Strategy Focus
Use Logical Reasoning

MATH FOCUS: Place Value

Learn About It

🟦 Read the Problem ·

Marta is doing a report on four states. The states are California, Hawaii, Pennsylvania, and Wyoming. She lists the number of people who lived in each state in 2009. But, she forgets to write the state names.

544,270
1,295,178
12,604,767
36,961,664

Marta remembers the facts below.
- California had the greatest number of people.
- Wyoming had the least number of people.
- About 10 times as many people lived in Pennsylvania as in Hawaii.

How many people lived in Hawaii in 2009?

Reread Ask yourself questions as you read.

- What is the problem about?

  _____

- What kind of information is given?

  _____

- What do you need to find?

  _____

Mark the Text ✏️

🟦 Search for Information ·

Look for phrases that you will need to solve the problem.

Record What details will help you answer the question?

The states are California, Hawaii, _____ , and _____ .

The numbers of people are 544,270; 1,295,178; _____ ; and _____ .

You can use this information to choose a problem-solving strategy.

■ Decide What to Do

You know the names of the four states. You know the numbers of people. You need to match a number with the right state.

Ask How can I use the clues to solve the problem?

- I can use the strategy *Use Logical Reasoning.*
- I can make a chart to organize the clues. I can use what I know to rule out possible answers.

■ Use Your Ideas

Step 1 Use the first clue: *California had the greatest number of people.* Put a ✔ in the box to show this. California cannot have any of the other *numbers of people.* So put an X in the empty boxes in that row. No other *state* can have 36,961,664 people. So put an X in the empty boxes in that column.

36,961,664 is the greatest number.

	544,270	1,295,178	12,604,767	36,961,664
California	X	X	X	✔
Hawaii				X
Pennsylvania				X
Wyoming				X

Step 2 Use the second clue: *Wyoming had the least number of people.* Use a ✔ to show this. Put an X in the empty boxes in the Wyoming row and in the 544,270 column.

Step 3 Use the third clue: *About 10 times as many people lived in Pennsylvania as in Hawaii.* Which of these two states has more people? _____ Complete the chart.

So _____ people lived in Hawaii in 2009.

■ Review Your Work

Check that you used the clues correctly.

State How does ruling out possible answers help you find the correct answer?

_____

_____

Try It

Solve the problem.

(**1**) Paula has several fish tanks. Jimmy asks Paula how many fish she has altogether. She gives him these clues for the number.

- The number is less than 200.
- The number is more than 100.
- The ones digit is 1 more than the hundreds digit.
- The ones digit is 4 less than the tens digit.

How many fish does Paula have?

Mark the Text ⇢

▢ Read the Problem and Search for Information · · · · · · · ·

Read the clues. Identify clues that will help you get started.

▢ Decide What to Do and Use Your Ideas · · · · · · · · · · · · · ·

You can use the strategy *Use Logical Reasoning* to find the answer.

Ask Yourself

What will be the greatest place value in the number?

Step 1 Use the first and second clues. The number is less than 200 and more than 100.

So the hundreds digit must be _____ .

Step 2 Use the third clue. The ones digit is 1 more than the hundreds digit.

The hundreds digit is _____ . So the ones digit is _____ .

Step 3 Use the last clue. The ones digit is 4 less than the tens digit.

The ones digit is _____ . So the tens digit is _____ .

Paula has _____ fish.

▢ Review Your Work ·

Reread the clues and make sure your answers match all of them.

Conclude Why should you start by finding the hundreds digit?

_____

_____

Apply Your Skills

Solve the problems.

(2) Jay, Max, Tara, and Sam collect pop tabs from aluminum cans for a good cause. They collect 361; 282; 230; and 155 pop tabs.

- Max collects the least number of pop tabs.
- Jay collects about 200 more pop tabs than Max.
- Tara collects about 50 more pop tabs than Sam.

How many pop tabs does Tara collect?

	361	282	230	155
Jay				
Max				
Tara				
Sam				

Ask Yourself

Which number is about 50 more than another number?

Answer _____

Explain How does using a chart help you solve the problem?

_____

_____

(3) All students at North School have ID numbers. Nicole forgot her number. Her teacher gives her clues to find the number.

- The number is greater than 700 and less than 800.
- The tens digit is 4 less than the hundreds digit.
- The sum of the tens digit and the ones digit is 8.

What is Nicole's ID number?

What is the greatest place value of the number? _____

The hundreds digit must be _____ .

Answer _____

Identify Which clues did you start with first and why?

Ask Yourself

How many digits will the number have?

_____

_____

4 Dee and her family drive to the mall. The parking lot sign shows the number of cars that can fit in the lot. Dee asks her brother Ben to guess the number. She gives him clues. The digits in the number are 2, 6, 7, and 9. The hundreds digit is 5 more than the thousands digit. The ones digit is even. What is the number?

The hundreds digit is _____ .

_____ , _____ , _____ , _____

Answer _____

Summarize How did the clue that the hundreds digit is 5 more than the thousands digit help you identify the hundreds digit?

_____

_____

5 Judy and Bo are studying countries with populations of less than 1 million people. They round the population numbers to the nearest thousand. Bo wants Judy to guess the population of the Solomon Islands. He gives her these clues.

- The hundreds digit is 5 more than the tens digit.
- The ones and tens digits are the same.
- The sum of the ones digit and the tens digit is 8.
- The thousands and ten thousands digits are both 2.
- The hundred thousands digit is 3 more than the thousands digit.

What is the population of the Solomon Islands *rounded to the nearest thousand*?

The ten thousands digit is _____ .

The thousands digit is _____ .

Answer _____

_____

Sequence What steps did you use to find the correct answer?

_____

_____

On Your Own

Solve the problems. Show your work.

6 Dina wants to guess the number of people at the high school football game. She has the following clues.

- All three of the digits are odd.
- The sum of the ones digit and the tens digit is 2.
- The sum of all the digits is 5.

How many people are at the game?

Answer _____

Evaluate Why do you need the first clue to solve the problem?

_____

_____

7 The estimated numbers of people living in Evansville, Hanson, Bingham, and Clinton are listed in the table. Clinton has the greatest number of people. The number of people in Bingham is greater than the number of people in Hanson. If you round the populations of Hanson and Bingham to the nearest thousand, the numbers would be the same. How many people live in Evansville?

Estimated Population
14,989
13,824
14,046
15,452

Answer _____

Justify Do you need to round all of the numbers? Explain.

_____

_____

Create Look back at Problem 4. Think of a different number of cars that can fit in the parking lot. Write and solve a problem with a new set of clues.