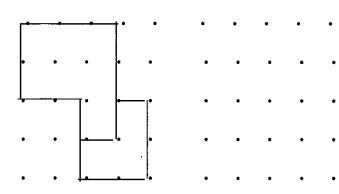


$\star\star\star$ 2. What is the rule?

6-----> 4 8-----> 6 10-----> 8 20-----> 18

Rule:

★★ 3. Draw a figure just like this one:



★ 4. Color the figure with the largest area:



Strategy of the Month

Someone said, "A picture is worth a thousand words." Turning the words of a problem into a picture or a diagram can help you "see" the problem. By using the part of your brain that visualizes a situation or object, you may see relationships or information that helps you solve the problem. When someone tells you a story, try turning the words into a motion picture or a cartoon. When reading a description, try "seeing it in your mind's eye." If you can do these things, this strategy may be for you! Try using a picture or make a diagram to solve this problem:

On the playground there are three bicycles and four tricycles. How many wheels are there?

Every year you grow and change in many different ways. Get someone to help you measure and record these data about yourself. Be sure to save the information because we will measure again in two months!

How tall are you?
How much do you weigh?
What is the circumference of your head?

★★★ 5. Place these sums in the correct column:

4 + 0	3 + 4	2 + 2
0 + 5	3 + 1	4 + 5
4 + 4	6 + 2	1 + 2

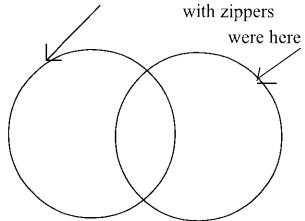
Less than 6 Greater than 6

★★ 6. Jody saw a ladybug with eight spots. Draw a picture to show how many spots Jody would see on three ladybugs?

★★ 7. How many paper clips long is the dotted line below?

About paper clips.

★★★★ 8. If all clothes with and all buttons were here clothes



What would go in the middle?

Setting Personal Goals

Problem solving is what you do when you don't know what to do. Being a good problem solver will help you be ready to live and work in our changing world. Computers can do computations but people must tell the computers what to do. Good problem solvers know how to make plans and use many different strategies in carrying out their plans. They use all of their past experiences to help them in new situations. We learn to swim by getting in the water; we learn to be good problem solvers by solving problems!

Vol. 1 No. 2

 $\star\star\star$ 1. Circle the expressions that equal 24: (You may use a calculator to help you.)

$$6+12$$
 $18+6$ $16+9$ $14+11$

 $\star\star$ 2. Cut a strip of cardboard the same length as this unit: $\vdash ----$. If it equals two, about how long and how tall is this rectangle?

1		
I		

units across

up and down units.

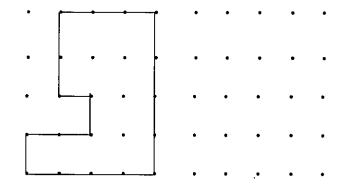
3. What is the rule? ***

> 6---->11 12---->17 20---->25 50---->55

Rule:

 $\star\star\star$ 4. Chris had a roll of stamps worth six cents each. If there are ten stamps on his roll, how much is his roll of stamps worth?

★ 5. Draw a figure just like this one:



Strategy of the Month

Your brain is an organizer. It organizes information as it stores that information. When a problem involves many pieces of information, your brain will have an easier time sorting through it if you make an organized list. A list helps you be sure you have thought of all of the possibilities without repeating any of them. Like drawing a picture or making a diagram, making an organized list helps your brain "see" the problem clearly and find a solution. Try making an organized list to solve this problem:

You have three pennies, two nickels and a dime. How many different amounts of money can you make?

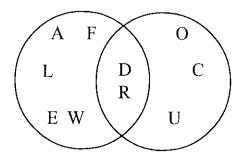
Sometimes the hardest part of solving a problem is just getting started. Having some steps to follow may help you.

- 1. Understand the information in the problem and what you are trying to find out.
- 2. Try a strategy you think might help you solve the problem.
- 3. Find the solution using that strategy or try another way until you solve the problem.
- 4. Check back to make certain your answer makes sense,

- ★★★★ 8. If Frank has 12 cows in his pasture, draw a picture showing how many legs are on the 12 cows? Circle the answer that best matches your picture.
- A. more than 60
- B. less than 25
- C. close to 100
- D. between 40 and 50
- ★ 6. Some numbers are missing. Write them on the number line in the correct places.



★★★ 7. Where do these letters belong in the diagram below? Q, T, K, P, S

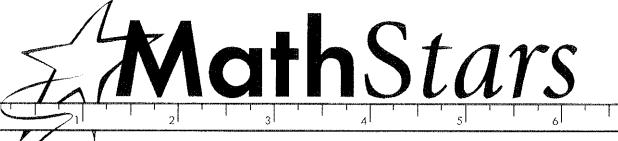


Setting Personal Goals

Being able to ask good questions will help you in many ways. Use these to solve problems:

- What information do I know?
- What else do I need to find out?
- What question am I trying to answer?
- Have I missed anything?
- Does my answer make sense?

Set the goal of asking good questions!



a problem solving newsletter

Vol. 1 No. 3

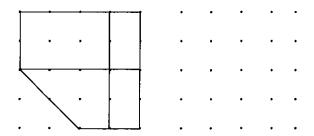
 $\star\star\star$ 1. Place these expressions in the proper column:

6 + 6	12 + 7	12 + 2	8 + 9
4 + 7	6 + 17	8 + 15	10 + 4
14 + 6	9 + 10	21 + 2	5 + 8

Less than 18

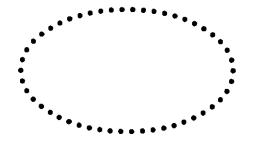
Greater than 18

 $\star\star\star$ 3. Draw a figure just like this one:



★★★ 4. Maegen uses four blocks to build a house. If she builds a town with six houses, how many blocks will she need?

★★ 2. Guess how many beads there are in the necklace. Check your answer by counting.



Strategy of the Month

Being a problem solver is something like being a detective! A detective has to solve crimes by guessing what happened and checking the guess to see if it fits the situation. For some problems, your best strategy may be to make a guess and then check to see if your answer fits the problem. If not, decide if your guess was too high or too low and then make a second "guesstimate." A good detective keeps records (usually some kind of chart) to help see any patterns and to narrow down the possibilities. You should do this too. The results of incorrect guesses can give you valuable clues to the correct solution. Guess and then check the solution to this problem:

Billy has 42 marbles to put in boxes. Each box will hold five marbles. How many boxes will he need?

Memorizing number facts will save you time. Flash cards are one way to learn new facts, but you also might try these ideas:

- play dice or card games in which you need to add, subtract, multiply, or divide.
- learn new facts using ones you already know (7+7=14 so 7+8=15).
- learn facts that are related to each other (7+6=13, 6+7=13, 13-7=6, 13-6=7).
- make a list of the facts you need to memorize and learn 5 new facts each week.
- Spend 5-10 minutes every day practicing facts.

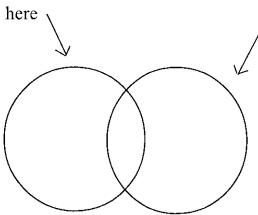
★★ 7. Some numbers are missing.
Write the missing numbers on the number line in the correct places.

★★★★ 8. After rolling a number cube 20 times, Taylor has collected this information:



If you put all shoes with laces

and put all shoes with velcro here



What would belong in the middle?

1 - \\\
2 - \ Help her make a graph
3 - \\\\
with it.

4	-	//	
5	-	##	١

111			

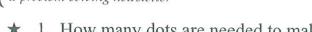
		-

 $\star\star\star$ 6. What is the rule?

Rule:

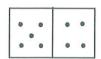
Setting Personal Goals

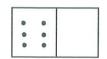
Communicating mathematically means that you are able to share your ideas and understandings with others orally and in writing. Because there is a strong link between language and the way we understand ideas, you should take part in discussions, ask questions when you do not understand, and think about how you would explain to someone else the steps you use in solving problems.



Vol. 1 NO.4

★ 1. How many dots are needed to make the dominoes equal?

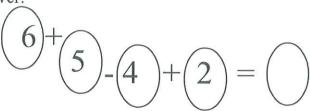




★ 5. Continue the pattern:

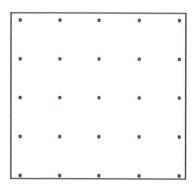
A, M, A, A, M, A, A, A, M, ____,

★★ 2. Follow the path to find the answer:



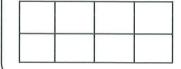
★★★ 3. You have a quarter and loan ten cents to a friend. What are the different ways you can show the money you have left?

*** 4. Connect the points to make a shape that has four sides and four corners.



Strategy of the Month

Noticing patterns helps people solve problems at home, at work, and especially in math class! Math has been called "the study of patterns," so it makes sense to look for a pattern when you are trying to solve a problem. Recognizing patterns helps you to see how things are organized and to make predictions. If you think you see a pattern, try several examples to see if using the pattern will fit the problem situation. Looking for patterns is helpful to use along with other strategies such as make a list or guess and check. How can finding a pattern help you solve this problem?



How many different rectangles can you find in the figure on the left?

Set aside a special time each day to study. This should be a time to do homework, to review, or to do extra reading. Be organized and have a special place in which to work. This place needs to have a good light and to be a place where you can concentrate. Some people like to study with quiet music; others like to sit at the kitchen table. You need to find what works for you!

Remember that when you are reviewing or working on solving problems it may help to study in a group.

**	7. Jane gets home from school at
3:00.	She begins her homework at 5:00.
How	much time does she have to play
before	e she begins her homework?

$\star\star\star$ 8. Use your calculator to fin	***	8. Use	your	calculat	or to	find
---	-----	--------	------	----------	-------	------

- a. How many two's are in 18?
- b. How many fives's make 30?
- c. How many four's make a dozen?

★★ 6. On a trip to the beach you see a group of starfish. There are six in the group. How many arms do you count?

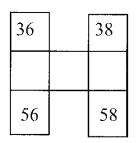
starfish	1	2	3	4	5	6
arms	5		15			

Setting Personal Goals

If your goal is to become a more <u>responsible</u> student, it means that you

- actively participate in class.
- complete your assignments.
- have everything you need in class.
- ask for help when you do not understand.
- be willing to investigate new ideas.

 \star \star 1. This puzzle piece was cut from a hundred board. Fill in the missing numbers:



★★★★ 3. In January, Mrs. Clark's class read ten books. In February they read two more than in January. If this pattern continues, how many books will they read in April?

★★ 4. Don wants to buy an eraser at the school store. If erasers cost 14 cents and he pays with two dimes, what coins could he receive in change?

★ 2. How many flowers do not have pots?



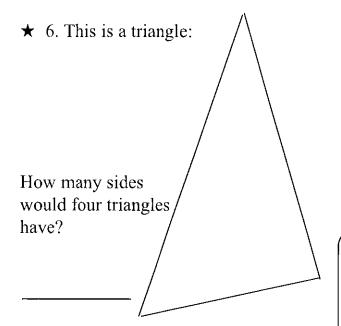
Strategy of the Month

Sometimes mathematical ideas are hard to think about without something to look at or to move around. Drawing a picture or using objects or models helps your brain "see" the details, organize the information, and carry out the action in the problem. Beans, pennies, toothpicks, pebbles, or cubes are good manipulatives to help you model a problem. You can use objects as you guess and check or look for patterns. Try using objects to help you solve this problem:

A factory has wheels for go-carts and scooters. If they have 18 wheels, how many of each can they make? Is there more than one answer?

Remember when you had "Show and Tell" in kindergarten? Now you have a great deal to share in mathematics. Talk to the folks at home about what you are learning. Show them your papers and tell them about what is happening in your math class. Let them see that you are doing problems in class similar to these. Each week choose an assignment that you are proud of and display it somewhere in your house.

 $\star \star \star 5$. What are the next three numbers in this series?



Use the calendar to answer these questions:

NOVEMBER

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

 $\star \star \star \star$ 7. (a) Jane's birthday is the 3rd Sunday in November. What date is her birthday?

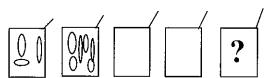
- (b) She is having a birthday party on November 20. What day of the week is her party?
- (c) She will mail her invitations two weeks before the party. What date will she mail the invitations?

Setting Personal Goals

Mathematics is all around us. We use it every day in personal living and in all of our school work. When we read graphs in social studies, gather and use data in science investigations, or count in music or physical education, we are using mathematics. We make connections in our math classes also; for example, measurement skills help us in solving many geometry problems and classification skills help us in organizing data. We use computation in many different situations. You will become a stonger mathematics student by making connections.

 $\star \star \star \star$ 1. The first box has three balloons, the second box has six balloons. If this pattern continues, how many ballons will be in the fifth box?

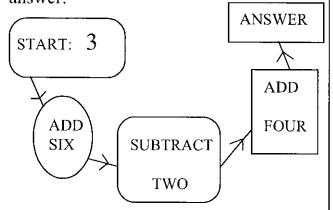
 \star \star 4. How many wheels are on four tricycles and three bicycles?



 $\star \star 2$. How tall do you think eight apples would be?

____More than a foot
____Less than a foot
____Exactly a foot

 $\star \star 3$. Follow the directions to the answer:



Strategy of the Month

When a problem involves data with more than one characteristic, making a table, chart, or graph is a very good way to organize the information. It helps your brain to identify patterns and to discover any missing data. Tables help you record data without repeating yourself. Making a table or chart is especially useful for certain problems about probability and for some logic problems. Sometimes tables and charts are included in your information and you need to read through them carefully to understand the data you need to solve your problem. Creating a graph is also a good way to organize and visualize information. Make a table to solve this problem:

Loni has red, blue, green and yellow markers. She is coloring the stripes on the new soccer team flag. How many different flags can she color?

Everyone learns from sharing, and you can continue to learn by teaching others about the new mathematics ideas you are learning.

Become a teacher and help a younger student.

Explain what you have learned and what else you want to know. Good teachers set goals and evaluate the progress made toward reaching these goals. You will continue to be a learner whenever you become a teacher.

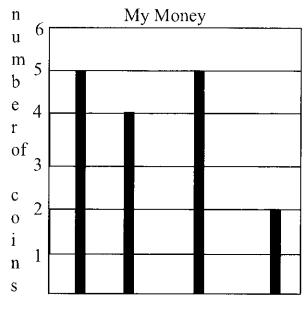
 $\star \star \star \star \star$ 5. Twelve animals are swimming in the pond. There are twice as many ducks as there are frogs.

How many ducks are in the pond? _____

How many frogs are in the pond? _____

Hint: What two numbers add to 12?

 $\star \star \star \star$ 6. Bill made a graph of the coins he had in his pocket.



penny nickel dime quarter Kind of Coins

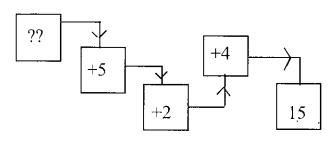
How much money does he have in:

- a. pennies _____
- b. nickels
- c. dimes
- d. quarters
- 7. How much does he have to spend?

Setting Personal Goals

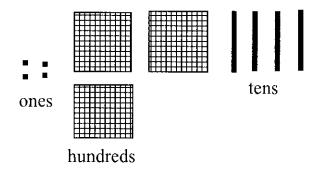
Perseverance means that you do not give up easily. Good problem solvers try different strategies when they are stumped and are not discouraged when they cannot find an answer quickly. They stick to the task, using all of their previous experiences to make connections with what they know and the problem they are trying to solve. If something does not work, they discard the unsuccessful idea and try again using a different strategy.

 $\star\star$ 1. Find the first number for the flow-chart:



★★★★ 2. Curly, Flipsy, Fuzzy and Topsy are sitting in a row. Topsy is first. Fuzzy is last. Curly is between Topsy and Flipsy. Who is in the third seat?

 $\star\star$ 3. What numeral is shown?



★★ 4. A waiter brought a pitcher of water to a table of six persons. Each person filled his glass and the pitcher was empty. If each glass holds 4 ounces, how much water was in the pitcher at the start?

 $\star\star\star\star$ 5. There are six puppies in the yard. How many tails, ears and legs are in the yard? Fill in the chart below to help you find the answers.

Tails	Ears	Legs
		- 0-

Dogs	Tails	Ears	Legs
1			
2		·	
3			-
4			
5			
6			
	><	\times	

Strategy of the Month

Some problems are difficult to "see" even if you draw a picture. For these problems, it can be helpful to actually act out the problem. When you role-play with friends or people at home, you may discover the solution as you act out the problem. Or you may recognize another strategy that will help you find the answer. Sometimes "acting out" a problem can be done with manipulative materials. To find the solution to the problem below, become the director and choose your cast to act this out:

Freddy Frog is at the bottom of the stairs. He can move up three steps each time he hops. The pool is at the top of the stairs. If Freddy Frog hops five times before he is in the pool, how many stairs are there to the pool?

Calculators are important tools. They do not replace mathematical thinking; you must tell the calculator what numbers and operations to use. Calculators allow students to focus their energies on solving problems and to easily try alternative solutions. They also allow students to solve problems that are too difficult for pencil and paper. Number sense and good estimation skills are important when students use technology to carry out computations. Explore some "what if" situations with the calculator. "What if the cost of gas goes up 4¢... What if we build the patio 2 feet wider..."

- ★★ 6. Jody is trying to estimate the number of marbles in a jar. Use these clues to help him make a good guess:
- (1) there are more than 44 marbles.
- (2) there are fewer than 50 marbles.
- (3) there is an even number of marbles.

How many marbles should Jody guess?

 $\star\star\star\star$ 8. Complete the graph to show the lunch count for Mr. Scott's class.

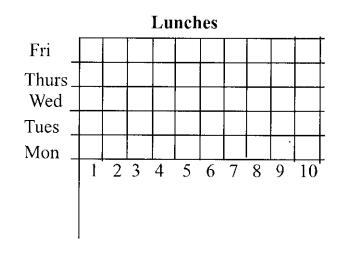
On Monday, four students brought their lunch.

On Tuesday, two more than on Monday brought their lunch.

On Wednesday, three less than on Tuesday brought their lunch.

On Thursday, two more than on Wednesday brought their lunch.

On Friday, three more than on Thursday brought their lunch.



 $\star\star$ 7. What number will make this statement true?

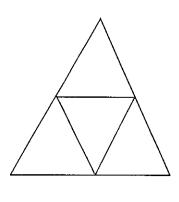
$$7 + 6 = \boxed{} + 9$$

Setting Personal Goals

Accuracy is very important to everyone. Pharmacists must always measure accurately when preparing prescriptions and carpenters must cut supporting boards precisely to fit. Careless mistakes may be avoided in the classroom by computing carefully, checking back over work, and writing numbers clearly and neatly. Remember: If work is worth doing, it is worth doing well.

Vol. 1 No. 8

★ 1. How many different triangles are there in the diagram below?



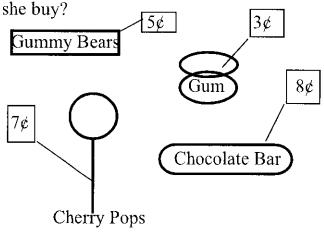
triangles

★★ 2. Robin Bird loves to eat worms. The chart below shows how many he ate in three days. If the pattern continues, how many will he eat on the eighth day?

Day	1	2	3	4	5	6	7	8
Worms	2	4	6					

★ 3. Ben's bus picks him up at 7:30 each morning. He arrives at school at 8:00 and the bell for class rings at 8:30. How many minutes does the bus ride take?

★★★★ 4. Tamisha has 20 cents to spend at the school store. She wants to buy some candy to share with her friends. What can she buy?



Strategy of the Month

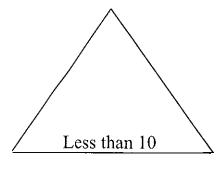
What do you do if you have a problem that seems to be very complicated? It may have lots of large numbers, too much information, or multiple conditions. One approach is to create a simpler problem like the one you need to solve. As you solve the easier problem, you may see the way to solve the more difficult one. Or you may discover a different process that will work with the harder problem. The trick is to be sure that your simpler problem is enough like the original one that the patterns or process you use will help you with the harder situation. Make a simpler problem first as you solve this:

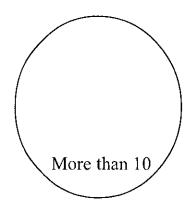
Six soccer players will shake hands before the game begins. How many handshakes will there be? {Suppose there are only three players; four players.}

Math skills develop as you apply concepts learned in school to real life situations. Which product is the best buy? How many tiles will it take to cover the kitchen floor? What time should we start baking the turkey so that we can have dinner at 7 p.m.? What do the statistics say about the two baseball players?

 $\star\star$ 5. Place the number facts in the correct shape:

$$6+4$$
 $5+4$ $6+6$ $9+5$ $2+8$ $1+9$ $3+4$ $8+3$





Equal to 10

★★★ 6. Estimate how many steps it takes to walk from your bedroom to the kitchen. Then carefully count the number of steps you actually take. Would this be the same for everyone in your family? Why?

Estimate for you
Number you actually walked
Who takes more steps?

Whv?	
,, 11 <i>y</i> .	

* '	7.	Wı	ite t	he n	ume	eral fo	or:	
six	te	ns -	⊦ tw	o on	ies +	- two	hundre	eds

\star	8.	How	many	days	are	in	two	weel	ks:

Setting Personal Goals

Confidence means that you believe in your-self. You can become a more confident problem solver by learning to use a variety of strategies. If your first idea does not work, don't give up just try another way! Working with a buddy also helps. You need to remember that there is usually more than one way to solve a problem and that practice always helps us learn.

a problem solving newsletter

Vol. 1 No. 9

 $\star\star\star$ 1. Toss a penny in the air 20 times and let it land flat.

Mark on the chart each head and tail.

(1¢)

Heads	Tails
1	
2	
3	
4	
5	
6	
6 7	
8	
9	
10	
11	
_12	
13	
14	
15	
16	
17	
18	
19	
20	
Total:	

★★ 2. Six birds have built their nests. Four birds laid three eggs each and two birds laid four eggs each. How many eggs in all?

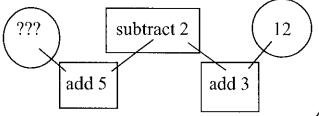
- ★★ 3. If $a = 1\phi$, $b = 2\phi$, $c = 3\phi$, and so on, what is the value of your first name?
- 4. In your pocket you have two dimes, one nickel and two pennies. Your friend has one dime, three nickels and five pennies in his pocket.

Who has more money, you or your friend?

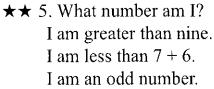
How much more?

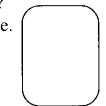
Strategy of the Month

What if you know the result of a situation, but you don't know the beginning? For example, you might know that you end up with thirteen baseball cards after doing a certain number of trades and you want to figure out how many cards you had before the trading started. In that case you need to work backwards; you have to think about your actions in reverse order. This strategy works for any sequence of actions when you know the end result rather than the starting place. Try working backwards to find the starting number on this flow chart:



Mathematics can make life easier for you when you become a good estimator. Spatial estimation helps you plan how you will rearrange your furniture or how far to jump to cross a puddle of water. Using estimation helps you know whether you have enough money for your purchases before you get to the check-out line. We become good estimators by practicing. Use your number sense and spatial sense to think about what the answers to problems will be before you start to solve them.

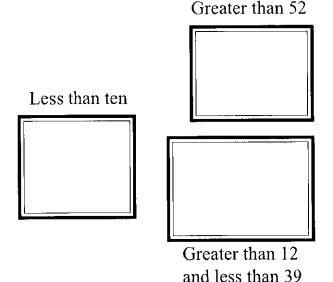




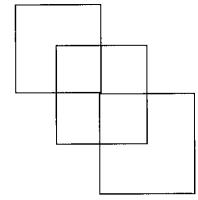
 $\star\star\star$ 6. Put the numbers in the boxes where they belong.

[Hint: two numbers will not belong in any box.]

6, 28, 51, 33, 48, 59, 14, 66, 8, 73, 25, 82, 38, 17, 96

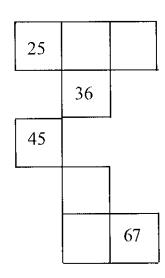


★ 7. How many squares are in this picture?



squares

★★★ 8. This puzzle piece was cut from a hundred board. Fill in the missing numbers.

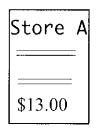


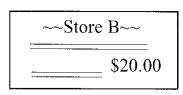
Setting Personal Goals

When you encounter a new situation, you use all of your previous experiences to figure out the current problem. Reasoning mathematically means using your brain power to think logically and sequentially, to put prior knowledge with new information. Set the goal of developing mathematical power and use your thinking power to achieve the goal!

Vol. 1 No. 10

 $\star\star\star$ 1. Bob and his mother went shopping. These are the bills:





Store	C
	\$15.00

Store D
\$18.00

Can you figure out what they bought?

Prices:

Shirts \$8.00 Pants \$12.00 Shoes \$10.00 Caps \$5.00 Belts \$4.00 Jackets \$16.00

Store A

Store B

Store C

Store D

★ 2. Fill in the missing number:

$$9 + 12 = \boxed{} + 10$$

★★★ 3. Grandma made four peach pies. She used six peaches for each pie. How many peaches did she use?

★★★★ 4. The neighborhood pool opens at 2:00. You arrive at 2:30. How long can you swim before the pool closes?



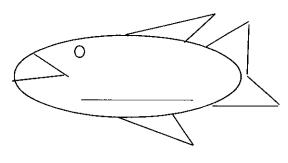
Strategy of the Month

You have tried many ways to solve problems this year. Already you know that when one strategy does not lead you to a solution, you back up and try something else. Sometimes you can find a smaller problem inside the larger one that must be solved first. Sometimes you need to think about the information that is missing rather than what is there. Sometimes you need to read the problem again and look for a different point of view. Sometimes you need to tell your brain to try to think about the problem in an entirely different way - perhaps a way you have never used before. Looking for different ways to solve problems is like brainstorming. Try to solve this problem. You may need to change your point of view.

Mrs. Gomez is planning a party. She needs seating for 26 people. She can use hexagon tables for six guests and square tables for four guests. She would like to use more hexagon tables than square tables. How many of each does she need?

Identifying the mathematics that is all around you can be lots of fun. Think about the geometry and spatial visualization you use in playing video games or when you play golf or basketball. When your parents parallel park, they are using their spatial skills too. When you track a hurricane, you use coordinates. When you check the stock market or read the latest sports statistics, you are using mathematics. With your family or friends go on a math scavenger hunt. Who can identify mathematics in the most unusual places?

★★ 5. Three friends went fishing. Juan caught five fish, Betty caught twice as many as Juan and Darryl caught seven. How many fish did the three friends catch?

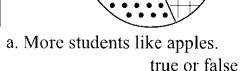


★ 6. Circle the letters that have a line of symmetry:

R D H

SШY

★★★ 7. Mr. Allen's class made a graph to show their favorite fruit. Look at the information on the graph. Then decide whether the following statements are true or false.



- b. More students like pears than oranges. true or false
- c. More students like pears and oranges than apples. true or false
- d. Over half the class prefers apples. true or false
- ★★ 8. Three students bring "Show and Tell" on Monday, five students on Tuesday, seven students on Wednesday. If this pattern continues, how many students will bring "Show and Tell" on Friday?

Setting Personal Goals

Students who recognize the value of mathematics are well on their way to becoming mathematically powerful citizens. Valuing mathematics means that we appreciate the richness, power, and usefulness of mathematics. Without math there would be no roads or bridges, computers or movies, banks or fast food restaurants. How can you become mathematically powerful?