

General Problem Solving

Guided Notes

This resource is designed to help you actively engage with key mathematical concepts. By completing these notes, you'll establish connections between concepts, identify patterns, and develop a deeper understanding of the material.

Fill in the blanks, solve examples, and note questions as you go. Writing in your own words strengthens your memory and helps identify areas needing more attention. Bring your questions to class discussions where your instructor can address specific concerns. Don't focus on perfection—you'll learn math best through active engagement!

Strategies for Reading and Understanding Math Problems

Key Strategies for Approaching Math Problems

List the key strategies for reading and understanding math problems:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

Key Concept: Classifying Types of Math Problems

Complete the table below by providing descriptions in your own words and examples for each type of math problem:

Problem Type	Description in Your Own Words	Example
Solve		
Simplify		
Calculate		
Graph		
Multi-step		

Think About It

How does your approach to solving a math problem differ when you encounter it in a textbook versus in a real-world context? What additional considerations might you need to make in real-world problem solving?

Problem-Solving Process

Key Steps in the Problem-Solving Process

Complete the steps for effective problem solving:

1.

2.

3. _____
4. _____
5. _____

Key Concept: Problem-Solving Approaches

Complete the table below by providing descriptions in your own words and examples for each problem-solving approach:

Approach	Description in Your Own Words	Example
Break It Down		
Trial and Error		
Pattern Recognition		
Logical Reasoning		

Practice with Problem Solving

How would you solve this problem?

A recipe makes 12 regular muffins at 250 calories each. If you make mini-muffins instead and get 20 muffins from the same recipe, how many calories are in 4 mini-muffins?

- Step 1: Identify what you're looking for: _____
- Step 2: What information do you need to solve this problem?
 - _____
 - _____
- Step 3: Create a solution pathway:
 - _____
 - _____
 - _____
- Step 4: Solve the problem:

- Total calories in the recipe: _____
- Calories per mini-muffin: _____
- Calories in 4 mini-muffins: _____

Think About It

When approaching a complex problem, why is it often more effective to break it down into smaller steps rather than trying to solve it all at once? Can you think of a situation outside of mathematics where this strategy would be useful?

Using Technology in Mathematics

Key Concept: Types of Mathematical Technology

Describe how each of these technological tools can be used in mathematics:

- Graphing Calculators: _____
- Spreadsheets: _____
- Mathematical Software: _____

Key Concept: Using a Graphing Calculator

List three tasks a graphing calculator can perform beyond basic arithmetic:

1. _____
2. _____
3. _____

Key Concept: Using Spreadsheets

Describe how spreadsheets can be useful for:

- Performing calculations: _____
- Organizing data: _____

- Statistical analysis: _____

Key Concept: Mathematical Software

Briefly describe the capabilities of these software tools

- Desmos: _____
- Wolfram Mathematica: _____
- GeoGebra: _____

Think About It

How has technology changed the way we approach and solve mathematical problems? What mathematical tasks would be difficult without technological assistance? Are there any drawbacks to relying on technology for mathematical problem solving?

Critical Thinking in Mathematics

Key Concept: Evaluating Claims

When evaluating a mathematical or quantitative claim, what questions should you ask? List at least three:

1. _____
2. _____
3. _____

Key Concept: Recognizing and Challenging Assumptions

Define what an assumption is: _____

List steps to identify and challenge assumptions in mathematical claims:

1. _____
2. _____

3. _____

Key Concept: Improving Quantitative Statements

Describe how to improve quantitative statements through:

1. Adding details: _____
2. Restructuring for clarity: _____

Practice with Improving Statements

Improve the following quantitative statements by adding details or restructuring for clarity:

1. "Home prices have increased."
 - Improved statement: _____
2. "Most students passed the exam."
 - Improved statement: _____

Think About It

Why is critical thinking particularly important when interpreting statistical data or claims?

How might a lack of critical thinking lead to misinterpretations or manipulations of data?

Interpreting Data from Graphs, Charts, and Tables

Key Concept: Types of Data Representations

Describe the purpose and characteristics of each:

- Graphs: _____
- Charts: _____
- Tables: _____

Key Concept: Steps for Interpreting Data Representations

List the key steps to follow when interpreting data from a graph, chart, or table:

1. _____
2. _____
3. _____

Practice with Data Interpretation

The table below shows the monthly sales figures (in thousands of dollars) for a small business over a six-month period:

Month	Sales
Jan	45
Feb	53
Mar	58
Apr	62
May	60
Jun	67

- What was the average monthly sales for this period?

- What was the percentage increase in sales from January to June?

- In which month did the business see the highest growth compared to the previous month?

Think About It

How can the same data be represented in different ways to emphasize different aspects or tell different stories? Why is it important to be able to interpret various data representations rather than just one type?

Key Takeaways

Summarize the most important concepts from each section:

General Problem Solving:

- ---

- ---

- ---

Questions to Ask in Class:

1.

2.

3.

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