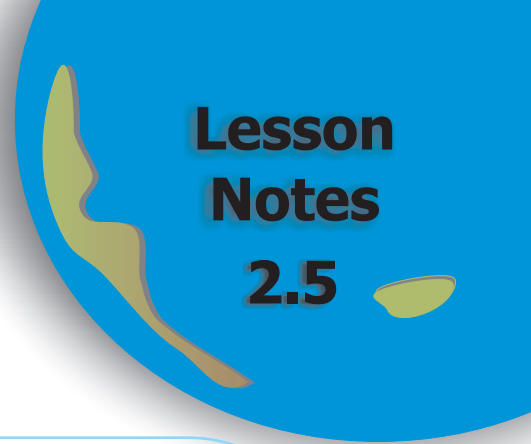


NAME _____

Module 2 Whole Number Operations
Lesson 5 Problem-solving Strategies



Lesson Objective

- Develop and apply a variety of strategies to solve problems with emphasis on multi-step and non-routine problems.

Subtopics 1 and 2

Problem-solving Basics and Draw a Diagram

Problem-solving Basics

What is problem solving?

- **Problem solving** is engaging in a task for which the solution method is not obvious or not known immediately.

Problem-solving Steps

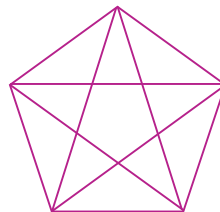
- **Read** the problem.
- Devise a **plan**.
- **Work** the plan.
- CHECK the **solution**.

Problem-solving Strategies

- *Guess and **Check***
- *Make a Drawing or **Diagram***
- *Look for a **Pattern***
- *Make a Table or a **List***

1 Five people are in a room. Each person shakes hands with every other person. How many handshakes are there?

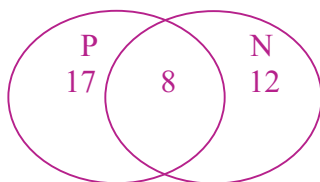
- Draw a diagram.**
- Draw five points.**
- Connect each pair of points.**
- Count the number of segments.**



10 handshakes

- 2** In a Learning Languages Seminar, 25 students are studying Plutonese, 20 students are studying Neptunese, and eight are studying both Plutonese and Neptunese. How many students are in the seminar?

Draw a Diagram



37 students

Subtopic 3

Look for a Pattern and Make a List

- 3** A palindromic number is a number that is the same whether read from right to left or left to right, such as 121. How many three-digit palindromic numbers can be made using the digits 1, 2, and 3?

Make a list to solve:

111 212 313
 121 222 323
 131 232 333

Nine palindromic numbers can be made using the digits 1, 2, and 3.

Subtopic 4

Guess and Check

- 4** Use each of the digits from zero to nine exactly once in the subtraction problem. The minuend and subtrahend have five digits each. The minuend contains only even digits. The subtrahend contains only odd digits. Find the missing digits.

Guess and Check

$$\begin{array}{r} 8\square,\square\square\square \\ - \square\square,\square\square 3 \\ \hline 949 \end{array}$$

First Guess:

2 goes in the tens place of the minuend.

$$\begin{array}{r} 80,\square\square 2 \\ - 79,\square\square 3 \\ \hline 949 \end{array}$$

NAME _____

Module 2 Whole Number Operations

Lesson 5 Problem-solving Strategies

The digits 1, 4, 5, and 6 are left. The difference between the numbers in the tens place is four when I subtract. But one 10 was regrouped into 10 ones. So, the difference between the original numbers must be five. $6 - 1 = 5$.

$$\begin{array}{r} 80, \square 62 \\ - 79, \square 13 \\ \hline 949 \end{array}$$

Then, 4 would go in the minuend and 5 in the subtrahend.

$$\begin{array}{r} 80,462 \\ - 79,513 \\ \hline 949 \end{array} \text{ Check by subtracting.}$$

