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For the Student



Figure it out is a booklet that teaches problem-solving skills. In each lesson you will learn a strategy that you can use to solve problems. Your teacher will ask you questions to help you use the strategy to solve the first problem in each lesson. Your teacher will also guide you through the second problem in each lesson, giving you some things to think about and ways to help you find the solution. The last two problems in each lesson are for you to do on your own. These problems give you practice using the strategy you have just learned.

By the time you have completed this booklet, you will have learned eight strategies to use when solving problems. The strategies will be useful in school and in your everyday life. Hopefully, you will find that calculators and computers are useful for computation, but human beings are needed to solve problems.

When you Use this Booklet

- Read each problem carefully before you begin to solve it.
- Think about the questions that follow the first two problems in each lesson. They will help you to understand the problems and find the solutions.
- Use the blank space on the page to work through problems. You can write anywhere in this booklet if it will help you to solve a problem.
- Once you have solved a problem, check your solution to be sure it makes sense. Some problems have more than one correct answer.
- Write the solution to a problem on the line that follows the problem.

This **Figure it out** booklet was prepared for students by Sandra R. Cohen

Act it out



1. Kate, Pete, Joan, Amos and Paul are the 5 finalists in the Main Street School Spelling Bee. Before the final round of the bee, each student must shake hands with every other student. What is the total number of handshakes?

Questions

- a. Estimate the answer. _____ How did you make your estimate?

- b. When 2 students shake hands with each other, how many handshakes is that? _____

- c. Suppose Kate is shaking hands with Pete. Could you also say that Pete is shaking hands with Kate? _____

- d. If 1 student shakes hands with 4 others, how many handshakes is that?

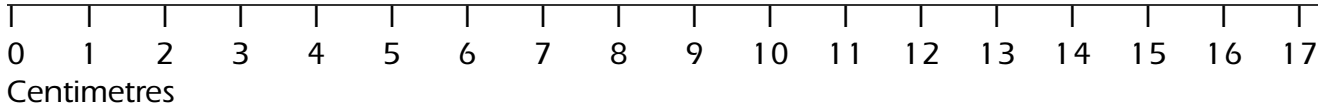
Apply the Strategy

Work with 4 other students to act out the problem. Pretend you are the finalists. Each person should shake hands with the others. Record the number of times you shake hands.

Solution

- e. How can you be sure you recorded all the possible handshakes?

2. Which is worth more: 30 centimetres of ten-cent coins placed side by side or 60 centimetres of five-cent coins placed side by side? About how much more?



Think about:

- Which do you think is worth more? Why?
- Which coin is larger?
- About how much longer is the row of 3 ten-cent coins than the row of five-cent coins?
- About how many ten-cent coins will measure 10 centimetres?
- About how many five-cent coins will measure 10 centimetres?

Work with other students. Use real or play money. Act out the problem to find the solution. If you use play money, it should be the same size as real money.

Solution _____

On your Own

Work with other students. Act out the problems to solve them.

3. Miguel has 3 times as many video games as Paula. Both children have an even number of games. Together they have between 20 and 30 games. How many games does each child have?

4. There were 12 boys who lived near the Bethpage Golf Course. As a team, the boys found and sold golf balls. Each odd-numbered boy found the same number of balls as his number. Each even-numbered boy sold 1 ball. So, Boy 1 found 1 ball, Boy 3 found 3 balls, Boy 5 found 5 balls, and so on. Boys 2, 4, 6, 8, 10, and 12 each sold 1 ball. When the 12 boys were finished, how many golf balls were *not* sold?

Mixed Practice



Solve the problems. Use the strategies you have just learned, or any other strategies you know.

- The girls on the Baldwin softball team have these numbers on their uniforms: 35, 22, 17, 28, 34.



Use the following clues to find each girl's number. Write the correct number under each drawing.

- The 2 girls who are the same height have consecutive numbers.
 - Eva's number is half of Bev's.
 - Debi's number is not a multiple of 4.
- Josh had \$10 more than Carly, so he gave Carly half of his money. Then Carly had more money than Josh, so she gave Josh \$4. Then they both had \$13. How much money did each person start with?

- If this pattern is continued, what letter will be in the row that has 48 letters?

AA
BBBB
CCCCCC
DDDDDDDD
EEEEEEEEEE

- Draw the 16 figures on the grid so that no number or shape appears more than once in any row, column, or large diagonal.

