More Problem Solving Strategies TEKS 8.14.C

Problem solving strategies can help you solve mathematical and real-life problems. Lesson 1.5 shows how to apply the strategies *use a formula*, *look for a pattern*, *draw a diagram*, and *use a verbal model*. Below are four more strategies.

Strategy	When to Use	How to Use
Make a list or table	Make a list or table when a problem requires you to record, generate, or organize information.	Make a table with columns, rows, and any given information. Generate a systematic list that can help you solve the problem.
Work backward	Work backward when a problem gives you an end result and you need to find beginning conditions.	Work backward from the given information until you solve the problem. Work forward through the problem to check your answer.
Guess, check, and revise	Guess, check, and revise when you need a place to start or you want to see how the problem works.	Make a reasonable guess. Check to see if your guess solves the problem. If it does not, revise your guess and check again.
Solve a simpler problem	Solve a simpler problem when a problem can be made easier by using simpler numbers.	Think of a way to make the problem simpler. Solve the simpler problem, then use what you learned to solve the original problem.

EXAMPLE **Lee works as a cashier. In how many different ways can Lee make $.50 in change using quarters, dimes, and nickels?**

Use the strategy *make a list or table*. Then count the number of different ways.

Quarters	Dimes	Nickels
2	0	0
1	2	1
1	1	3
1	0	5
0	5	0
0	4	2
0	3	4
0	2	6
0	1	8
0	0	10

Start with the greatest number of quarters.

Then list all the possibilities with 1 quarter, starting with the greatest number of dimes.

Then list all the possibilities with 0 quarters, starting with the greatest number of dimes.

▶ Lee can make $.50 in quarters, dimes, and nickels in 10 different ways.

EXAMPLE **In a cafeteria, 3 cookies cost $.50 less than a sandwich. If a sandwich costs $4.25, how much does one cookie cost?**

Use the strategy *work backward*.

$4.25 - 0.50 = 3.75$ **Cost of 3 cookies**   *CHECK* $1.25 \times 3 = 3.75$ **Cost of 3 cookies**

$3.75 \div 3 = 1.25$ **Cost of 1 cookie** $3.75 + 0.50 = 4.25$ **Cost of sandwich**

▶ One cookie costs $1.25.