MathStars

a problem solving newsletter

★★★ 1. Bob and his mother went shopping. These are the bills:

Store A
$13.00

~~Store B~~
$20.00

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?

Pool Hours:
2 - 4 daily

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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?

★★ 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?
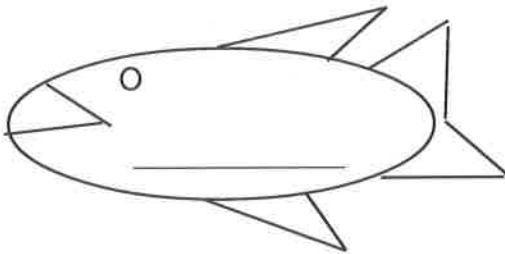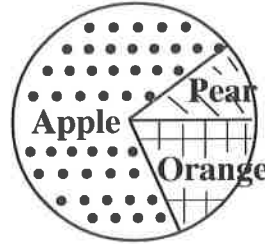

★ 6. Circle the letters that have a line of symmetry:

R D H

S W Y

★★★ 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.

a. More students like apples.
   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?

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About these newsletters...

 The purpose of the MathStars Newsletters is to challenge students beyond the classroom setting. Good problems can inspire curiosity about number relationships and geometric properties. It is hoped that in accepting the challenge of mathematical problem solving, students, their parents, and their teachers will be led to explore new mathematical horizons.

As with all good problems, the solutions and strategies suggested are merely a sample of what you and your students may discover. Enjoy!!

Discussion of problems.....

1. (**See chart below**) This problem requires adding various clothing prices to match the totals on the bills. Students may choose two or more items for each bill; some students may find more than one combination to arrive at a given total.
 Answer:

Item	Shirt	Shoes	Belt	Pants	Cap	Jacket
Store						
A	1				1	
			2		1	
B	1			1		
	1		3			
	2		1			
		2				
		1			2	
			2	1		
			1			1
			5			
					4	
C					3	
		1			1	
D	1	1				
		1	2			
	1				2	

2. **(11)** Students can solve this problem in several ways. Manipulatives to model the numbers, a balance to experiment with solutions, guess and check or addition and subtraction (missing addend). The important feature is the use of different strategies to determine the missing number.

3. **(24 peaches)** A good problem for modeling with manipulatives, drawing a picture or acting out. Again, students should be encouraged to try more than one strategy or to share their strategies with the class.

4. **(90 minutes or an hour and a half)** This problem involves unequal time intervals. The use of toy clocks or clock faces to help students "see" intervals is important. Manipulatives to help keep track of the time or pictures to model the situation - all are excellent helps to insure access for every student.

5. **(22 fish)** This problem requires students to know the concept "twice as many" to determine Betty's catch. The problem lends itself to modeling or using manipulatives as well as regrouping to state the final answer.

6. **(D, H, W, Y)** An understanding of symmetry is needed to solve this problem. Students should be encouraged to draw the line of symmetry and verify that the two parts are identical. Folding is another good test for symmetry; the concept of a mirror image also helps students with this concept. Note: some students may notice that H has two lines of symmetry. Can you find other letters or numbers that are symmetrical?

7. **(a. true; b. false; c. false; d. true)** Students will need to study the data represented by the graph. Since there are no numbers involved in this problem, a sense of the relative areas represented needs to be emphasized. Spatial sense, area and comparisons are important features of a graph of this type. Students might be encouraged to ask what ifs for the data, i.e., what if 25 students chose apples, then how many do you think chose pears, or chose oranges? Experiences with concrete circle graphs will help children understand these abstract representations.

8. **(11 students)** Besides recognizing an increase of two students per day, an understanding of the calendar and daily succession is needed to solve this problem.