

1-7 Problem-Solving Investigation: Guess and Check - Analyze the Strategy

1. Explain when to use the *guess and check* strategy to solve a problem.

Sample answer: when you are trying to find the solution of an equation

1-7 Problem-Solving Investigation: Guess and Check - Mixed Problem Solving

Use the *guess and check* strategy to solve.

3. **COMICS** A comic book store sells used comic books in packages of 5 and new comic books in packages of 3. If Monica buys a total of 16 comic books, how many packages of new and used comic books did she buy?

Explore: We are looking for the number of packages that total 16 comic books.

Plan: Make a guess until you find an answer that makes sense for the problem.

Solve: Guess until you come up with 2 used packages and 2 new packages. Check the total.

$$2 \times 5 + 2 \times 3 = 16$$

Check: The answer satisfies the conditions of the original problem.

5. **NUMBERS** Antonio is thinking of four numbers from 1 through 9 whose sum is 18. Find the numbers.

Explore: We know that four numbers from 1 to 9 total 18. We need to find the numbers.

Plan: Guess four numbers and check whether they total 18.

Solve: Guess 2, 4, 5, and 7.

$$2 + 4 + 5 + 7 = 18$$

The numbers are 2, 4, 5, and 7. (Other numbers are possible.)

Check: Find other numbers that satisfy the conditions of the problem.

Use any strategy to solve.

Some strategies are shown below.

Guess and check.

Find a pattern.

Name: School: Grade: Class:

7. **ANALYZE TABLES** How much deeper is Crater Lake than Lake Superior?

Lake	Depth (ft)
Crater Lake	1,943
Lake Tahoe	1,685
Lake Chelan	1,419
Lake Superior	1,333

Explore: The table shows the depths of 4 mountains. We are looking for the difference in depths of Crater Lake and Lake Superior.

Plan: Subtract the depth of Lake Superior from the depth of Crater Lake.

Estimate: $2,000 - 1,300 = 700$

Solve: $1,943 - 1,333 = 610$

Crater Lake is 610 feet deeper than Lake Superior.

Check: Since the answer is close to the estimate, the answer is reasonable.

9. **NUMBERS** The sum of two prime numbers is 20. Find the numbers.

Explore: We need to find two prime numbers that have a sum of 20.

Plan: List the prime numbers less than 20. Then find two that have a sum of 20.

Solve: Prime numbers less than 20: 1, 2, 3, 5, 7, 11, 13, 17, and 19.

One pair of numbers from the list with a sum of 20 is 7 and 13.

Check: Find other numbers from the list that satisfy the conditions of the problem.

11. **ORDER OF OPERATIONS** Use the symbols $+$, $-$, \times , or \div to make the following math sentence true. Use each symbol only once.

$$3 \blacksquare 4 \blacksquare 6 \blacksquare 1 = 18$$

Check: We know the sentence is

$3 \blacksquare 4 \blacksquare 6 \blacksquare 1 = 18$. We need to find which of the symbols $+$, $-$, \times , and \div are used once to make the sentence true.

Plan: Guess the order of the symbols $+$, $-$, \times , and \div . Then check to see if they make the sentence true.

Solve:

$$3 \times 4 + 6 \div 1 = 12 + 6 \div 1$$

$$= 18 \div 1$$

$$= 18$$

Check: The symbols make the sentence a true statement.

Name: School: Grade: Class:

13. **ANALYZE TABLES** How many fewer students were on the 6th grade honor roll in the 3rd grading period than in the 1st grading period?

6th Grade Honor Roll Students	
1st grading period	40
2nd grading period	37
3rd grading period	31

Explore: We know how many 6th grade students were on the honor roll in the 1st, 2nd, and 3rd grading period. We need to find how many fewer students were on the honor roll in the 3rd grading period than the 1st grading period.

Plan: Subtract the number of students on the honor roll in the 3rd grading period from the number of students on the honor roll in the 1st grading period.

Solve: $40 - 31 = 9$

There were 9 fewer students on the honor roll in the 3rd grading period.

Check: Add 9 to the number of students on the honor roll in the 3rd grading period to make sure the result is 40.