = 22 tens (Write 2 tens, remember 2)
- b. (4 ones x 3 tens) x (5 tens + 2 tens) = 22 tens (Write 2 tens, remember 200)
- \*c. (4 ones x 3 tens) + (5 tens x 2 ones) = 22 tens (Write 2 tens, remember 20)

In the above problem what combination of partial products was used to get 17 hundreds? 0449

- \*a. 2 hundreds + (3 tens x 5 tens) = 17 hundreds
- b. 15 hundreds x 2 hundreds = 17 hundreds
- c. (3 hundreds x 5 hundreds) + 2 hundreds = 17 hundreds

$$\begin{array}{r} 24 \\ \times 51 \\ \hline 1224 \end{array}$$

In the above problem what combination of partial products was used to get 4? 0450

- a. 4 tens x 1 ten = 4 ones
- \*b. 1 one x 4 ones = 4 ones
- c. 4 ones x 1 ten = 4 tens

In the above problem what combination of partial products was used to get 2 tens?

0451

- a.  $(1 \text{ ten} \times 2 \text{ tens}) + (5 \text{ tens} \times 4 \text{ tens}) = 22 \text{ hundreds}$  (Write 2 tens, remember 2)
- \*b.  $(1 \text{ one} \times 2 \text{ tens}) + (5 \text{ tens} \times 4 \text{ ones}) = 22 \text{ tens}$  (Write 2 tens, remember 200)
- c.  $(1 \text{ one} \times 2 \text{ tens}) + (5 \text{ tens} \times 4 \text{ ones}) = 22 \text{ ones}$  (Write 2 ones, remember 20)

In the above problem what combination of partial products was used to get 1200?

0452

- a.  $(5 \text{ tens} \times 2 \text{ tens}) + 20 \text{ hundreds} = 12 \text{ tens}$
- b.  $(20 \text{ tens} + (5 \text{ tens} \times 2 \text{ tens})) = 120 \text{ hundreds}$
- \*c.  $200 \text{ ones} + (2 \text{ tens} \times 5 \text{ tens}) = 1200 \text{ ones}$

$$\begin{array}{r} 24 \\ \times 68 \\ \hline 1632 \end{array}$$

In the above problem what combination of partial products was used to get 2?

0453

- a.  $8 \text{ ones} \times 4 \text{ ones} = 32 \text{ tens}$  (Write 2 ones, remember 30)
- b.  $4 \text{ ones} \times 8 \text{ ones} = 32 \text{ ones}$  (Write 2 tens, remember 30)
- \*c.  $4 \text{ ones} \times 8 \text{ ones} = 32 \text{ ones}$  (Write 2 ones, remember 3 tens)

In the above problem what combination of partial products was used to get 3 tens?

0454

- a.  $(4 \text{ ones} \times 6 \text{ tens}) + 3 \text{ tens} + (8 \text{ tens} \times 2 \text{ tens}) = 430 \text{ ones}$
- \*b.  $3 \text{ tens} + (8 \text{ ones} \times 2 \text{ tens}) + (6 \text{ tens} \times 4 \text{ ones}) + 43 \text{ tens}$
- c.  $(8 \text{ ones} \times 4 \text{ ones}) + (2 \text{ tens} \times 6 \text{ tens}) + 3 \text{ tens} = 43 \text{ tens}$

In the above problem what combination of partial products was used to get 1600?

0455

- \*a.  $(2 \text{ tens} \times 6 \text{ tens}) + 400 = 1600$
- b.  $(2 \times 6 + 4) = 16 \text{ tens}$
- c.  $(20 \times 60) + 40 = 16 \text{ hundreds}$



$$\begin{array}{r} 43 \\ \times 6 \\ \hline 258 \end{array}$$

In the above problem what combination of partial products was used to get 8? O456

- a. 3 ones x 6 ones = 18 tens (Write 8, remember 1 ten)
- \*b. 3 ones x 6 ones = 18 ones (Write 8, remember 1 ten)
- c. 3 tens x 6 tens = 18 tens (Write 8, remember 1 ten)

In the above problem what combination of partial products was used to get 25 tens? O457

- a. 1 ten + (4 tens x 6 tens) = 25 tens
- \*b. (4 tens x 6 ones) + 1 ten = 25 tens
- c. (6 ones x 4 ones) + 1 ten = 25 tens

$$\begin{array}{r} 72 \\ \times 4 \\ \hline 288 \end{array}$$

In the above problem, what combination of partial products was used to get 8 ones? O458

- a. 4 tens x 2 ones = 8 ones
- b. 4 ones x 2 tens = 8 ones
- \*c. 2 ones x 4 ones = 8 ones

In the above problem, what combination of partial products was used to get 28 tens? O459

- \*a. 7 tens x 4 ones = 28 tens
- b. 4 tens x 7 tens = 28 tens
- c. 7 tens x 4 tens = 28 tens

$$\begin{array}{r} 615 \\ \times 8 \\ \hline 4920 \end{array}$$

In the above problem what combination of partial products was used to get 0 ones?

0460

- a. 5 ones x 8 tens = 40 ones (Write 0, remember 4 tens)
- b. 8 ones x 5 tens = 40 ones (Write 0, remember 4 tens)
- \*c. 8 ones x 5 ones = 40 ones (Write 0, remember 4 tens)

In the above problem what combination of partial products was used to get 2 tens?

0461

- \*a. (8 ones x 1 ten) + 4 tens = 12 tens (Write 2, remember 100)
- b. (8 tens x 1 one) + 4 tens = 12 tens (Write 2, remember 100)
- c. (8 x 1) + 4 tens = 12 tens (Write 2, remember 100)

In the above problem what combination of partial products was used to get 49 hundreds?

0462

- a. (6 tens x 8 ones) + 1 hundred = 4900
- \*b. (6 hundreds x 8 ones) + 100 = 49 hundreds
- c. (6 hundreds x 8 tens) + 100 = 49 hundreds

8c40

$$\begin{array}{r} 215 \\ \times 6 \\ \hline 1290 \end{array}$$

In the above problem what combination of partial products was used to get 0 ones?

0463

- \*a. 5 ones x 6 ones = 30 ones (Write 0, remember 3 tens)
- b. 6 ones x 5 tens = 30 ones (Write 0, remember 3 tens)
- c. 5 ones x 6 ones = 30 ones (Write 0, remember 3 ones)

In the above problem what combination of partial products was used to get 9 tens? 0464

- a. (1 one x 6 ones) + 3 tens = 9 tens
- b. (1 ten x 6 ones) + 2 tens = 9 tens
- \*c. (1 ten x 6 ones) + 3 tens = 9 tens

In the above problem what combination of partial products was used to get 12 hundreds? 0465

- \*a. 2 hundreds x 6 ones = 1200
- b. 2 x 6 = 12 hundreds
- c. 2 hundreds x 6 tens = 12 hundreds

$$\begin{array}{r} 39 \\ \times 68 \\ \hline 312 \\ 2340 \\ \hline 2652 \end{array}$$

In the above problem what combination of partial products was used to get 312? 0466

- \*a. (9 x 8) + (30 x 8) = 312
- b. (9 ones x 8 ones) + (3 tens x 8 tens) = 312
- c. (9 x 8) + (30 x 8) + 70 = 312

In the above problem what combination of partial products was used to get 2340? 0467

- a. (90 x 60) + (30 x 60) = 2340
- \*b. (9 ones x 6 tens) + (3 tens x 6 tens) = 2340
- c. (9 x 60) + (3 ones x 6 tens) = 2340

In the above problem what combination of partial products was used to get 2300? 0468

- a. (3 tens x 6 tens) + 5 tens = 2300
- \*b. (3 tens x 6 tens) + 500 = 2300
- c. (30 x 60) + 50 = 2300

$$\begin{array}{r} 78 \\ \times 32 \\ \hline 156 \\ 2340 \\ \hline 2496 \end{array}$$

In the above problem what combination of partial products was used to get 156? O469

- a.  $(8 \text{ ones} \times 2 \text{ ones}) + (70 \text{ tens} \times 2 \text{ ones}) = 156 \text{ hundreds}$   
 b.  $(8 \text{ ones} \times 2) + (70 \times 2 \text{ ones}) = 156 \text{ tens}$   
 \*c.  $(8 \times 2) + (70 \times 2) = 156 \text{ ones}$

In the above problem what combination of partial products was used to get 2340? O470

- a.  $(30 \times 80) + (30 \times 70) = 2340$   
 \*b.  $(3 \text{ tens} \times 8 \text{ ones}) + (3 \text{ tens} \times 7 \text{ tens}) = 2340 \text{ tens}$   
 c.  $(30 \times 8) + (30 \times 70) = 2340 \text{ thousands}$

$$\begin{array}{r} 324 \\ \times 23 \\ \hline 972 \\ 6480 \\ \hline 7452 \end{array}$$

In the above problem, what combination of partial products was used to get 972? O471

- a.  $(4 \text{ ones} \times 3 \text{ ones}) + (20 \text{ tens} \times 3 \text{ ones}) + 300 \text{ hundreds} \times 3) = 972$   
 b.  $(4 \times 3) + (2 \times 3) + (300 \times 3) = 972$   
 \*c.  $(4 \times 3) + (20 \times 3) + (300 \times 3) = 972$

In the above problem what combination of partial products was used to get 6480? O472

- \*a.  $(2 \text{ tens} \times 4 \text{ ones}) + (2 \text{ tens} \times 2 \text{ tens}) + (3 \text{ hundreds} \times 2 \text{ tens}) = 6480$   
 b.  $(20 \times 4) + (200 \times 20) + (300 \times 20) = 6480$   
 c.  $(20 \text{ tens} \times 4 \text{ ones}) + (20 \text{ tens} \times 20) + (300 \times 2 \text{ tens}) = 6480$

$$\begin{array}{r}
 123 \\
 \times 321 \\
 \hline
 123 \\
 2360 \\
 36900 \\
 \hline
 39483
 \end{array}$$

In the above problem what combination of partial products was used to get 123? 0473

- \*a.  $(1 \times 3) + (1 \times 20) + (1 \times 100) = 123$
- b.  $(1 \times 3 \text{ ones}) + (1 \times 2 \text{ ones}) + (1 \times 1 \text{ one}) = 123$
- c.  $(1 \text{ one} \times 3 \text{ ones}) + (1 \text{ one} \times 2 \text{ tens}) + (1 \text{ one} \times 1 \text{ ten}) = 123$

In the above problem what combination of partial products was used to get 2450? 0474

- \*a.  $(20 \times 3) + (20 \times 20) + (20 \times 100) = 2460$
- b.  $(20 \times 3) + (200 \times 20) + 100 \times 20 = 2460$
- c.  $(20 \text{ ones} \times 3) + (20 \text{ ones} \times 200) + (2 \text{ tens} \times 100) = 2460$

In the above problem what combination of partial products was used to get 36900? 0475

- a.  $(3 \text{ hundreds} \times 3) + (300 \times 200) + (300 \times 100) = 36900$
- b.  $(300 \times 3) + (300 \times 20) + (300 \times 1 \text{ hundred}) = 359 \text{ tens}$
- \*c.  $(300 \times 3 \text{ ones}) + (300 \times 2 \text{ tens}) + (300 \times 100) = 36900$

$$\begin{array}{r}
 616 \\
 \times 324 \\
 \hline
 2464 \\
 12320 \\
 184800 \\
 \hline
 199584
 \end{array}$$

In the above problem what combination of partial products was used to get 2464? 0476

- a.  $(6 \text{ ones} \times 4) + (10 \text{ tens} \times 4) + (600 \times 4) = 2464$
- \*b.  $(6 \times 4) + (10 \times 4) + (600 \times 4) = 2464$
- c.  $(6 \text{ ones} \times 4 \text{ ones}) + (10 \text{ ones} \times 4 \text{ ones}) + 60 \text{ ones} \times 4 \text{ ones} = 2464$

In the above problem what combination of partial products was used to get 12320? 0477

- \*a.  $(20 \times 6 \text{ ones}) + 20 \times 1 \text{ ten} + (20 \times 6 \text{ hundreds}) = 1232 \text{ tens}$
- b.  $(2 \text{ tens} \times 6) + (2 \text{ tens} \times 1) + (2 \text{ tens} \times 6) = 12320$
- c.  $(20 \times 6) + 20 \times 10 + 20 \times 60 = 1232 \text{ hundreds}$

In the above problem what combination of partial products was used to get 184800? 0478

- a.  $(6 \times 3 \text{ hundreds}) + (1 \times 3 \text{ hundreds}) + 6 \times 3 \text{ hundreds} = 184800$
- b.  $(300 \times 6) + (300 \times 10) + 300 \times 600 = 1848 \text{ thousands}$
- \*c.  $(300 \times 6) + (300 \times 10) + (300 \times 600) = 184800$

**MULTIPLICATION AND DIVISION**

THE STUDENT DEMONSTRATES UNDERSTANDING OF THE RELATION BETWEEN MULTIPLICATION AND DIVISION BY RECOGNIZING RELATED MULTIPLICATION AND DIVISION COMBINATIONS.

0029

Here are three equations.

$$\begin{aligned} 3 \times 5 &= 15 \\ 15 \div 5 &= 3 \\ 15 \div 3 &= 5 \end{aligned}$$

Which of the following is related to the above equations?

0479

- a.  $5 \times 1 = 5$
- b.  $5 \times 2 = 10$
- \*c.  $5 \times 3 = 15$
- d.  $12 \div 4 = 3$

Here are three more equations.

$$\begin{aligned} 3 \times 4 &= 12 \\ 4 \times 3 &= 12 \\ 12 \div 4 &= 3 \end{aligned}$$

Which of the following is related to the above three equations?

0480

- a.  $12 \div 2 = 6$
- \*b.  $12 \div 3 = 4$
- c.  $6 \times 2 = 12$
- d.  $12 \div 6 = 2$

Do these the same way.

$$\begin{aligned} 1 \times 4 &= 4 \\ 4 \times 1 &= 4 \\ 4 \div 1 &= 4 \end{aligned}$$

Which of the following is related to the above three equations?

0481

- a.  $2 \times 2 = 4$
- b.  $4 \div 2 = 2$
- c.  $8 \div 4 = 2$
- \*d.  $4 \div 4 = 1$



THE CHILD WILL APPLY HIS KNOWLEDGE THAT MULTIPLICATION MAKES AN ANSWER HAVE A HIGHER NUMBER AND WHOLE NUMBER DIVISION MAKES AN ANSWER HAVE A LOWER NUMBER, BY BEING ABLE TO SELECT EITHER THE MULTIPLICATION OR DIVISION SIGNS WHICH WOULD BELONG IN A SPECIFIED PROBLEM.

0077

In which group of problems below would you use a multiplication sign in each problem. Circle the correct answer.

0482

a.  $15 \bigcirc 5 = 3$   
 $25 \bigcirc 5 = 5$   
 $30 \bigcirc 5 = 10$

\*b.  $5 \bigcirc 3 = 15$   
 $5 \bigcirc 5 = 25$   
 $5 \bigcirc 10 = 50$

c.  $45 \bigcirc 5 = 9$   
 $35 \bigcirc 7 = 5$   
 $4 \bigcirc 4 = 16$

In which group of problems below would you use a division sign in each problem? Circle the correct answer.

0483

\*a.  $45 \bigcirc 5 = 7$   
 $30 \bigcirc 5 = 6$   
 $16 \bigcirc 4 = 4$

b.  $1 \bigcirc 2 = 2$   
 $3 \bigcirc 3 = 9$   
 $3 \bigcirc 2 = 6$

c.  $7 \bigcirc 1 = 7$   
 $15 \bigcirc 3 = 5$   
 $14 \bigcirc 2 = 7$

200

110

**MEASUREMENT**

LENGTH

THE STUDENT DEMONSTRATES AN UNDERSTANDING OF LENGTH BY IDENTIFYING THE RELATION BETWEEN THE INCH, FOOT AND YARD AS UNITS OF LINEAR MEASURE.

0009

Mark the greater length.

0484

- a. 10 inches more than 1 foot
- b. 18 inches and 5 inches
- \*c. 6 inches less than 1 yard
- d. 2 feet
- e. 28 inches

Mark the lesser length.

9485

- a. 2 feet and 8 inches
- b. 10 inches and 20 inches
- c. 3 feet
- d. 1 yard less 5 inches
- \*e. 29 inches

GIVEN A GROUP OF THREE STICKS AT ONE TIME, NO TWO OF WHICH ARE THE SAME LENGTH, THE CHILD WILL SHOW HIS UNDERSTANDING OF THE MEANING OF "LONGEST" AND "SHORTEST" BY CHOOSING FROM THE GROUP OF STICKS AT THE DIRECTION OF THE TEACHER.

0050

Directions: The teacher will cut sticks from wooden dowels into 2 in., 4 in., 6 in., 8 in., and 10 in. lengths. She will place three of them before the child at one time and ask him to choose.

The teacher puts out the 2 in., 4 in., and 8 in. sticks and says, "Pick up the longest stick."

0486

- a. child picks up 2 in. stick
- b. child picks up 4 in. stick
- \*c. child picks up 8 in. stick
- d. child picks up no stick

Teacher sets out 2 in., 6 in., and 8 in. sticks and says, "Pick up the shortest stick." 0487

- \*a. child picks up 2 in. stick
- b. child picks up 6 in. stick
- c. child picks up 8 in. stick
- d. child picks up no stick

Teacher puts out 2 in., 8 in., and 10 in. sticks and says, "Choose the longest stick." 0488

- a. child picks up 2 in. stick
- b. child picks up 8 in. stick
- \*c. child picks up 10 in. stick
- d. child picks up no stick

Teacher sets out 2 in., 4 in., and 8 in. sticks and asks, "Pick up the shortest stick." 0489

- \*a. child picks up 2 in. stick
- b. child picks up 4 in. stick
- c. child picks up 8 in. stick
- d. child picks up no stick

Teacher sets out 4 in., 6 in., and 8 in. sticks and says, "Choose the shortest stick." 0490

- \*a. child picks up 4 in. stick
- b. child picks up 6 in. stick
- c. picks up 8 in. stick
- d. picks up no stick

Teacher puts out 6 in., 8 in., and 10 in. sticks and says, "Choose the longest stick." 0491

- \*a. Child picks up 10 in. stick
- b. Child picks up 8 in. stick
- c. Child picks up 6 in. stick
- d. Child picks up no stick

THE CHILD WILL DEMONSTRATE HIS UNDERSTANDING OF THE RELATIONSHIP BETWEEN THE INCH, FOOT, AND YARD, BY BEING ABLE TO SELECT THE UNIT OF MEASUREMENT THAT MEASURES THE SAME AMOUNT AS A SPECIFIED AMOUNT.

0074

Circle the amount below which  $\underline{m}$  1 yard

0492

- a. 2 feet
- b. 12 inches
- \*c. 36 inches
- d.  $1\frac{1}{2}$  feet

Circle the amount below which  $\underline{m}$  1 foot

0493

- \*a. 12 inches
- b. 6 inches
- c. 1 yard
- d. 2 yards

48 inches  $\underline{m}$  \_\_\_\_\_?

0494

- a. 1 yard
- \*b. 1 yard and 1 foot
- c. 2 yards and 2 feet

72 inches  $\underline{m}$  \_\_\_\_\_?

0495

- \*a. 2 yards
- b. 4 feet
- c. 1 yard and 2 feet

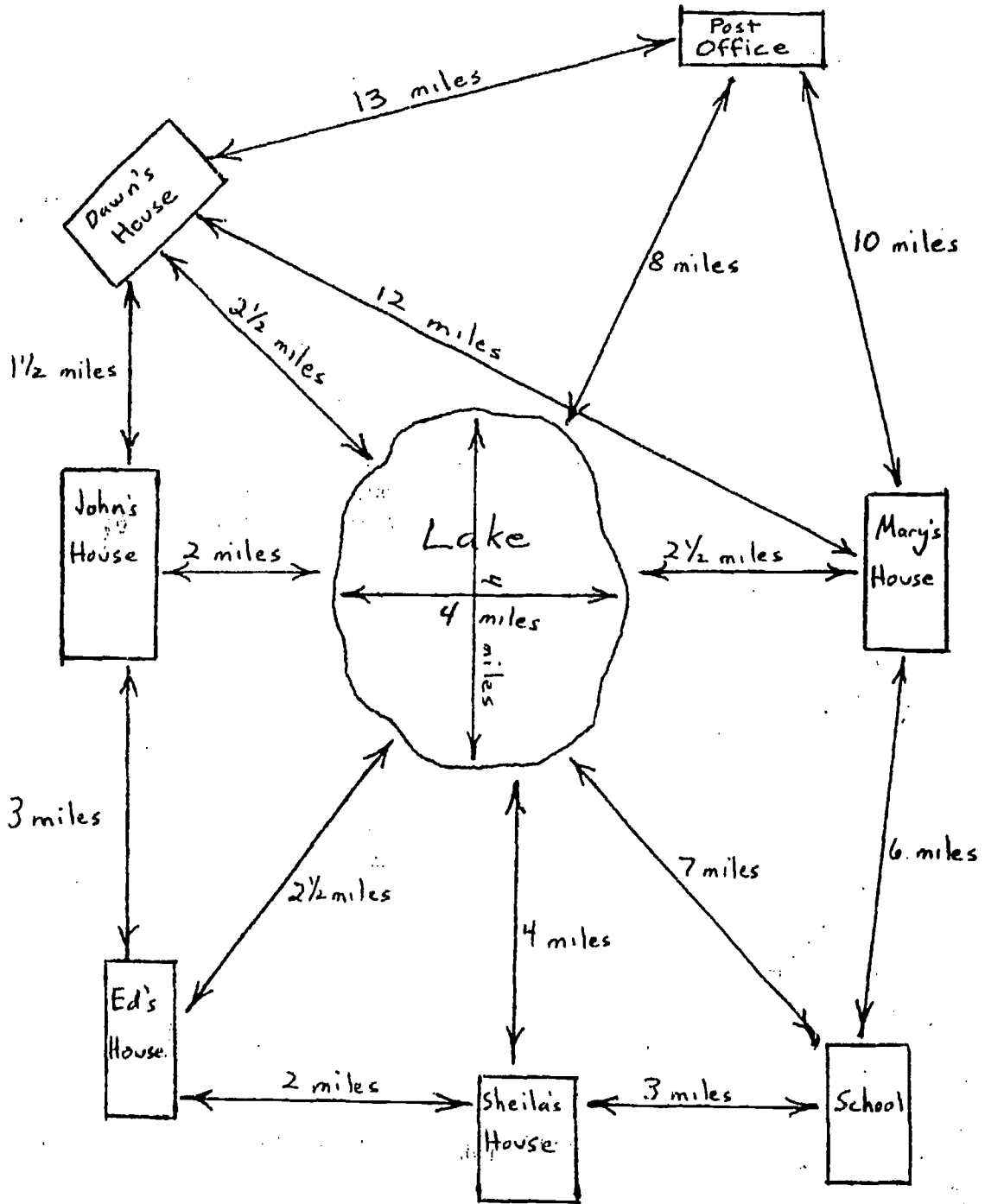
13 inches  $\underline{m}$  \_\_\_\_\_?

0496

- \*a. 1 foot 1 inch
- b. 2 feet
- c. 1 yard

THE CHILD WILL DEMONSTRATE HIS ABILITY TO ADD AND SUBTRACT DISTANCES BETWEEN GIVEN POINTS ON A MAP BY BEING ABLE TO COMPUTE DISTANCES TRAVELED WHEN THE PATH TAKEN IS SPECIFIED.

0076



On the map the shortest way of getting from Mary's house to John's house is \_\_\_\_\_ miles. Circle the correct distance below. 0497

- \*a.  $8\frac{1}{2}$  miles
- b.  $4\frac{1}{2}$  miles
- c. 10 miles

Sheila walked to Dawn's house and back again. Circle the amount of miles Sheila walked. 0498

- a.  $6\frac{1}{2}$  miles
- b. 15 miles
- \*c. 13 miles

The school bus driver started from the school and went to Sheila's house, Ed's house, John's house, Dawn's house, and Mary's house; then he went back to school. Circle the number of miles the driver traveled. 0499

- a.  $15\frac{1}{2}$  miles
- \*b.  $27\frac{1}{2}$  miles
- c. 30 miles
- d. 25 miles

John walked to the lake, took a boat across, and then walked to Mary's house. Mary's mother drove John home. Circle the number of miles John traveled. 0500

- a.  $20\frac{1}{2}$  miles
- \*b. 22 miles
- c.  $9\frac{1}{2}$  miles

\_\_\_\_\_ travels the longest distance to get to school. Circle the right answer. 0501

- a. John
- b. Ed
- \*c. Dawn
- d. Mary



If Sheila could go the shortest way to the post office she would travel \_\_\_\_\_ miles. Circle the correct answer. 0502

- a. 19 miles
- b. 20 miles
- \*c. 18 miles

How many miles does John travel to school than Sheila? Circle the correct answer. 0503

- a. 8 miles
- \*b. 5 miles
- c. 2 miles

How many miles less does John walk when he goes to Ed's house, than Mary walks when she goes to Dawn's house? Circle the correct answer. 0504

- \*a. 9 miles
- b. 7 miles
- c. 11 miles

The difference in miles between the school and the lake, and the lake and Ed's house is \_\_\_\_\_ miles. 0505

- a. 10 miles
- \*b.  $4\frac{1}{2}$  miles
- c. 8 miles

How many miles less does Mary have to walk to get to the post office than Dawn does? Circle the right answer. 0506

- a. 10 miles
- b. 5 miles
- \*c. 3 miles

... ..

**SIZE**

... ..

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GIVEN A SET OF THREE BLOCKS, NO TWO OF WHICH ARE THE SAME SIZE,  
THE CHILD WILL SHOW HIS KNOWLEDGE OF THE MEANING OF THE WORDS  
"LARGEST" AND "SMALLEST" BY CHOOSING A BLOCK AT THE DIRECTION OF  
THE TEACHER.

0044

Directions: The teacher arranges and rearranges a set of three  
blocks, no two of which are the same size.

The blocks are arranged so that the largest block is first,  
smallest block is second, medium block third. The teacher says,  
"Point to the smallest block."

0507

- \*a. child points to second block
- b. child points to first block
- c. child points to third block

Teacher arranges blocks: smallest block first, medium block second,  
largest block third. "Point to the largest block."

0508

- a. child points to first block
- b. child points to second block
- \*c. child points to third block

Teacher arranges blocks: medium first, smallest second, largest  
third. "Point to the smallest block."

0509

- a. child points to first block
- \*b. child points to second block
- c. child points to third block

Blocks are arranged: medium first, smallest second, largest third.  
"Point to the largest block."

0510

- a. child points to first block
- b. child points to second block
- \*c. child points to third block

LIQUID

THE STUDENT DEMONSTRATES AN UNDERSTANDING OF LIQUID MEASURE BY IDENTIFYING THE RELATION BETWEEN CUP, PINT, QUART AND GALLON AS UNITS OF LIQUID MEASURE.

0008

1 quart (measures the same amount as)

0511

- a. 3 pints
- \*b. 4 cups
- c. 1 gallon

2 pints (measures the same amount as)

0512

- a. 3 cups
- b. 1 gallon
- \*c. 1 quart

1 gallon (measures the same amount as)

0513

- \*a. 4 quarts
- b. 10 cups
- c. 6 pints

Tom and Ann drink milk at three meals every day. They need 6 cups of milk. This (measures the same amount as)

0514

- a. 1 quart and 1 cup
- b. 2 quarts
- \*c. 1 quart and 1 pint

Tom's family likes ice cream. One day they bought 2 quarts of vanilla, 2 pints of strawberry and 2 pints of chocolate. This (measures the same amount as)

0515

- a. 6 pints
- \*b. 1 gallon
- c. 5 quarts

TIME

THE STUDENT SHOWS COMPREHENSION OF TIME BY IDENTIFYING THE RELATION BETWEEN DAY, WEEK, MONTH AND YEAR AS UNITS OF MEASURE OF TIME.

0007

Mark the one that is not right.

0516

- a. There are seven days in a week.
- b. Friday comes before Saturday.
- \*c. January is a week.
- d. Monday comes after Sunday.

Mark the one that is not right.

0517

- a. There are 12 months in a year.
- b. Some months have 30 days.
- c. Some months have 31 days.
- \*d. December is the first month of the year.

**BILLS AND COINS**



THE STUDENT DEMONSTRATES AN UNDERSTANDING OF THE U. S. MONETARY SYSTEM BY IDENTIFYING THE RELATION BETWEEN THE PENNY, NICKEL, QUARTER AND HALF DOLLAR AS UNITS OF MEASURE OF VALUE.

0006

Which set of coins has the same value as 25¢?

0518

- a. 2 dimes and 5 nickels
- b. 2 dimes and 2 nickels and 5 pennies
- c. 2 nickels and 5 pennies
- \*d. 1 dime and 2 nickels and 5 pennies

Which set of coins has the same value as 50¢?

0519

- a. 5 nickels
- \*b. 5 dimes
- c. 1 quarter and 1 nickel and 5 pennies
- d. 1 quarter and 1 dime and 5 pennies

Which set of coins has the same value as 78¢?

0520

- a. 1 half-dollar and 1 dime and 3 pennies
- b. 2 quarters and 8 pennies
- \*c. 1 half-dollar and 1 quarter and 3 pennies
- d. 7 dimes and 8 nickels

Some candy costs 17¢. You pay 25¢. What change will you get?

0521

- \*a. 3 pennies and 1 nickel
- b. 7 pennies
- c. 2 nickels
- d. 3 pennies and 1 dime

A book costs 29¢. You pay 50¢. What change will you get?

0522

- a. 5 nickels
- b. 1 penny and 3 nickels
- c. 2 dimes
- \*d. 1 penny and 2 dimes

**GEOMETRY**

147

SHAPES

154

THE CHILD WILL APPLY HIS KNOWLEDGE OF SHAPES BY NAMING COMMON  
TWO-DIMENSIONAL SHAPES WHEN PRESENTED WITH OBJECTS IN THE ROOM.

0039

Child is presented with a clock.

0523

Child says,

- a. "square"
- b. "rectangle"
- \*c. "circle"
- d. no response

Child is presented with a square desk.

0524

Child says,

- a. "rectangle"
- \*b. "square"
- c. "circle"
- d. no response

Child is presented with a rectangle chalkboard

0525

Child says,

- \*a. "rectangle"
- b. "square"
- c. "circle"
- d. no response

Child is presented with a piano key.

0526

Child says,

- \*a. "rectangle"
- b. "square"
- c. "circle"
- d. no response

GIVEN A CHALKBOARD ON WHICH ARE DRAWN A CIRCLE, A TRIANGLE, A SQUARE, AND A RECTANGLE, THE CHILD SHOWS THAT HE KNOWS THE NAMES OF THE SHAPES BY CIRCLING THE SHAPE WHOSE NAME IS SPOKEN BY THE TEACHER.

0041

Teacher says "triangle".

0527

- a. child circles circle
- \*b. child circles triangle
- c. child circles square
- d. child circles rectangle
- e. no response

Teacher says "rectangle".

0528

- a. child circles circle
- b. child circles triangle
- c. child circles square
- \*d. child circles rectangle
- e. no response

Teacher says "circle".

0529

- \*a. child circles circle
- b. child circles triangle
- c. child circles square
- d. child circles rectangle
- e. no response

Teacher says "square".

0530

- a. child circles circle
- b. child circles triangle
- \*c. child circles square
- d. child circles rectangle
- e. no response

THE CHILD WILL SHOW HIS KNOWLEDGE OF SHAPES BY NAMING THE SHAPE WHICH THE TEACHER MAKES WITH A LENGTH OF ROPE ON THE FLOOR.

0042

Teacher makes a triangle

0531

- a. child says "circle"
- b. child says "square"
- \*c. child says "triangle"
- d. child says "rectangle"
- e. child says "ellipse"
- f. no response

Teacher makes a circle

0532

- \*a. child says "circle"
- b. child says "square"
- c. child says "triangle"
- d. child says "rectangle"
- e. child says "ellipse"
- f. no response

Teacher makes a square

0533

- a. child says "circle"
- \*b. child says "square"
- c. child says "triangle"
- d. child says "rectangle"
- e. child says "ellipse"
- f. no response

THE CHILD WILL APPLY HIS KNOWLEDGE OF SHAPES — SQUARE, CIRCLE, TRIANGLE, RECTANGLE, BY RECOGNIZING AND NAMING A SHAPE FROM AN ARRANGEMENT OF OBJECTS MADE BY THE TEACHER.

0049

Directions: Teacher assembles pencils, rods, string, with which to form shapes on the floor.

Teacher makes a rectangle with pencils.

0534

- a. child says square
- b. child says circle
- c. child says triangle
- \*d. child says rectangle

Teacher shapes a length of string into a circle.

0535

- \*a. child says circle
- b. child says square
- c. child says triangle
- d. child says rectangle

Teacher uses rods to make a square.

0536

- a. child says circle
- \*b. child says square
- c. child says triangle
- d. child says rectangle

Teacher uses 3 pencils to make a triangle.

0537

- a. child says circle
- b. child says square
- \*c. child says triangle
- d. child says rectangle

Teacher makes a long rectangle with rods and pencils.

0538

- a. child says circle
- b. child says square
- c. child says triangle
- \*d. child says rectangle

**SIMMETRY**

152



GIVEN AN UNCOMPLETED SHAPE OR OBJECT, THE CHILD WILL SHOW HIS ABILITY TO ANALYZE THE THREE CHOICES GIVEN HIM ACCORDING TO THE CRITERION OF SYMMETRY BY SELECTING THE HALF WHICH COMPLETES THE WHOLE SYMMETRICALLY.

0057

Directions: The child receives half a shape from the teacher. On the chalk board, the teacher draws two halves opposite and similar to the one the child holds and one opposite and exactly the same as the child's. The child then holds his half next to the half on the chalk board which completes the whole symmetrically.

The teacher gives the child:

D

0539

- a. Child matches it with
- \*b. Child matches it with
- c. Child matches it with

D

D

D

The teacher gives the child:

D

0540

- a. Child matches it with
- b. Child matches it with
- \*c. Child matches it with

D

D

D

The teacher gives the child:

A

0541

- a. Child matches it with
- \*b. Child matches it with
- c. Child matches it with

A

A

A

The teacher gives the child:

A

0542

- \*a. Child matches it with
- b. Child matches it with
- c. Child matches it with

A

A

A

The teacher gives the child:

B

0543

- a. Child matches it with
- \*b. Child matches it with
- c. Child matches it with

B

B

B

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PATTERNS




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GIVEN AN UNCOMPLETED SEQUENCE OF GEOMETRIC FIGURES, THE CHILD WILL SHOW HIS ABILITY TO ANALYZE THE PATTERN BY CHOOSING THE GEOMETRIC FIGURE WHICH COMES NEXT.




0064



- \*a. child chooses 
- b. child chooses 
- c. child chooses 
- d. no response




0544



- a. child chooses 
- b. child chooses 
- \*c. child chooses 
- d. no response




0545



- a. child chooses 
- \*b. child chooses 
- c. child chooses 
- d. no response




0546



- a. child chooses 
- \*b. child chooses 
- c. child chooses 
- d. no response

0547



- \*a. child chooses 
- b. child chooses 
- c. child chooses 
- d. no response

0548

SETS

○ □ △

○ □ △

○ □ △

○ △ □



○ □ △

8420



EMPTY

GIVEN A CHALKBOARD ON WHICH THE TEACHER WILL DRAW SETS OF OBJECTS, THE CHILD WILL SHOW HIS KNOWLEDGE OF THE MEANING OF THE TERM "EMPTY SET" BY POINTING TO THE EMPTY SET ON THE BOARD. 0043


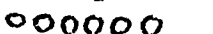
Teacher draws the following three sets: 0549

- a. child points to [  ]  
 \*b. child points to [                    ]  
 c. child points to [  ]

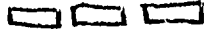

Teacher draws three sets: 0550

- \*a. child points to [                    ]  
 b. child points to [  ]  
 c. child points to [  ]

Teacher draws three new sets: 0551

- a. child points to [  ]  
 \*b. child points to [                    ]  
 c. child points to [  ]

Teacher makes three new sets: 0552

- a. child points to [  ]  
 b. child points to [  ]  
 \*c. child points to [                    ]

ONE

THE CHILD WILL DEMONSTRATE HIS KNOWLEDGE OF THE MEANING OF "A SET OF ONE" BY IDENTIFYING A SET OF ONE WHEN THE TEACHER MAKES THREE SETS ON THE CHALKBOARD, ONE BEING A SET OF ONE.

0063

Teacher makes a set of 2, 1, 4 objects.

0553

- a. child circles a set of two
- \*b. child circles a set of one
- c. child circles a set of four
- d. no response

Teacher makes a set of 1, 3, 5 objects.

0554

- \*a. child circles a set of one
- b. child circles a set of three
- c. child circles a set of five
- d. no response

Teacher makes a set of 4, 2, 1 objects.

0555

- a. child circles a set of four.
- b. child circles a set of two
- \*c. child circles a set of one
- d. no response

Teacher makes a set of 6, 1, 4 objects.

0556

- a. child circles a set of six
- \*b. child circles a set of one
- c. child circles a set of four
- d. no response



EQUAL-EQUIVALENT

GIVEN A FLANNELBOARD ON WHICH ARE SETS OF OBJECTS 1 THRU 5, THE CHILD WILL SHOW HIS KNOWLEDGE OF THE MEANING OF EQUIVALENT SETS BY POINTING TO A SET ON THE FLANNELBOARD WHICH IS EQUIVALENT TO THE SET THE TEACHER HOLDS UP ON A CARD. 0045

Teacher holds up a set of three 0557

- a. child points to set of one
- b. child points to set of two
- \*c. child points to set of three
- d. child points to set of four
- e. child points to set of five

Teacher holds up a set of one. 0558

- \*a. child points to set of one
- b. child points to set of two
- c. child points to set of three
- d. child points to set of four
- e. child points to set of five

Teacher holds up a set of four 0559

- a. child points to set of one
- b. child points to set of two
- c. child points to set of three
- \*d. child points to set of four
- e. child points to set of five

Teacher holds up a set of two 0560

- a. child points to set of one
- \*b. child points to set of two
- c. child points to set of three
- d. child points to set of four
- e. child points to set of five

Teacher holds up a set of five

0561

- a. child points to set of one
- b. child points to set of two
- c. child points to set of three
- d. child points to set of four
- \*e. child points to set of five

GIVEN A FLANNELBOARD ON WHICH ARE SETS OF OBJECTS, SIX THRU TEN, THE CHILD WILL DEMONSTRATE HIS KNOWLEDGE OF THE MEANING OF "EQUIVALENT SETS" BY POINTING TO A SET ON THE FLANNELBOARD WHICH IS EQUIVALENT TO THE SET THE TEACHER HOLDS UP ON A CARD.

0046

Teacher holds up a set of seven

0562

- a. child points to set of six
- \*b. child points to set of seven
- c. child points to set of eight
- d. child points to set of nine
- e. child points to set of ten

Teacher holds up a set of eight

0563

- a. child points to set of six
- b. child points to set of seven
- \*c. child points to set of eight
- d. child points to set of nine
- e. child points to set of ten

Teacher holds up set of ten

0564

- a. child points to set of six
- b. child points to set of seven
- c. child points to set of eight
- d. child points to set of nine
- \*e. child points to set of ten

Teacher holds up set of six

0565

- \*a. child points to set of six
- b. child points to set of seven
- c. child points to set of eight
- d. child points to set of nine
- e. child points to set of ten

Teacher holds up set of nine

0566

- a. child points to set of six
- b. child points to set of seven
- c. child points to set of eight
- \*d. child points to set of nine
- e. child points to set of ten

GIVEN A SHEET DISPLAYING SEVERAL OBJECTS, THE CHILD WILL SHOW HIS KNOWLEDGE OF THE MEANING OF "EQUIVALENT SET" BY CHOOSING A SET THAT IS EQUIVALENT TO THE GIVEN SET.

0065

Teacher shows a set of 3 boys

0567

- a. child chooses two balls
- \*b. child chooses three balls
- c. child chooses four balls
- d. no response

Teacher shows a set of 5 cups

0568

- \*a. child chooses five saucers
- b. child chooses six saucers
- c. child chooses three saucers
- d. no response

Teacher shows a set of 4 ice cream cones

0569

- a. child chooses seven dips of ice cream
- b. child chooses six dips of ice cream
- \*c. child chooses four dips of ice cream
- d. no response

- Teacher shows seven black cats 0570
- a. child chooses ten jack-o-lanterns
  - b. child chooses five jack-o-lanterns
  - \*c. child chooses seven jack-o-lanterns
  - d. no response
- Teacher shows two girls 0571
- a. child chooses six lollipops
  - \*b. child chooses two lollipops
  - c. child chooses three lollipops
  - d. no response
- Teacher shows six hearts 0572
- a. child chooses four arrows
  - b. child chooses five arrows
  - \*c. child chooses six arrows
  - d. no response
- Teacher shows nine scals 0573
- \*a. child chooses nine balls
  - b. child chooses seven balls
  - c. child chooses four balls
  - d. no response
- Teacher shows eight clowns 0574
- a. child chooses ten hats
  - b. child chooses five hats
  - \*c. child chooses eight hats
  - d. no response

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