Work with your group to make up a scorecard for Sam.
Talk about these questions.

3. How could you keep score? What ways would you compute?

4. Would you use a table? tally marks? a calculator?
Why or why not? Is there another method you might choose?
Describe it.

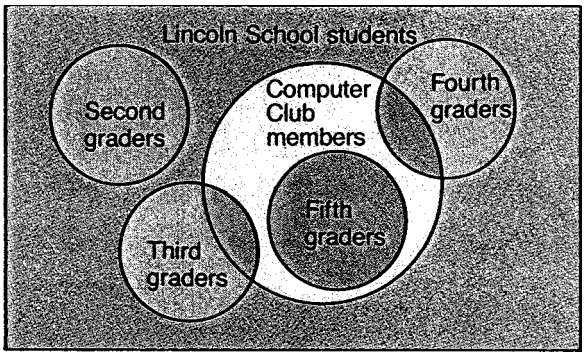
Before you find Sam's totals, compare his
scorecard with Carl's. Answer these questions.

s. For each game, who won?

s. Who had the higher total after four games?

7. Do you think it is always. necessary to find an exact total?
Why or why not?

c. The diagram shows information that doesn't use specific numbers. It shows from which grades some of the members of the computer club come. Two overlapping circles mean that some students belong to two groups.



What does the diagram show about computer club members and

8. second graders? 9. fourth graders? ,o. fifth graders?

Make a diagram for each statement.

». Some club members take Spanish.

12. No club members have their own computer.

13. All club members take math.

14. Some club members have blond hair, some have blue eyes, but none have blond hair and blue eyes.

Name Date Time

Interpreting Scientific Notation

Study Link 7-3

Scientific notation is a short way to represent large and small numbers. In scientific notation, a number is written as the product of two factors. One factor is a whole number or decimal. The other factor is a power of 10.

Scientific notation: $4 * 10^4$

Meaning: Multiply 10^4 (10,000) by 4.

$4 * 10^4 = 4 * 10{,}000 = 40{,}000$

Scientific notation: $6 * 10^6$

Meaning: Multiply 106 (1,000,000) by 6.

$6 * 10^6 = 6 * 1{,}000{,}000 = 6{,}000{,}000$

Guides for Powers of 10	
10^3	one thousand
10^6	one million
10^9	one billion
$10'^2$	one trillion

Complete the following statements.

1. The area of Alaska is about $6 * 10^5$ or _____ thousand square miles.

   The area of the "lower 48" states is about $3 * 10^6$ or _____ million square miles.

2. There are about $6 * 10^9$ or _____ billion people in the world.

3. It is estimated that about $5 * 10^8$ or _____ people speak English as their first or second language.

4. The language spoken by the greatest number of people is Chinese.

   More than $1 * 10^9$ or _____ people speak Chinese.

5. It is estimated that the most popular television shows in the United States are watched by at least one person in

   each of 1 * 107 or _____ households.

Source: The World Almanac and Book of Facts, 2000

5-EM

Name Date Time

Arrays and Factors

Home Link 9.6

Famil Note

Discuss with your child all the ways to arrange 18 chairs in equal rows. Then help your child use this information to list the factors of 18 (pairs of numbers whose product is 18).

Please return this Home Link to school tomorrow.

Work with someone at home.

The third grade class is putting on a play. Children have invited 18 people. Gilda and Harvey are in charge of arranging the 18 chairs. They want to arrange them in rows with the same number of chairs in each row, with no chairs left over.

Yes or no: Can they arrange the chairs in ...	**If yes, how many chairs in each row?**
1 row?	chairs
2 rows?	chairs
3 rows?	chairs
4 rows?	chairs
5 rows?	chairs
6 rows?	chairs
7 rows?	chairs
8 rows?	chairs
9 rows?	chairs
10 rows?	chairs
18 rows?	chairs

List all the factors of the number 18. *(Hint:* 18 has exactly 6 factors.)

How does knowing all the ways to arrange 18 chairs in equal rows help you find all the factors of 18? Tell someone at home.

Date Time

Logic Problems

Math Message

1. There are three children in the Smith family: Sara, Sam, and Sue.
   Use the following clues to find each one's age:

   • Each of the two younger children is half as old as the next older child.

   • The oldest is 16.

   • Sara is not the oldest.

   • Sara is twice as old as Sam.

   What is the age of each person?

   Sara Sam Sue

---

2. **a.** DeeAnn, Eric, Brooke, and Kelsey all have a favorite sport. Each one likes a different sport. Their favorite sports are basketball, swimming, golf, and tennis.

• DeeAnn doesn't like water.

• Both Eric and Brooke like to hit a ball.

• Eric doesn't like to play on a playing field that has lines on it.

What is each person's favorite sport?

DeeAnn Eric

Brooke Kelsey

b. Write an explanation of how your group found the answers.

Date Time

Logic Problems (cont.)

4. Sam, Don, Darla, Jon, and Sara all have a favorite kind of cookie. They each like a different kind best.

- Sam and Jon do not like peanut butter.
- Don has never tried sugar cookies and neither has Sara.
- Darla does not like raisins.
- Jon doesn't like sugar cookies.
- Darla and Jon do not like chocolate.
- Sara does like chocolate.
- Don likes cinnamon.

What kind of cookie does each like best? Use the logic grid to help you.

	Peanut butter	Sugar	Cinnamon	Oatmeal raisin	Chocolate
Sam					
Don					
Darla					
Jon					
Sara					

Sam

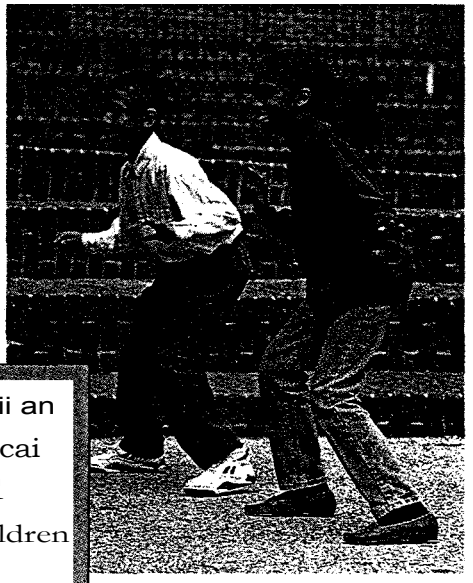
Don

Darla

Jon

Sara

Problem Solving
Use Logical Reasoning



The students are doing an Ibo dance from Nigeria in western Africa.

LEARN ABOUT IT

To solve some problems, a helpful strategy is Use Logical Reasoning.

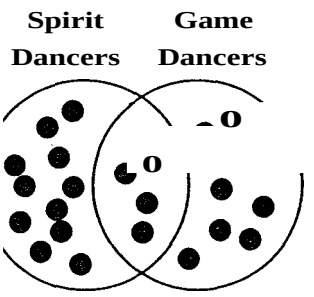
T e Folk Dance` Festival presented dances Iron.i ii an different countries._ 25 children"joined in the Afrlcai dances 1 b danced the Umoya-Spirit Dance an 1 danced the Aredze Game Dance'-'How many children danced in both dances?

I'll draw a Venn diagram.

I ll put 16 counters inside the Spirit Dancers circle.
I ll ut 14 counters inside the Game Dancers circle.

T do this with only 25 counters, I must place 55 counters so that they are inside *both* circles.

5 children danced both dances.



Venn Diagram

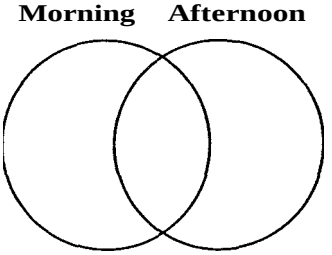
TRY IT OUT

Tell if the statement about the dance problem is true or false.

1. All of the 25 dancers joined two different dances.

2. Every child danced at least once, and some children danced twice.

3. Many of the children danced at least one dance.



4. Copy this Venn diagram and solve using counters.

   There were 16 dances in the Festival. 9 dances were performed in the morning and 12 in the afternoon. How many dances were performed both times?

Date Time

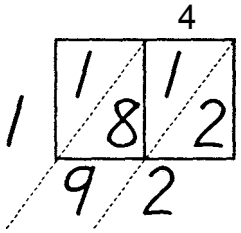
Lattice Multiplication

Megan has a special way of doing multiplication problems. She calls it lattice multiplication. Can you figure out how she does it?

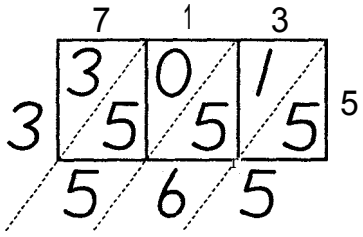
Study the problems and solutions in Column A. Then try to use lattice multiplication to solve the problems in Column B.

Column A

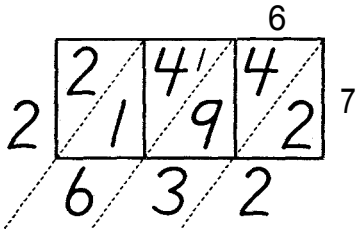
3X64=1 1 72



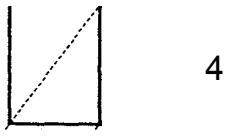
0 5 X,,,__3,565-



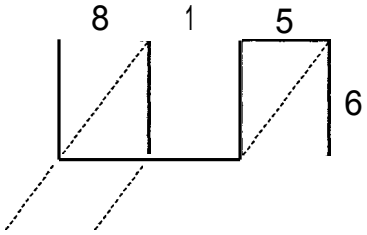
,X3,6- 2,1632



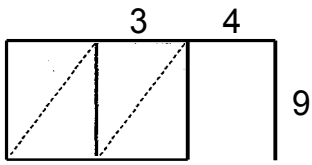
Column B



2. 6x815=



3. 9 x 634 ==



3-EM

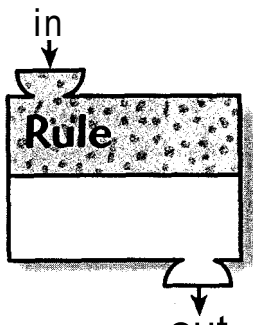
Date

"What's My Rule?"

Find the missing numbers and

in	out
7	4
11	8
4	
	9

Your turn:



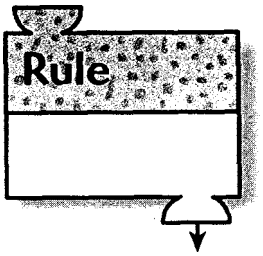
in	out
5	10
8	13
12	17
16	

Your turn:

in	out
1321	43
12	22
27	
	24

Your turn:

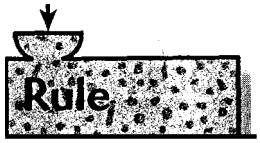
Challenge



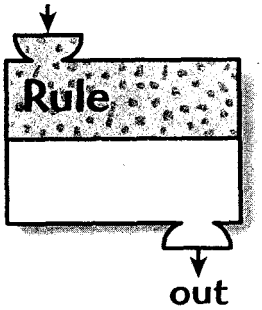
in	Out
1	2
2	4
	6
4	
6	

Your turn:

Make your own!

5. 

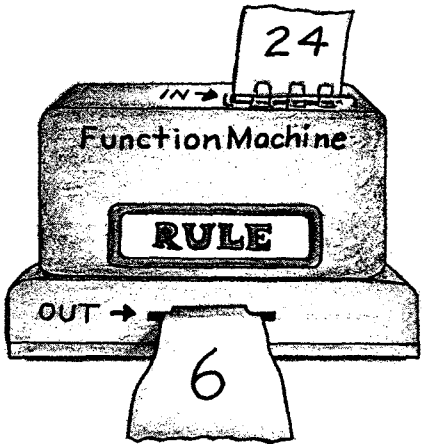
in	out

6. 

in	out

Using Critical Thinking

LEARN ABOUT T



"This is a great machine," said Carl. "You can put in a number and make it do any operation you want! It's easy to see that it is dividing by 4."

"It's not easy for me to see," said Lola. "I thought that the machine was subtracting!"

"You're both jumping to conclusions," said Ginger. "I just thought of a way that the machine could be subtracting *and* dividing!"

TALK ABOUT IT

1. What does a function machine do?
2. Why did Carl think that the machine was dividing by 4?
3. What do you think Lola meant? How could the machine produce 6 by subtracting?
4. Could Ginger be correct? Work together to figure out a rule that the machine could use to begin with 24 and produce 6 by subtracting and dividing.
5. What additional information might help you decide what rule the machine is actually using? Give examples.
6. Make up a rule for a function machine. Give some "in" and "out" numbers and ask a partner to discover the rule.
7. Can you think of any real-world machines that could be made to work like a function machine? Explain.

IN	OUT
24	6

q_Aw

TRY ff OUT

1. Matt pretended to be a function machine.

   When Jorie said 24, Matt said 4.

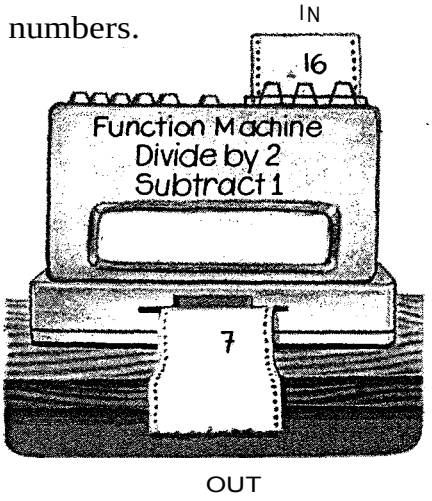
   When Jorie said 12, Matt said 2.

   When Jorie said 18, Matt said 3.

   What rule do you think Matt was using?

Give the output number for each of these input numbers.

2. 8
3. 10
4. 14
5. 40
6. 20
7. 24
8. 16
9. 100



Think about what rule the function machine could be using. What do you think should go in each box?

RULE: Multiply by 6	
IN	OUT
3	18
5	☐
9	☐
7	☐
0	☐

10. 11. 12. 13.

14 15.

RULE: ☐	
IN	OUT
6	2
12	4
3	1
9	3
24	☐

RULE: Divide by 4, Add 3.	
IN	OUT
16	7
12	☐
8	☐
24	☐
36	☐

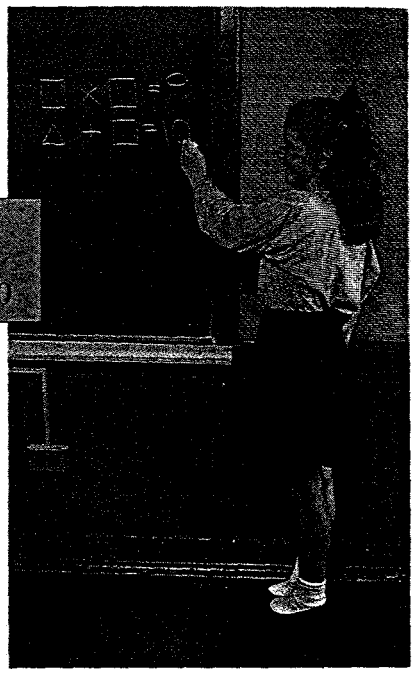
16. 17. 18. 19.

RULE: ☐	
IN	OUT
2	5
3	7
4	9
5	11
10	☐

20. 21.

y-A-W

Exploring Algebra



LEARN ABOUT T

In these equations, each shape holds a place for just one number. Find the number that goes in each shape.

□ × □ = 9
△ + □ = 10

TALK ABOUT IT

1. Look at the first equation. How many basic facts have a product of 9?
2. In the first equation, will the factors be the same or will they be different? Why is this important?
3. If you know what goes in n, how can you find what goes in △? Tell why.

TRY IT OUT

Find the number that goes in each shape.

1. | | + A = 7
   A x A = 4
2. A + 8 = 8
   n - A = 6
   = 30
   | | x f | = 36
3. | | x A = 27
5. A + A = Q + 3
   Q + n = 8
   = △
6. | | + A = Q
   5 x A = 5
   | | + □ = 6

7. Make up a problem like the one on this page. Exchange with a classmate and find the missing numbers.

4-AW

Solve each open sentence on your calculator without using the "broken" key.
Record your steps.

1.

Broken Key: O	
To Solve: 68 + x = 413	

2.

Broken Key: O	
To Solve: s * 48 = 2,928	

3.

Broken Key: O	
To Solve: z+ 643 = 1,210	

4.

Broken **Key:**	
To Solve: w / 15 = 8	

5.

Broken Key: O	
To Solve: d - 574 = 1,437	

6. Make up one for your partner to solve.

Broken Key:	
To Solve:	

4-EM

Date Time

Open Sentences

Solve each open sentence. Copy the sentence over, with the solution in place of the variable. Circle the solution.

1. 51 = n + 29

   5/ +25

2. 48+d=70

3. 34-x=7

4. 32=76-p

5. b-7=12

6. u-30=10

7. y=3*8

8. 5*m=35

9. 21 /x=7

10. x=32/8

11. 5 = w/ 10

12. h-6 = 9

Algebraic Expressions

Variables can be used to express relationships between quantities.

200-201

EXAMPLE Claude earns $6 an hour. Use a variable to express the relationship between Claude's earnings and the amount of time worked.

If you use the variable *H* to stand for the number of hours Claude works, you can write his pay as *H * 6.*

H * 6 is an example of an **algebraic expression.** An algebraic expression uses operation symbols (+, -, *, and so on) to combine variables and numbers.

EXAMPLE Write the statement as an algebraic expression.

Statement	Algebraic Expression
Marshall is 5 years older than Carol.	If Carol is C years old, then Marshall's age in years is C + 5.

Evaluating Expressions

To **evaluate** something is to find out what it is worth. To evaluate an algebraic expression, first replace each variable with its value.

EXAMPLES Evaluate each algebraic expression.

6*H

If H = 3, then 6 * *H* is 6 * 3, or 18.

x*x*x

If *x* = 3, then x *x *xis3*3 * 3, or 27.

CHECK YOUR UNDERSTANDING

Write an algebraic expression for each situation using the suggested variable.

1. Alan is A inches tall. If Barbara is 4 inches shorter than Alan, what is Barbara's height in inches?

2. Toni runs 3 miles every day. How many miles will she run in D days?

What is the value of each expression when *k = 2?*

3. k+3

4. *k*k*

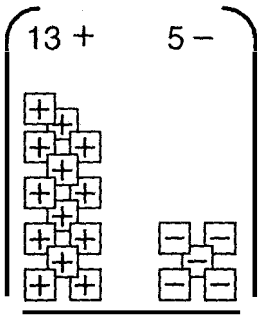
5. *k/2*

Check your answers on page 392-

r LM

You and your partner combine your counters. Use the counters to help you solve the problems.

1.



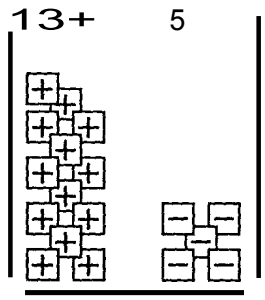
Balance =

If 4 E counters are subtracted from the container, what is the new balance?

New balance =

Number model: _____

2.



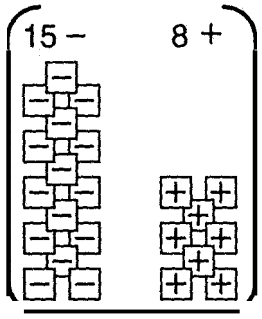
Balance =

If 4 n counters are added to the container, what is the new balance?

New balance =

Number model:

3.



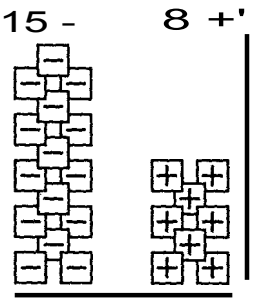
Balance =

If 3 F+I counters are subtracted from the container, what is the new balance?

New balance =

Number model:

4.



Balance =

If 3 E counters are added to the container, what is the new balance?

New balance =

Number model: