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Introduction

About this Book

The variety of math problems in *Daily Warm-Ups: Problem-Solving Math* will provide students with enough problem-solving practice to introduce your math period every day for an entire school year. For each warm-up, allow 10 to 15 minutes for reading, interpreting, and solving the problems before you correct them as a class.

Students can work on the problems in this book independently, in groups, or as a whole class. Decide which approach works best for your students, based on their math skill levels and reading competence.

The book is divided into two sections. The first section of the book introduces five specific problem-solving strategies with math problems that are not directly addressed to a specific operation or concept. The math strategies are as follows: Creating an Organized List, Guessing and Checking, Looking for a Pattern, Using Tree Diagrams, and Working Backwards. (See pages 8–12 for examples of math problems to which these types of strategies apply.) The second section of the book contains more traditional problems in operations, numeration, geometry, measurement, data analysis, probability, and algebra. The general math area and focus addressed in each warm-up is noted at the top of each page.

These activities can be used in a variety of ways, but they were designed to be introductory warm-ups for each math period. The 250 warm-ups are individually numbered and should be used in any order according to your main math lessons. Choose warm-ups that cover concepts previously taught so that the warm-up can serve as a review.

NCTM Standards

The math problems in this book have been correlated to the National Council of Teachers of Mathematics (NCTM) standards. See the correlation chart on pages 4–7. You will find the standards and expectations along with the warm-up numbers to which they relate. As the NCTM math standards make clear, problem solving is the critical component in math instruction. It is the component that makes general operations knowledge both essential and useful. Problem solving is the basic element in the concept of math as a method of communication.

Warm-Up 67

What's the Problem?

Work It Out

Kimberly was interested in how many people lived in her country, her state, and her city, but she wanted numbers that were easy to remember and compare.

Her country has 301,621,157 people.

Her state has 36,553,215 people.

Her city has 3,834,340 people.

What is the population of these places rounded to the nearest million?

_____

_____

_____

Warm-Up 68

What's the Problem?

Work It Out

Kimberly listed these states and their populations.

State	Population	State	Population
NY	19,297,729	WV	1,812,035
CA	36,553,215	MT	957,861
HI	1,283,388	NV	2,565,382
TX	23,904,380	MN	5,197,621
MI	10,071,822	OH	11,466,917

NY =
CA =
HI =
TX =
MI =
WV =
MT =
NV =
MN =
OH =

1. **Round each population to the nearest million.**
2. **Which of these states has the largest population?** _____
3. **Which of these states has the lowest population?** _____
4. **How do rounded numbers help make the figures easier to understand and more meaningful?** _____ _____

Warm-Up 91

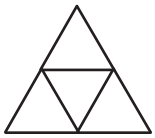
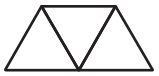
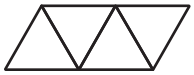
What's the Problem?

Work It Out

Sheila drew this equilateral triangle with a perimeter of 3 centimeters. She used it to draw the shapes in the chart.

1. **What is the perimeter of each of the geometric figures shown?**
2. **How many equilateral triangles make up each figure?**

Complete the chart.

Geometric Figure	Perimeter	# of Equilateral Triangles
equilateral triangle 		
rhombus 		
regular trapezoid 		
parallelogram 		

Warm-Up 92

What's the Problem?

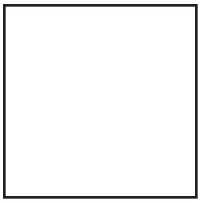
Work It Out

Sheila wanted to know how many isosceles right triangles she could create inside the shapes below.

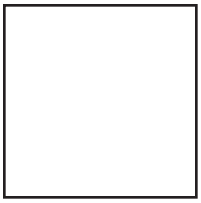
1. **How can she create 2, 4, and 8 isosceles right triangles inside the squares?**
2. **How can she create 4 isosceles right triangles inside the rectangle?**

Show your answers in the shapes.

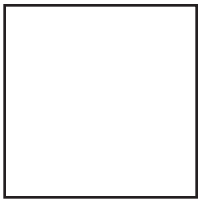
4 triangles



2 triangles



4 triangles



8 triangles

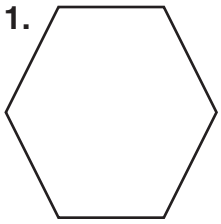
Warm-Up 95

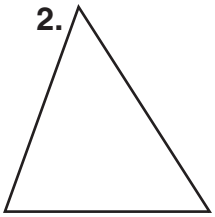
What's the Problem?

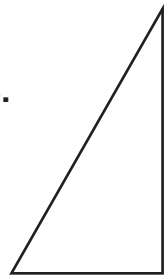
Work It Out

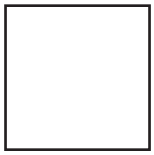
Michelle drew a series of geometric figures shown here. She wanted to identify the angles in each figure as acute angles (A), right angles (R), or obtuse angles (O).

Label the angles in each figure with A, R, or O.

1. 

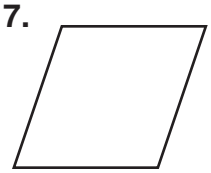
2. 

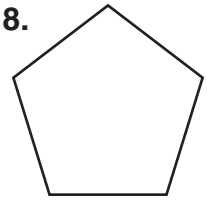
3. 

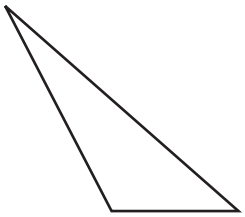
4. 

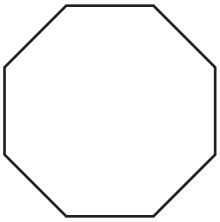
5. 

6. 

7. 

8. 

9. 

10. 

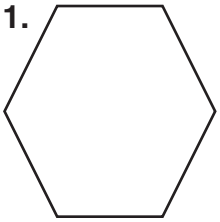
Warm-Up 96

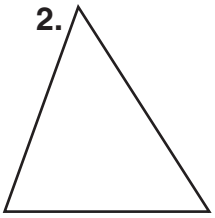
What's the Problem?

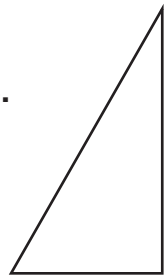
Work It Out

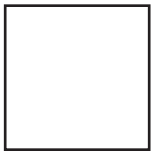
Michelle used a ruler to measure the sides of each figure she illustrated to the nearest half centimeter.

What is the perimeter of each figure? Write each answer inside the shape.

1. 

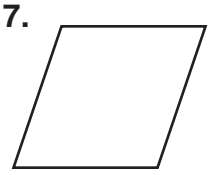
2. 

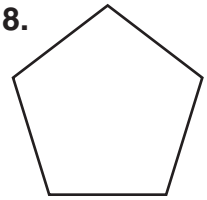
3. 

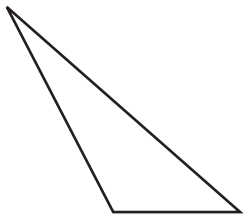
4. 

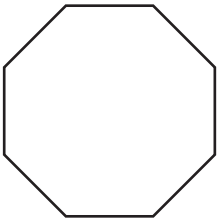
5. 

6. 

7. 

8. 

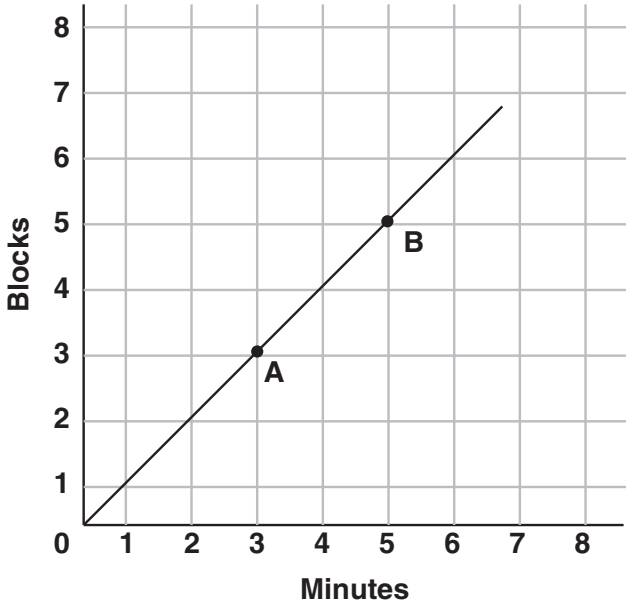
9. 

10. 

Warm-Up 129

What's the Problem? Work It Out

Juan Carlos drew this graph to illustrate the number of blocks he has been running and the number of minutes it takes.



1. **How many minutes did it take Juan Carlos to run 2 blocks?**

   _____

2. **How many minutes did it take him to run 6 blocks?**

   _____

3. **How many minutes would it likely take Juan Carlos to run 12 blocks?**

   _____

4. **What are the coordinates at point A?**

   _____

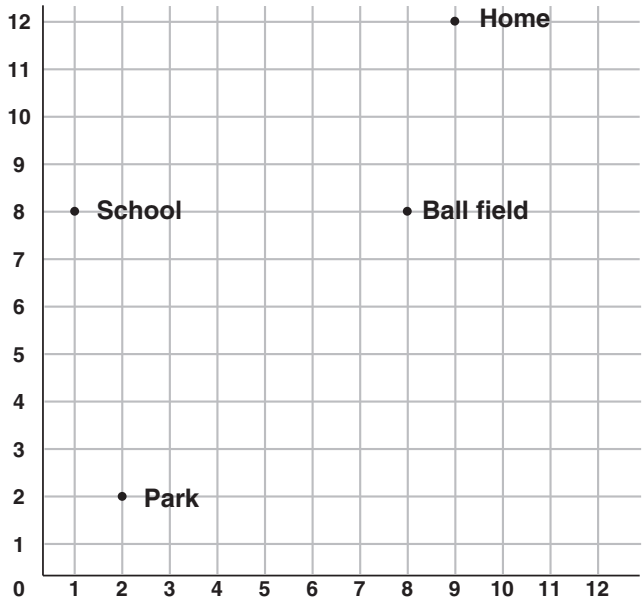
5. **What are the coordinates at point B?**

   _____

Warm-Up 130

What's the Problem? Work It Out

Juan Carlos made this graph to illustrate the location of places he liked.



1. **What are the coordinates of the ball field?**

   _____

2. **What are the coordinates of the park?**

   _____

3. **What are the coordinates of the school?**

   _____

4. **What are the coordinates of his home?**

   _____