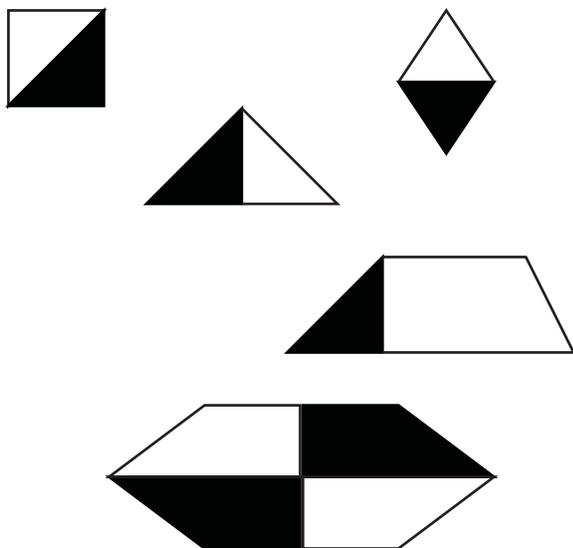


★★★★ 1. Horn's hardware shop sells batteries, flashlights, and lightbulbs. They sell  $\frac{1}{3}$  as many flashlights as batteries. They sell  $\frac{1}{2}$  as many lightbulbs as batteries. If they sell 15 lightbulbs, how many flashlights do they sell? \_\_\_\_\_

★★ 2. Cross out the pattern block that does not belong in the set.



Why does it not belong? \_\_\_\_\_  
\_\_\_\_\_

★★★ 3. Each morning Colonel Rogers runs around his office building. He makes five left turns. He runs an equal distance between each turn. His office building is named after this shape. What is the shape? \_\_\_\_\_

★★ 4. Robin went to the store to buy a new hat. Robin couldn't make up her mind between the six different hats below.



2 hats with dots



1 plain hat



2 hats with flowers



1 hat with stripes

If she closes her eyes and picks one hat, what are the chances that she will get a hat with a flower?

\_\_\_\_\_

What are the chances she will get a plain hat?

\_\_\_\_\_

## Strategy of the Month

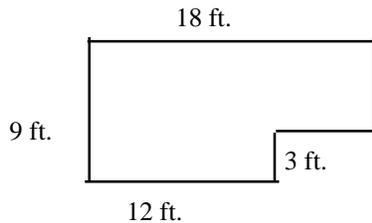
*What if you know the result of a situation, but you don't know the beginning? For example, you might know that you end up with thirteen baseball cards after doing a certain number of trades and you want to figure out how many cards you had before the trading started. In that case you need to work backwards; 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 solve this problem:*

Jo gave a number problem to Nelda. She told her to pick a number, add 10 to it, double that sum, and then subtract 5. Nelda's answer was 39. What number did she start with?

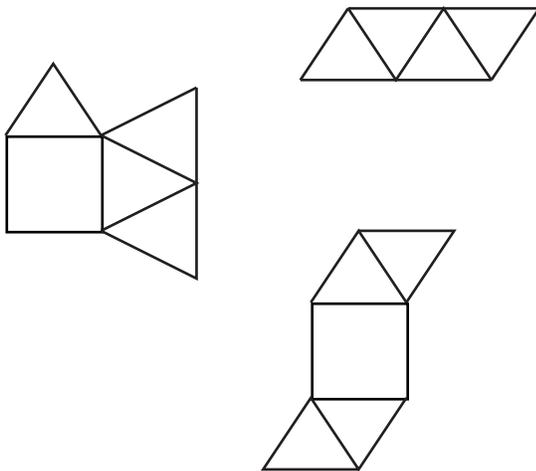
## MathStars Home Hints

*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 if 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.*

- ★★★ 5. Determine the perimeter of Allen's bedroom. \_\_\_\_\_



- ★★★ 6. Which arrangement below will fold to create a square pyramid?



- ★★ 7. Mrs. Glenn has 26 children in her class. If a van will hold six children, how many vans should Mrs. Glenn arrange to have so that everyone can go to the museum? \_\_\_\_\_

- ★★★★ 8. To answer the questions below, you may use the digits 1-9 once and only once. To help you keep track of the numbers you have used, mark out each number in the following list as you use it! 1 2 3 4 5 6 7 8 9

A. Make a two-digit number as close as possible to 60. \_\_\_\_\_

B. Make a three digit number that is as close as possible to 800. \_\_\_\_\_

C. Make a two-digit, odd number that rounds up to 40. \_\_\_\_\_

D. Make a two-digit, even number that rounds up to 50. \_\_\_\_\_

- ★★★★ 9. The area of a square is 25 square centimeters. What is the perimeter of the square? The perimeter of the square is \_\_\_\_\_ centimeters.

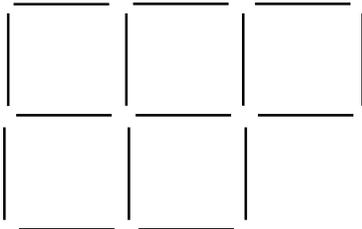
## Setting Personal Goals

*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!*

★★★ 1. Brittany has a small pack of M&Ms. When she opens the bag she finds six red, two green, three light brown, six brown, no yellow, three blue, and four orange M&Ms. What part of her bag is either orange, brown, or green?

Answer: \_\_\_\_\_

★★★ 2. Examine this arrangement of toothpicks. Right now there are five squares. How could you remove three toothpicks so there would only be three squares? Sketch your solution below!



★★★★ 3. In November Katlin will play basketball every third day, beginning on November 3rd. She is also scheduled to play soccer every fourth day, beginning on November 4th. On what days will Katlin be playing both basketball and soccer? \_\_\_\_\_

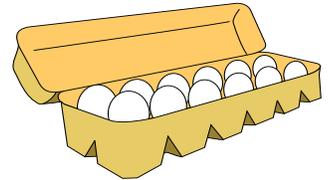


★ 4. Without using paper and pencil, figure out how many numbers from 1 to 50 have a 6 in the number.

Answer: \_\_\_\_\_

★★ 5. Harvey collects eggs on his grandfather's farm. His grandfather pays him two cents for each egg. His grandfather gives him \$1.32. In your head figure out how many eggs Harvey collected?

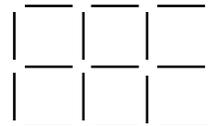
Answer: \_\_\_\_\_ eggs



## 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.*

Build this toothpick design. Remove 5



toothpicks and leave only 3 squares that are the same size.

## MathStars Home Hints

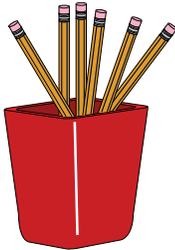
*Identifying the mathematics that is all around you can be lots of fun. Think about the geometry and spatial visualization you use in playing video games or when you play golf or basketball. When your parents parallel park, they are using their spatial skills too. When you track a hurricane, you use 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?*

★★ 6. This graph shows how many pencils five students in Mrs. Alread's class had in their desks one day last week. Based on this information, about how many pencils would you expect to find in the desks of the entire class of 20 kids? \_\_\_\_\_

### NUMBER OF PENCILS IN EACH STUDENT'S DESK

		X		
X		X		X
X		X	X	X
X		X	X	X
X	X	X	X	X

**ELISA    ROGER    LAUREN    IESHA    SAM**



★★ 7. For the third grade bake sale, Molly baked four dozen cookies. Only two and one-half dozen of her cookies sold. Does she have enough cookies left over to give each of her 16 classmates a cookie? \_\_\_\_\_

★★★ 8. Lance really wants to buy a pair of LA Gear shoes, but he is also concerned that he get the best deal possible (he worked hard for his money). In the newspaper he notices the following two advertisements:

**SEARS**  
**50% Off SALE**

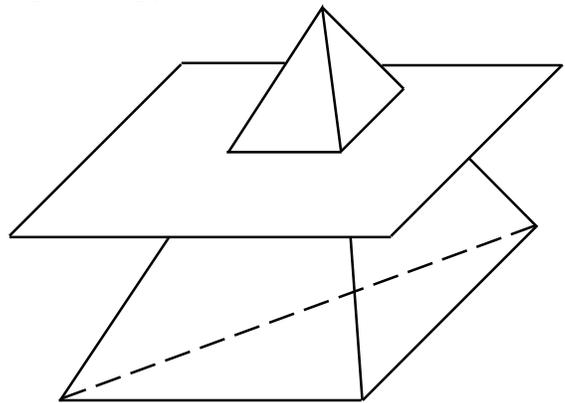
**LA GEAR SHOES**  
**REG. PRICE \$50**  
**NOW 50% OFF!**

**PENNEY'S**  
**\$10 OFF COUPON**  
**ANY ITEM IN STORE**  
**LA GEAR SHOES**  
**\$39.99**  
**(REG. PRICE)**

Which store has the best deal on LA Gear shoes?  
\_\_\_\_\_

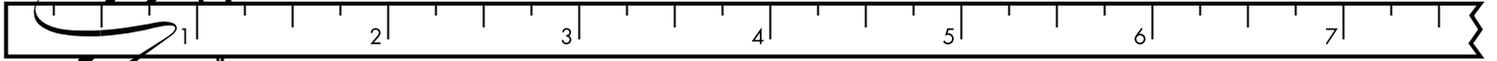
★★★ 9. After reviewing her records, the school dietitian noticed that about two out of every four students at her school eat a hot lunch everyday. Based on this information, how many hot meals for lunch should she prepare if there are 800 students at her school? \_\_\_\_\_

★★ 10. Pretend you sliced the top off of the triangular pyramid below. What is the shape of the new top of the pyramid? \_\_\_\_\_



## Setting Personal Goals

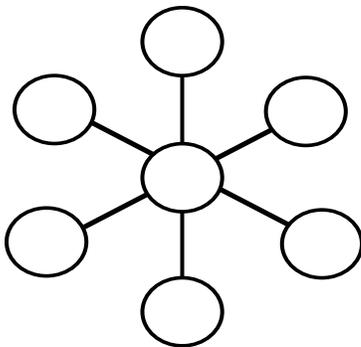
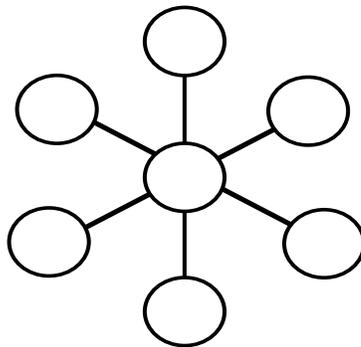
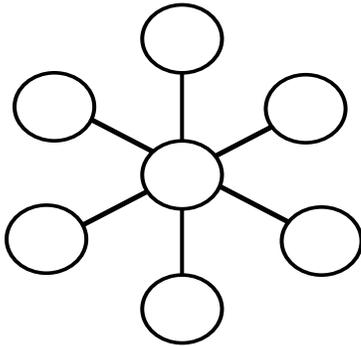
*Students who recognize the value of mathematics are well on their way to becoming mathematically powerful citizens. Valuing mathematics means that we appreciate the richness, power, and usefulness of mathematics. Without math there would be no roads or bridges, computers or movies, banks or fast food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



★ 1. What number could be added to 150 so that the sum would be between 500 and 525?

Answer: \_\_\_\_\_

★★★★ 2. Find three ways that the sum of three digits in a line equal 17. Don't repeat the digits within a design.



★★★ 3. If you begin with a certain two-digit number and follow the arrows, you will end with 45.

$$\bigcirc \xrightarrow{\div 3} \bigcirc \xrightarrow{+ 8} \bigcirc \xrightarrow{\times 2} \bigcirc \xrightarrow{- 1} = \textcircled{45}$$

## 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:

Every bike slot in a bicycle rack was filled. Donna's bike was in the middle. There were six bikes to the right of Donna's. How many bicycles were in the bicycle rack?

## MathStars Home Hints

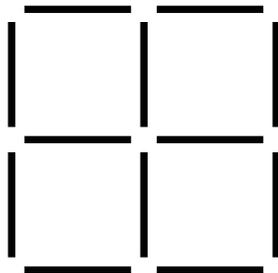
*Every year you grow and change in many different ways. Get someone to help you measure and record these data about yourself. Be sure to save the information because we will measure again in two months!*

How tall are you? \_\_\_\_\_

How much do you weigh? \_\_\_\_\_

What is the circumference of your head?  
\_\_\_\_\_

- ★★ 4. How can you remove two toothpicks from the square shape below and leave two squares of different sizes? Cross out the two that should be removed.



- ★★★ 5. Miss Black's class began a stem and leaf graph of the following data. Complete the graph.

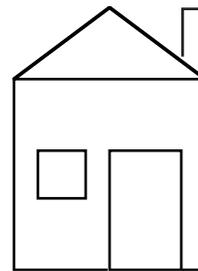
Number of organisms	1	1, 7
in each person's square	2	0, 1, 2
foot of space on the		
playground.		

28, 29, 17, 21, 36, 20,  
33, 11, 22, 33, 35, 41

- ★★★ 6. John is twice as old as his sister Mary. Mary's age is  $\frac{1}{6}$  the age of her mother. Their mother is 30. How old are John and Mary?

John \_\_\_\_\_ Mary \_\_\_\_\_

- ★★ 7. Find all the right angles on the house below. Put a square on each one like this:



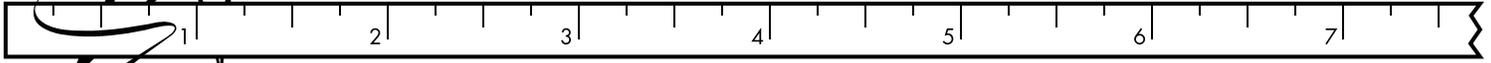
- ★★ 8. Use the digit **8** four times to make **89**.

- ★★★ 9. Place the other letters of the alphabet above or below the line given below using the same rule that was used for **A** through **I**.

<b>A</b>		<b>E F</b>	<b>HI</b>
<b>B C D</b>		<b>G</b>	

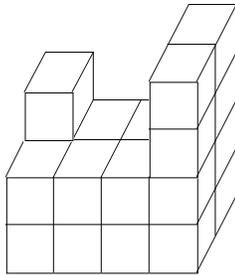
## Setting Personal Goals

*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!*



★★★ 1. What is the volume of the solid figure below? If the outside were painted blue, how many cubes would have only three sides painted blue?

\_\_\_\_\_  $\text{cm}^3$  is the volume  
\_\_\_\_\_ cubes are painted blue on three sides



★★★ 2. Principal Greene orders pencils for the school store by rounding the number of students in each grade to the nearest 10 and doubling that number. What is the total number of pencils he will order?

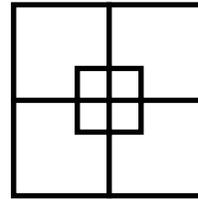
Answer: \_\_\_\_\_ pencils

Grade	K	1	2	3	4	5
# of students	87	94	97	78	72	84

★★ 3. A digital clock shows either three or four digits. At what time do the digits have the greatest sum?

★ 4. How many squares are in the figure below?

Answer: \_\_\_\_\_ squares



★★ 5. Three friends shared some cookies. They each got two and two-thirds cookies. How many cookies did they have altogether before they divided them?

## 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:*

If you must use 15 or fewer coins, how many different combinations of coins can be used to make \$1.00?

## MathStars Home Hints

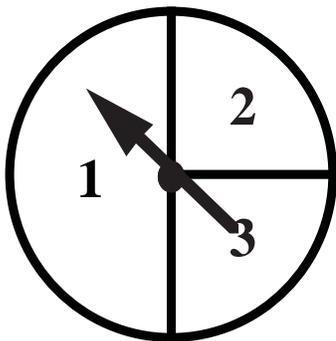
Sometimes the hardest part of solving a problem is just getting started. Having some steps to follow may help you.

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.

- ★★★★ 6. Given  $y$  is two times  $x$ ,  $z$  is three times  $x$ , and  $x + y + 3z = 12$ . What are the values of  $x$ ,  $y$ , and  $z$ ?

$$x = \underline{\quad} \quad y = \underline{\quad} \quad z = \underline{\quad}$$

- ★★ 7. On this spinner, the probability of getting a one is  $\frac{1}{2}$  or 1 out of 2. What is the probability of getting a 2?



- ★★ 8. Circle the whole number below that is closest to the sum of these numbers:

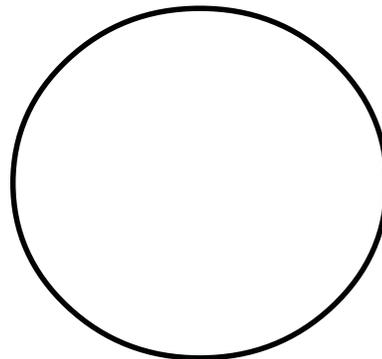
$$2\frac{1}{73} + 6\frac{40}{44} + 8\frac{3}{58} + 1\frac{15}{17} =$$

17      19      21      23

- ★★★★ 9. Katie gave a number problem to Jenny. She told her to pick a number, double it, add 10 to it, and then subtract 2. Jenny's answer was 34. What number did Jenny pick?

Answer: \_\_\_\_\_

- ★★★ 10. Show how you could divide a circle into 11 pieces using only 4 straight lines.



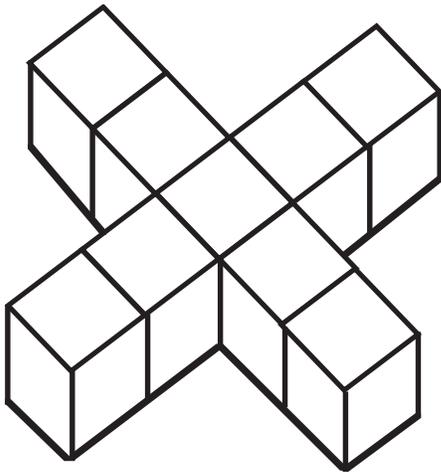
## Setting Personal Goals

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?

Practice asking good questions!

★★★ 1. Nine cubes form to make an X. If the complete figure is painted red, how many cubes have exactly four faces painted red? How are the remaining cubes painted? Write on each cube the number of its faces that are painted.



★★★ 2. November 8 is on Wednesday. Gary's birthday is in November. This year his birthday is on a weekend. The date has two digits. You say the date when you count by twos. The sum of the digits is 8. What is the day and date of Gary's birthday?

Day of the week \_\_\_\_\_

Date \_\_\_\_\_

★★ 3. Lila saw a shirt on sale at 25% ( $\frac{1}{4}$ ) off. It's original price was \$12. How much is the shirt now?

★★★ 4. On a 20 question math test, your teacher gives you five points for every correct answer and takes away one point for each incorrect answer. If you score 70 on the test, how many did you get correct?

Answer: \_\_\_\_\_ correct

## 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:*

I am a 2-digit number over 50. When you put me in groups of 7, 2 are left over. The sum of my digits is 11. What number am I?

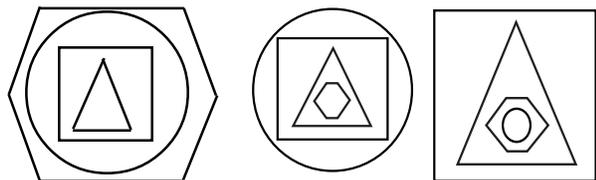
## MathStars Home Hints

*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, multiple, 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 ( $7 \times 6=42$ ,  $6 \times 7=42$ ,  $42 \div 6=7$ ,  $42 \div 7=6$ ).
- 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.

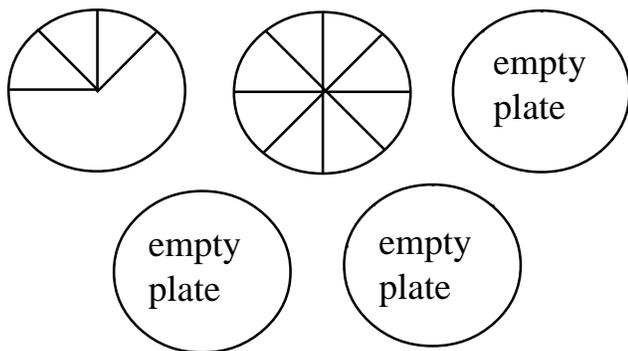
★★ 5. What would the next shape look like?

Draw it on the line.



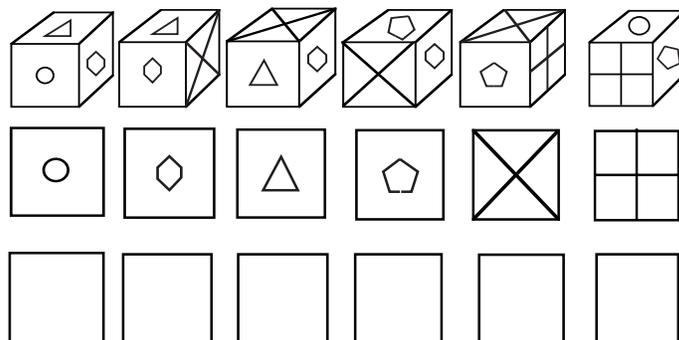
Answer: \_\_\_\_\_

★★ 6. Allison's mom baked five pies for her birthday party. Each person who came to the party ate one piece, and all the pieces were the same size. The pies that were left over are shown below. How many people came to the party?



Answer: \_\_\_\_\_ pieces

★★★★ 7. The pictures below all show the same block, but seen from a different view each time:



Draw the design that is opposite these sides.

★ 8. It's now 12:10 p.m. What time was it 15 minutes ago?

Answer: \_\_\_\_\_

## 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.*