# Dinah Zike's Teaching Mathematics <sup>with</sup> FOLDABLES

<u>Author</u> Dinah Zike, M. Ed. Educational Consultant San Antonio, Texas



New York, New York Columbus, Ohio Chicago, Illinois Peoria, Illinois Woodland Hills, California

#### Glencoe/McGraw-Hill



A Division of The McGraw-Hill Companies

Copyright © by The McGraw-Hill Companies, Inc. All rights reserved. Printed in the United States of America. Except as permitted under the United States Copyright Act, no part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the publisher.

Send all inquiries to: Glencoe/McGraw-Hill 8787 Orion Place Columbus, OH 43240

Part of ISBN 0-07-830413-X

Teaching Mathematics with Foldables

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9\ 10 \quad 045 \quad 11\ 10\ 09\ 08\ 07\ 06\ 05\ 04\ 03\ 02$ 

# **Table of Contents**

Letter from Dinah Zikev
Introduction to Foldables         Why Use Foldables in Mathematics?         Correlation of Foldables to         Glencoe Mathematics         Foldable Basics         Selecting the Appropriate Foldable
Folding InstructionsBasic Foldable Shapes
1-Part FoldsHalf Book
2-Part Folds Matchbook
3-Part FoldsTrifold Book.13Three-Tab Book.14Three-Tab Book Variations.15Pyramid Fold or Mobile.16
4-Part FoldsLayered-Look Book.17Four-Tab Book.18Envelope Fold.19Standing Cube.20Four-Door Book.21Top-Tab Book.22Accordion Book.24
Any Number of PartsPop-Up Book.25Folding into Fifths.26Folded Table, Chart, or Graph.27Folding a Circle into Tenths.28Circle Graph.29Concept-Map Book.30Vocabulary Book.31

Projects Using Folds	
Billboard Project	32
Sentence-Strip Holder	33
Sentence Strips	34

#### Math Activities using Foldables

#### Number Systems

Whole Numbers
Integers
Integers: Adding and Subtracting
Integers: Multiplying and Dividing
Rational Numbers
Rational Numbers: Fractions
Rational Numbers: Decimals41
Percents
Ratios
Proportions
Irrational Numbers
Real Number System

#### Algebraic Patterns and Functions

Sets and Variables
Expressions
Properties
Equations
Inequalities
Relations and Functions
Factors
Multiples
Monomials and Polynomials
Powers and Exponents
Sequences
Matrices

#### Geometry

Points
Lines and Line Segments
Rays
Angles
Angle Relationships
Planes
Polygons
Triangles
Right Triangles
Right Triangle Trigonometry

Quadrilaterals
Squares, Rectangles, and Rhombi
Parallelograms
Trapezoids
Circles
Three-Dimensional Figures
Prisms and Cylinders
Pyramids and Cones
Coordinate Geometry
Slope
Graphing Equations and Inequalities74

#### Measurement

Metric Measurement	.75
Length, Width, and Height	.75
Distance	.76
Weight	.76
Volume	.77
Temperature	.77

#### Data Analysis and Probability

Statistics
Stem-and-Leaf Plots
Box-and-Whisker Plots
Fundamental Counting Principle
Frequency Tables
Pascal's Triangle

Permutations
Problem Solvina
Problem-Solving Plan
Problem-Solving Strategies
Communication
Vocabulary and Writing Definitions 85
Journals
Outline, List, and Sequence
Concept Maps
Writing Instructions
Main Ideas and Note Taking
Annotations
Questioning
Representation
Tables and Charts
Circle Graphs
Bar Graphs and Histograms
Line Graphs
Pictographs
Venn Diagrams
Index

### Dear Teacher,

In this book, you will find instructions for making Foldables as well as ideas on how to use them. They are an excellent communication tool for students and teachers.

### National Math Standards and Communication Skills

The Principles and Standards for School Mathematics, published by the National Council of Teachers of Mathematics (NCTM) in 2000, stress the importance of communication skills in a strong mathematics program. Not all students will become mathematicians, engineers, or statisticians, but all students need to be able to think, analyze, and problem solve using skills acquired through the study of mathematics.

Throughout their lives, students will be called upon to be literate in mathematics personally and professionally. They will need to have a basic understanding of numbers, operations, and quantitative reasoning; patterns, relationships, and algebraic thinking; geometry; measurement; and probability and statistics to solve real-life problems involving finances, chance, design, science, fine arts, and more.

Furthermore, students must be able to share the results of their use of mathematics using various forms of oral and written communication. Foldables are one of many techniques that can be used to integrate reading, writing, thinking, organizing data, researching, and other communication skills into an interdisciplinary mathematics curriculum.

### Who, What, When, Why

You probably have seen at least one of the Foldables featured in this book used in supplemental programs or staff-deveopment workshops. Today, my Foldables are used internationally. I present workshops and keynotes to over fifty thousand teachers and parents a year, sharing the Foldables that I began inventing, designing, and adapting over thirty years ago. Around the world, students of all ages are using them for daily work, note-taking activities, student-directed projects, forms of alternative assessment, math journals, graphs, charts, tables, and more.

### Add and Amend

After workshop presentations, participants would ask me for lists of activities to be used with the Foldables they had just learned to make. They needed help visualizing how to convert math data into Foldables. So, over fifteen years ago, I began collecting and sharing the ideas listed in this book. The ideas are organized by topic. The table for each topic shows the math content being addressed and an appropriate Foldable. I hope you enjoy making Foldables a part of your math classroom!

Dinch Zu

### Why Use Foldables in Mathematics?

When teachers ask me why they should take time to use the Foldables featured in this book, I explain that they

- ... quickly organize, display, and arrange information, making it easier for students to grasp math concepts and master skills.
- ... result in student-made study guides that are compiled as students listen for main ideas, read for main ideas, and work their way through new concepts and procedures.
- ... provide a multitude of creative formats in which students can present projects, research, and computations instead of typical poster board or math fair formats.
- ... replace teacher-generated writing or photocopied sheets with student-generated print.
- ... incorporate the use of such skills as comparing and contrasting, recognizing cause and effect, and finding similarities and differences into daily work and long-term projects. For example, these Foldables can be used to compare and contrast student explanations and procedures for solving problems to the explanations presented by other students and teachers.
- ... continue to "immerse" students in previously learned vocabulary and concepts, providing them with a strong foundation that they can build upon with new observations, experiences, and knowledge.
- ... can be used by students or teachers to easily communicate data through graphs, tables, charts, models, and diagrams, including Venn diagrams.
- ... allow students to make their own math journals for recording main ideas, problem-solving strategies, examples, questions that arise during classwork, and personal experiences that occur during learning.
- ... can be used as alternative assessment tools by teachers to evaluate student progress or by students to evaluate their own progress.
- ... integrate language arts, the sciences, and social sciences into the study of mathematics.
- ... provide a sense of student ownership in the mathematics curriculum.

### **Correlation of Foldables<sup>™</sup> to Glencoe Mathematics**

Foldable™ Topic	Mathematics: Applications and Connections, Course 1	Mathematics: Applications and Connections, Course 2	Mathematics: Applications and Connections, Course 3	Pre-Algebra	Algebra 1	Geometry	Algebra 2
Number Systems							
Whole Numbers	1	1	✓	1			
Integers	1	1	1	1	1		
Integers: Adding and Subtracting	1	<i>√</i>	1	1			
Integers: Multiplying and Dividing	1	1	1	1			
Rational Numbers	1	5	1	1	1		
Rational Numbers: Fractions	1	1	1	1			
Rational Numbers: Decimals	1	1	1	1			
Percents	1	1	1	1	1		
Ratios	1	1	1	1			
Proportions	1	1	1	1	1		
Irrational Numbers				1	1		1
Real Number System				1	1		1
Patterns and Functions							
Sets and Variables	1	1	✓	1	1		<ul> <li>✓</li> </ul>
Expressions	1	1	1	1	1		1
Properties	1	1	1	1	1		1
Equations	1	1	1	1	1		1
Inequalities	1	1	1	1	1		1
Relations and Functions	1	1	1	1	1		~
Factors	1	<i>✓</i>		<i>√</i>	1		
Multiples	1	1		1	1		
Monomials and Polynomials			1	1	1		1
Powers and Exponents	1	1	1	1	1		1
Sequences				<i>√</i>	1	<i>✓</i>	~
Matrices			<i>✓</i>		1	1	1
Geometry							
Points	1	1	1	<i>✓</i>	1	1	1
Lines and Line Segments			1	1		1	
Rays						1	
Angles	1	✓	✓	1		1	1
Angle Relationships						1	
Planes						1	
Polygons	1	1	1	1		1	
Triangles	1	1	1	1		1	
Right Triangles	1	1	1	1	1	1	1

### **Correlation of Foldables<sup>™</sup> to Glencoe Mathematics**

Foldable™ Topic	Mathematics: Applications and Connections, Course 1	Mathematics: Applications and Connections, Course 2	Mathematics: Applications and Connections, Course 3	Pre-Algebra	Algebra 1	Geometry	Algebra 2
Algebra and Right Triangles				1	1	1	1
Quadrilaterals	1	1		1		1	
Squares, Rectangles, and Rhombi	1	5	1	1		1	
Parallelograms	1	<i>✓</i>		1		1	
Trapezoids		<i>✓</i>	1	1		1	
Circles	1	1	1	1		1	
Three-Dimensional Figures	1	1	1	1		1	
Prisms and Cylinders	1	1	1	1		1	
Pyramids and Cones			1	1		1	
Coordinate Geometry	1	1	1	1	1	1	1
Slope		1	1	1	1	1	1
Graphing Equations and Inequalities		1	1	1	1	1	1
Measurement				1			
Metric Measurement	1						
Length, Width, and Height	1						
Distance	1						
Weight	1						
Volume	1						
Temperature	1	<i>✓</i>	<i>✓</i>	1	1		
Data Analysis and Proba	ability						
Statistics							
Stem-and-Leaf Plots	1						
Box-and-Whisker Plots		<i>✓</i>		1	1		
Fundamental Counting Principle		5	1	1	1		1
Frequency Tables	1	<i>s</i>	1	1			
Pascal's Triangle			1	1	1	1	1
Permutations		<i>s</i>	1	1	1		1
Combinations		<i>✓</i>	1	1	1		1
Probability	1	<i>✓</i>	1	1	1	1	1
Scatter Plots		<i>✓</i>	✓	1	1	1	1
Problem Solving							
Problem Solving Plan	<i>✓</i>	<i>✓</i>	<i>✓</i>	1	1	1	1
Problem Solving Strategies	1	1	1	1	1		
Communication							
Vocabulary and Writing Definitions	1	1	1	1	1	1	1

### **Correlation of Foldables<sup>™</sup> to Glencoe Mathematics**

Foldable™ Topic	Mathematics: Applications and Connections, Course 1	Mathematics: Applications and Connections, Course 2	Mathematics: Applications and Connections, Course 3	Pre-Algebra	Algebra 1	Geometry	Algebra 2
Journals	1	1	1	1	1	1	1
Outline, List, and Sequence	1	1	1	1	1	1	1
Concept Map	1	1	1	1	1	1	1
Writing Instructions	1	1	1	1	1	1	1
Main Ideas and Note Taking	1	1	1	1	1	1	1
Annotations	1	1	1	1	1	1	1
Questioning	1	1	1	1	1	1	1
Representation							
Tables and Charts	<i>✓</i>	✓	✓	✓	1	1	1
Circle Graphs	1	1	1	1		1	
Bar Graphs and Histograms	1	1	1	1	1		
Line Graphs	1	1					
Pictographs	<ul> <li>✓</li> </ul>						
Venn diagrams	1	1	1	1	1	1	1

### **Foldable Basics**

### What to Write and Where

Teach students to write general information—titles, vocabulary words, concepts, questions, main ideas, and properties or theorems—on the front tabs of their Foldables. General information is viewed every time a student looks at a Foldable. Foldables help students focus on and remember key points without being distracted by other print.

Ask students to write specific information—supporting ideas, student thoughts, answers to questions, research information, computation steps, class notes, observations, and definitions—under the tabs.

As you teach, demonstrate different ways in which Foldables can be used. Soon you will find that students make their own Foldables and use them independently for study guides and projects.





### With or Without Tabs

Foldables with flaps or tabs create study guides that students can use to self check what they know about the general information on the front of the tabs. Use Foldables without tabs for assessment purposes or projects where information is presented for others to view quickly.



#### Venn Diagram used for assessment



### What to Do with Scissors and Glue

I don't expect secondary students to bring glue and scissors to math class. Instead, I set up a small table in the classroom and provide several containers of glue, numerous pairs of scissors (sometimes tied to the table), containers of markers and colored pencils, a stapler, clear tape, and anything else I think students might need to make their Foldables. Don't be surprised if students donate unusual markers, decorative-edged scissors, gel



pens, stencils, and other art items to your publishing table.

The more they make and use graphic organizers, the faster students become at producing them.



### Storing Graphic Organizers in Student Portfolios

Turn one-gallon freezer bags into student portfolios which can be collected and stored in the classroom. Students can also carry their portfolios in their notebooks if they place strips of two-inch clear tape along one side and punch three holes through the taped edge.

Have each student write his or her name along the top of the plastic portfolio with a

permanent marker and cover the writing with two-inch clear tape to keep it from wearing off. Cut the bottom corners off the bag so it won't hold air and will stack and store easily.

**HINT**: I found it more convenient to keep student portfolios in my classroom so student work was always available when needed and not "left at home" or "in the car." Giant laundry-soap boxes make good storage containers for portfolios.

### Let Students Use This Book As an Idea Reference

Make this book available to students to use as an idea reference for projects, discussions, extra credit work, cooperative learning group presentations, and more.

# **Selecting the Appropriate Foldable**

### **Dividing Math Concepts into Parts**

Foldables divide information and make it visual. In order to select the appropriate Foldable, decide how many parts you want to divide the information into and then determine which Foldable best illustrates or fits those parts. Foldables that are three-dimensional also make the student interact with the information kinesthetically.

For example, if you are studying the Properties of Equality you could choose a Foldable that has five tabs (or sections). On the front tabs write the properties. Under the tabs, explain the properties in words on one side and in symbols on the other side.

Math Concepts Already Divided into Parts						
Algebra		Geometry		Statistics and Probability		
Parts	Concept	Parts	Concept	Parts	Concept	
5	Properties of Equality	2	collinear and noncollinear	3	mean, median, mode	
3	parentheses, brackets, and braces	2	complementary and supplementary angles	1	Fundamental Counting Principle	
2	equations and inequalities	2	parallel and perpendicular	4	Who, What, When, Where: Blaise Pascal	
2	numeric and algebraic expressions	3	translation, rotation, reflection	2	permutations and combinations	
2	domain and range	6	types of triangles	2	upper quartile and lower quartile	
7	properties of addition and multiplication	4	SSS, SAS, ASA, AAS	2	dependent and independent events	
2	LCM and LCD	2	two types of special right triangles	2	probability and odds	
3	monomials, binomials, and trinomials	6	types of quadrilaterals	2	odds in favor and odds against	
2	powers and exponents	2	<i>x</i> -axis and <i>y</i> -axis	2	mutually inclusive and exclusive events	

Algebra	Geometry	Statistics and Probability
write algebraic expressions	draw angles with a protractor	determine ranges of sets
evaluate expressions	classify polygons	interpret scatter plots
sequence steps	illustrate quadrilaterals	display data collected in plots
list algebraic rules	list examples of prisms	draw models of combinations
solve equations	name ordered pairs	
find values for variables	graph points	

### **Dividing Skills and Foldables into Parts**

Reading, writing, and thinking skills can easily be used with Foldables. The following lists show examples of skills and activities and a selection of Foldables divided into parts. You may want to refer to this page as you select activities from the lists of math topics in this book. (See pages 35–90.)

Skills and Activities Divided into Parts				
1 Part	2 Parts			
Find the Main Idea	Compare and Contrast			
Predict an Outcome	Cause and Effect			
Narrative Writing	Similarities and Differences			
Descriptive Writing	Opposite Operations			
Expository Writing				
Persuasive Writing				
3 Parts	4 Parts			
Venn Diagrams	Who, What, When, Where			
Know?-Like to Know?-Learned?	What, Where, When, Why/How			
Beginning, Middle, End				
Any Numl	ber of Parts			
Questioning	Making and Using Tables			
Flow Charts	Making and Using Graphs			
Vocabulary Words	Making and Using Charts			
Timelines	Sequencing Data or Events			
Concept Webs or Maps				

Foldables Divided into Parts				
1 Part	2 Parts			
Half Book	Two-Tab Book			
Folded Book	Pocket Book			
Matchbook	Shutter Fold			
Bound Book	Matchbook Cut in Half			
	Concept-Map Book with Two Tabs			
3 Parts	4 Parts			
Trifold Book	Four-Tab Book			
Three-Tab Book	Standing Cube			
Pyramid Book	Top-Tab Book			
Layered-Look Book	Four-Door Book			
Concept Map with Three Tabs				
Any Num	ber of Parts			
Accordion Book	Circle Graph			
Layered-Look Book	Concept-Map Book			
Sentence-Strip Holder	Vocabulary Book			
Folded Table, Chart, or Graph	Bound Book			
Pyramid Mobile	Pocket Books			
Top-Tab Book				
(three or more sheets of paper)				

# **Basic Foldable Shapes**

The following figures illustrate the basic folds that are referred to throughout the following section of this book.





Taco Fold

Hamburger Fold



Hot Dog Fold



**Shutter Fold** 





Valley Fold



**Mountain Fold** 



# **Folded Book**

**1**. Make a *half book*.

**2**. Fold it in half again like a *hamburger*. This makes a ready-made cover, and two small pages for information on the inside.

Use photocopied worksheets, Internet print outs, and student-drawn diagrams or maps to make this book. One sheet of paper can be used for two activities and two grades.







### **Bound Book**

**1**. Take two sheets of  $8\frac{1}{2}$ "  $\times$  11" paper

and fold each one like a *hamburger*. Place the papers on top of each other, leaving one sixteenth of an inch between the *mountain tops*.

- **2**. Mark both folds one inch from the outer edges.
- **3.** On one of the folded sheets, cut from the top and bottom edge to the marked spot on both sides.
- **4**. On the second folded sheet, start at one of the marked spots and cut the fold between the two marks.
- **5.** Take the cut sheet from step 3 and fold it like a *burrito*. Place the *burrito* through the other sheet and then open the *burrito*. Fold the bound pages in half to form an eight-page book.



1

![](_page_17_Picture_9.jpeg)

![](_page_17_Figure_10.jpeg)

5

# Two-Tab Book

- **1.** Take a *folded book* and cut up the *valley* of the inside fold toward the *mountain top*. This cut forms two large tabs that can be used front and back for writing and illustrations.
- **2**. The book can be expanded by making several of these folds and gluing them side-by-side.

Use this book for data that occurs in twos, for example opposite operations.

![](_page_18_Picture_5.jpeg)

![](_page_18_Picture_6.jpeg)

©Glencoe/McGraw-Hill

![](_page_19_Figure_1.jpeg)

#### FOLDING INSTRUCTIONS: 2-PART FOLDS

# **Pocket Book**

- **1**. Fold a sheet of  $8\frac{1}{2}$ " × 11" paper in half like a *hamburger*.
- Open the folded paper and fold one of the long sides up two inches to form a pocket. Refold along the *hamburger* fold so that the newly formed pockets are on the inside.
- **3**. Glue the outer edges of the two-inch fold with a small amount of glue.
- **4**. **Optional:** Glue a cover around the *pocket book*.

**Variation:** Make a multi-paged booklet by gluing several pockets side-by-side. Glue a cover around the multi-paged *pocket book*.

Use  $3" \times 5"$  index cards inside the pockets. Store student-made books, such as two-tab books and folded books in the pockets.

![](_page_20_Picture_8.jpeg)

![](_page_20_Figure_9.jpeg)

![](_page_20_Picture_10.jpeg)

![](_page_21_Figure_1.jpeg)

©Glencoe/McGraw-Hill

2

# **Trifold Book**

- **1**. Fold a sheet of  $8\frac{1}{2}$ "  $\times$  11" paper into thirds.
- **2**. Use this book as is, or cut into shapes. If the trifold is cut, leave plenty of fold on both sides of the designed shape, so the book will open and close in three sections.

Use this book to make charts with three columns or rows, large Venn diagrams, or reports on data occurring in threes.

![](_page_22_Picture_5.jpeg)

![](_page_22_Picture_6.jpeg)

# **Three-Tab Book**

- **1**. Fold a sheet of paper like a *hot dog*.
- 2. With the paper horizontal, and the fold of the *hot dog* up, fold the right side toward the center, trying to cover one half of the paper.

**NOTE:** If you fold the right edge over first, the final graphic organizer will open and close like a book.

- **3.** Fold the left side over the right side to make a book with three folds.
- **4**. Open the folded book. Place your hands between the two thicknesses of paper and cut up the two *valleys* on one side only. This will form three tabs.

Use this book for data occurring in threes.

![](_page_23_Picture_8.jpeg)

![](_page_23_Figure_9.jpeg)

©Glencoe/McGraw-Hill

![](_page_24_Picture_1.jpeg)

Gane

![](_page_25_Figure_1.jpeg)

- **1.** Fold a sheet of  $8\frac{1}{2}$ " × 11" paper into a *taco*, forming a square. Cut off the
- excess rectangular tab formed by the fold.Open the folded *taco* and refold it the
- **2**. Open the folded *taco* and refold it the opposite way forming another *taco* and an X-fold pattern.
- **3.** Cut one of the folds to the center of the X, or the midpoint, and stop. This forms two triangular-shaped flaps.
- **4**. Glue one of the flaps under the other, forming a *pyramid*.
- **5.** Label front sections and write information, notes, thoughts, and questions inside the pyramid on the back of the appropriate tab.

Use to make mobiles and dioramas. Use with data occurring in threes.

![](_page_25_Picture_9.jpeg)

1

2

3

![](_page_25_Picture_10.jpeg)

![](_page_25_Picture_11.jpeg)

![](_page_25_Picture_12.jpeg)

![](_page_25_Picture_13.jpeg)

#### FOLDING INSTRUCTIONS: 4-PART FOLDS

2

1

3

# Layered-Look Book

**1.** Stack two sheets of  $8\frac{1}{2}$ "  $\times$  11" paper so that

the back sheet is one inch higher than the front sheet.

- **2**. Bring the bottom of both sheets upward and align the edges so that all of the layers or tabs are the same distance apart.
- **3**. When all tabs are an equal distance apart, fold the papers and crease well.
- **4**. Open the papers and glue them together along the *valley* or inner center fold or, staple them along the mountain.

3-D Shapes		
Cylinder D Cylinder D Pyramid A A Cone	Statistics 2 Statistics	1 mile 1,720 yune / 5250 fait
A Conte 13-9 13-5	Michigrams Measuring Variables Box and Whister Blots	BD gards Jours Feet Drawing Josep Peet -25 Jone Josep Feet Josep Peet -25 Jone Josep Peet Josep P
Algebraic Expressions	Right Triangles	Remark .
<ul> <li>I. Cohitz, Algebraic Expressions</li> <li>S. Salae, Algebraic, Equations (7 mm)</li> <li>Salae, Algebraic, Equations (7 mm)</li> <li>Y. Salae, Algebraic, Equations (7 mm)</li> <li>Y. Salae, Algebraic, Equations (7 mm)</li> <li>Salae, Algebraic, Equations (7 mm)</li> <li>Salae, Algebraic, Equations (7 mm)</li> </ul>	Pythagorean Theorem 45°-45° Right Triange 30°-60° Right Triange	000
4. Janihay dae Step Lynning 7. Uning Rowauks	When using more than two sheet of paper, make the tabs smaller t	s han an inch.

# Four-Tab Book

- **1**. Fold a sheet of  $8\frac{1}{2}$ " × 11" paper in half like a *hot dog*.
- **2**. Fold this long rectangle in half like a *hamburger*.
- **3.** Fold both ends back to touch the *mountain top* or fold it like an *accordion*.
- **4**. On the side with two *valleys* and one *mountain top*, make vertical cuts through one thickness of paper, forming four tabs.

Use this book for data occurring in fours. For example: the four steps in the order of operations.

![](_page_27_Picture_7.jpeg)

at - × +	
Commutative Property	Andreator danas
	And And And
Propert	ies of Oddition
$\cap \cap \cap \cap$	it tomal
$OOV \gamma$	Nardinas
Center radius diameter cincumbusena	Whole
Plus mi	Numbers
more than less than product divided	Integers
in all Subtract Multiplied Guotient	Radional
the by Of	Numbers

#### FOLDING INSTRUCTIONS: 4-PART FOLDS

### **Envelope Fold**

**1**. Fold a sheet of  $8\frac{1}{2}$ " × 11" paper into a *taco* forming a square. Cut off the excess paper

strip formed by the square.

- **2**. Open the folded taco and refold it the opposite way forming another taco and an X fold pattern.
- **3**. Open the *taco fold* and fold the corners toward the center point of the X forming a small square.
- **4.** Trace this square on another sheet of paper. Cut and glue it to the inside of the envelope. Pictures can be placed under or on top of the tabs, or can be used to teach fractional parts.

Use this book for data occurring in fours. For example, four operations.

![](_page_28_Picture_8.jpeg)

3

![](_page_28_Picture_9.jpeg)

![](_page_28_Picture_10.jpeg)

![](_page_28_Picture_11.jpeg)

# **Standing Cube**

- **1.** Use two sheets of the same size paper. Fold each like a *hamburger*. However, fold one side one half inch shorter than the other side. This will make a tab that extends out one half inch on one side.
- **2**. Fold the long side over the short side of both sheets of paper, making tabs.
- **3.** On one of the folded papers, place a small amount of glue along the the small folded tab, next to the *valley* but not in it.
- **4**. Place the non-folded edge of the second sheet of paper square into the *valley* and fold the glue-covered tab over this sheet of paper. Press flat until the glue holds. Repeat with the other side.
- **5.** Allow the glue to dry completely before continuing. After the glue has dried, the cube can be collapsed flat to allow students to work at their desks. The cube can also be folded into fourths for easier storage, or for moving it to a display area.

Use with data occurring in fours or make it into a project. Make a small display cube using

 $8\frac{1}{2}$ "  $\times$  11" paper. Use 11"  $\times$  17" paper to make

large project cubes that you can glue other books onto for display. Notebook paper, photocopied sheets, magazine pictures, and current events also can be displayed on the large cube.

![](_page_29_Picture_10.jpeg)

![](_page_29_Picture_11.jpeg)

#### FOLDING INSTRUCTIONS: 4-PART FOLDS

![](_page_30_Figure_1.jpeg)

# **Top-Tab Book**

**1**. Fold a sheet of  $8\frac{1}{2}$ " × 11" paper in half like a *hamburger*. Cut the center

fold, forming two half sheets.

- Fold one of the half sheets four times. Begin by folding in half like a *hamburger*, fold again like a *hamburger*, and finally again like a *hamburger*. This folding has formed your pattern of four rows and four columns, or 16 small squares.
- **3.** Fold two sheets of  $8\frac{1}{2}$ "  $\times$  11" paper

in half like a *hamburger*. Cut the center folds, forming four half sheets.

- **4.** Hold the pattern vertically and place on a half sheet of paper under the pattern. Cut the bottom right hand square out of both sheets. Set this first page aside.
- **5**. Take a second half sheet of paper and place it under the pattern. Cut the first and second right hand squares out of both sheets. Place the second page on top of the first page.

![](_page_31_Figure_9.jpeg)

![](_page_31_Figure_10.jpeg)

![](_page_31_Figure_11.jpeg)

![](_page_31_Figure_12.jpeg)

![](_page_31_Picture_13.jpeg)

![](_page_31_Figure_14.jpeg)

#### FOLDING INSTRUCTIONS: 4-PART FOLDS

- **6.** Take a third half sheet of paper and place it under the pattern. Cut the first, second, and third right hand squares out of both sheets. Place this third page on top of the second page.
- 7. Place the fourth, uncut half sheet of paper behind the three cut out sheets, leaving four aligned tabs across the top of the book. Staple several times on the left side. You can also place glue along the left paper edges, and stack them together. The glued spine is very strong.
- **8**. Cut a final half sheet of paper with no tabs and staple along the left side to form a cover.

![](_page_32_Picture_4.jpeg)

![](_page_32_Picture_5.jpeg)

![](_page_32_Picture_6.jpeg)

### **Accordion Book**

**NOTE:** *Steps 1 and 2 should be done only if paper is too large to begin with.* 

**1**. Fold the selected paper into *hamburgers*.

1

2

3

5

- **2**. Cut the paper in half along the fold lines.
- **3.** Fold each section of paper into *hamburgers*. However, fold one side one half inch shorter than the other side. This will form a tab that is one half inch long.
- **4**. Fold this tab forward over the shorter side, and then fold it back away from the shorter piece of paper. In other words, fold it the opposite way.
- **5.** Glue together to form an *accordion* by gluing a straight edge of one section into the *valley* of another section.

**NOTE:** Stand the sections on end to form an accordion to help students visualize how to glue them together. (See illustration.)

Always place the extra tab at the back of the book so you can add more pages later.

Use this book for number lines, timelines, student projects that grow, sequencing events or data, and more.

When folded, this project is used like a book, and it can be stored in student portfolios. When open, it makes a nice project display. Accordion books can be stored in file cabinets for future use, too.

#### FOLDING INSTRUCTIONS: ANY NUMBER OF PARTS

# **Pop-Up Book**

- **1**. Fold a sheet of  $8\frac{1}{2}$ " × 11" paper in half like a *hamburger*.
- **2**. Beginning at the fold, or *mountain* top, cut one or more tabs.
- **3.** Fold the tabs back and forth several times until there is a good fold line formed.
- **4**. Partially open the *hamburger* fold and push the tabs through to the inside.
- **5.** With one small dot of glue, glue figures for the *pop-up book* to the front of each tab. Allow the glue to dry before going on to the next step.
- 6. Make a cover for the book by folding another sheet of paper in half like a *hamburger*. Place glue around the outside edges of the *pop-up book* and firmly press inside the *hamburger* cover.

![](_page_34_Picture_8.jpeg)

![](_page_34_Picture_9.jpeg)

![](_page_34_Figure_10.jpeg)

![](_page_34_Picture_11.jpeg)

![](_page_34_Picture_12.jpeg)

Normal Distribution

![](_page_34_Figure_13.jpeg)

![](_page_35_Figure_1.jpeg)
# Folded Table, Chart, or Graph

- **1**. Fold the number of vertical columns needed to make the table or chart.
- **2**. Fold the horizontal rows needed to make the table or chart.
- **3**. Label the rows and columns.

*Remember:* Tables are organized along vertical and horizontal axes, while charts are organized along one axis, either horizontal or vertical.





# **Folding a Circle into Tenths**

- **1**. Fold a paper circle in half.
- **2**. Fold the half circle so that one third is exposed and two thirds are covered.
- **3**. Fold the one third (single thickness) backward to form a fold line.
- 4. Fold the two thirds section in half.
- 5. The half circle will be divided into fifths. When opened, the circle will be divided into tenths.





2









**NOTE:** Paper squares and rectangles are folded into tenths the same way. Fold them so that one third is exposed and two thirds is covered. Continue with steps 3 and 4.



# **Circle Graph**

- **1**. Cut out two circles using a pattern.
- **2**. Fold one of the circles in half on each axis, forming fourths. Cut along one of the fold lines (the radius) to the middle of each circle. Flatten the circle.
- **3**. Slip the two circles together along the cuts until they overlap completely.
- 4. Spin one of the circles while holding the other stationary. Estimate how much of each of the two (or you can add more) circles should be exposed to illustrate given percents or fractional parts of data. Add circles to represent more than two percents.







#### FOLDING INSTRUCTIONS: ANY NUMBER OF PARTS



# **Billboard Project**

- **1**. Fold all pieces of the same size of paper in half like *hamburgers*.
- Place a line of glue at the top and bottom of one side of each folded billboard section and glue them edge-to-edge on a background paper or project board. If glued correctly, all doors will open from right to left.
- **3.** Pictures, dates, words, etc., go on the front of each billboard section. When opened, writing or drawings can be seen on the inside left of each section. The base, or the part glued to the background, is perfect for more in-depth information or definitions.

Use for timelines or sequencing data and number lines.

Fiboracci Sequence







1 2 3 5 8 9	
Fiboracci Sequence	
$l_{+1} = l_{+2} = 2_{+3} = l_{+2} = 2_{+2} = 2_{+2} = 1_{-2} = 2_{+1} = 3_{+1}$	21.
10" 10" 10" 10" 10" 10" 10"	
Kila hecto deka liter deci centi millir	10 1 10"
1000 100 10 1 1 1 01 C	milli

1

3

5

2

4

Glue down

## **Sentence-Strip Holder**

**1**. Fold a sheet of  $8\frac{1}{2}$ " × 11" paper in half like a *hamburger*.

**2**. Open the *hamburger* and fold the two outer edges toward the *valley*. This forms a *shutter fold*.

- **3.** Fold one of the inside edges of the shutter back to the outside fold. This fold forms a floppy "L".
- **4.** Glue the floppy L-tab down to the base so that it forms a strong, straight L-tab.

**5.** Glue the other shutter side to the front of this L-tab. This forms a tent that is the backboard for the flashcards or student work to be displayed.

Fold the edge of the L-tab up one quarter to one half to form a lip that will keep the student work from slipping off the holder.



## **Sentence Strips**

**1**. Take two sheets of  $8\frac{1}{2}$ "  $\times$  11" paper and

fold into *hamburgers*. Cut along the fold lines making four half sheets. (Use as many half sheets as necessary for additional pages to your book.)

- **2**. Fold each sheet in half like a *hotdog*.
- **3.** Place the folds side-by-side and staple them together on the left side.
- **4**. One inch from the stapled edge, cut the front page of each folded section up to the mountain top. These cuts form flaps that can be raised or lowered.

To make a half-cover, use a sheet of construction paper one inch longer than the book. Glue the back of the last sheet to the contruction paper strip leaving one inch, on the left side, to fold over and cover the original staples. Staple this half-cover in place.











Skill	Activity Suggestion	Foldable Parts
define	whole numbers as the counting numbers (0, 1, 2, 3) and list examples	2
explain	why fractions such as $\frac{3}{3}$ , $\frac{4}{4}$ , and $\frac{8}{8}$ are whole numbers	1
find	10 examples of equivalent whole numbers: 3, $\frac{9}{3}$	10
describe	the two basic operations that can be performed on whole numbers: addition (combines individual numbers) and multiplication (combines groups of numbers) subtraction and division as the inverse operations of addition and multiplication	2
explain and use	the Commutative Property of Addition and the Commutative Property of Multiplication. the Associative Property of Addition and the Associative Property of Multiplication	4
outline	the Distributive Property, also called the Distributive Property of Multiplication over Addition	1
differentiate between	the Commutative Property, Associative Property, and the Distributive Property	3
define	sum, difference, product, and quotient as they relate to whole numbers	4
determine	if subtraction and division are associative (neither are) and explain your answer	2
list and describe	the order in which operations should be performed: multiply and/or divide then add and/or subtract	2
compare and contrast	two types of whole numbers: primes and composites	2
note and	every whole number is either prime or composite explain except for 0 and 1 which are neither	1
give	examples of prime factors for six whole numbers	6
reduce	given fractions to see what whole number they represent: $\frac{12}{4}, \frac{18}{9}$	any number
determine	whole numbers are greater than, less than, or equal to other whole numbers	3
round	whether five whole numbers to the nearest ten, nearest hundred, nearest thousand	5
demonstrate	three ways whole numbers can be written	3
use	whole numbers to solve real-world problems	any number
Venn diagram	characteristics of prime numbers, composite numbers, and both	3





Four-Door Book

	١
Sum	
Difference	
Product	
Quotient	

Four-Tab book



Shutter Fold



Three-Tab Venn diagram



©Glencoe/McGraw-Hill

Teaching Mathematics with Foldables

Skill

make



#### Two-Tab Book



Four-Tab Book



#### Two-Tab Concept Map



**Folded Chart** 



Number Line

Skill	Activity Suggestion	Poldable Parts
define	integers as the set of whole numbers and their opposites, or negative numbers $(3, -2, -1, 0, 1, 2, 3)$	1
differentiate between	positive and negative numbers	2
list	examples of positive and negative integers	2
explain	in your own words why you think zero is neither positive nor negative, but part of the set of integers	1
show	how the set of integers might be written $\{\dots -3, -2, -1, 0, 1, 2, 3, \dots\}$ and explain the use of ellipses	2
describe	four examples of the use of negative numbers in the real world: temperature, balancing account books, reporting weight loss, distance lost in a game or sport	4
define	absolute value as the number of units a number is from 0 on a number line	1
write	the definition of absolute value in words and symbols	2
find	the absolute value of given expressions	any number
explain	why absolute value can never be less than 0	1
describe	absolute value in terms of distance and give examples	2
graph	given integers on a number line	any number
	two points on a number line so that the coordinates of both have an absolute value of a given number	any number
write	inequalities using integers	any number
sequence	given integers from greatest to least, or from least to greatest	any number
state	which integers have the greater absolute value	any number
describe	how to determine if one integer is less than or greater than another integer	2
design	a concept map that shows integers as the union of whole numbers and their opposites	2

Integers

Foldable



a number line for whole numbers and integers

#### ©Glencoe/McGraw-Hill

1

	5 5	
Skill	Activity Suggestion	Foldable Parts
describe	how to add integers with the same sign	1
use	a number line and show how to add integers with the same sign	2
explain	how to add integers with different signs	1
use	a number line and show how to add integers with different signs	any number
compare and contrast	adding integers with the same and different signs	2
draw	a model that shows how to find the sum of two integers on a number line and describe your model	2
explain	how adding and subtracting are inverse operations that "undo" each other	2
use	a number line to show what happens when you add opposites like $-9$ and $9$	any number
define	an integer and its opposite as additive inverses of each other	1
describe	additive inverse in words, numerically, and algebraically	3
explain	how to subtract integers using what you know about additive inverses	1
describe	how to subtract an integer in words, numerically, and algebraically	3
draw	a model that shows how to find $7 - (-2)$	1
simplify	expressions such as $15x - 18x$	any number

## **Integers: Adding and Subtracting**



Two-Tab Book



Half Book



Three-Tab Concept Map





Shutter Fold



### **Integers: Multiplying and Dividing**

Skill	Activity Suggestion	Foldable Parts
describe	how to multiply integers with the same sign	1
use	a number line to show and explain how to multiply integers with the same sign	any number
explain	how to multiply integers with different signs	1
use	a number line to show and explain how to multiply integers with different signs	2
compare and contrast	multiplying integers with the same and different signs	2
draw	a model that shows how to find the product of two integers on a number line and write about the process	2
review	how multiplying and dividing are inverse operations that "undo" each other	2
explain	how to divide integers with the same sign	1
demonstrate	how to divide integers with different signs	1
describe	how to divide integers with the same and different signs in words, numerically, and algebraically	3
find	similarities and differences between multiplying and dividing integers with the same signs and multiplying and dividing integers with different signs	4



Two-Tab Concept Map

Half Book



### **Rational Numbers**

Skill	Activity Suggestion	Foldable Parts
define	rational numbers as numbers that can be written as a ratio, or fraction where $a$ and $b$ are integers and $b$ is not equal to 0	1
explain	why whole numbers, integers, fractions, mixed numbers, terminating decimals, and repeating decimals are rational numbers	6
chart	and list examples of whole numbers, integers, fractions, terminating decimals, and repeating decimals	5
document	five rational numbers encountered in a day	5
rename	10 rational numbers	10
write	decimals as fractions and fractions as decimals	2
solve	equations using rational numbers	any number
design	a concept map for rational numbers. rational numbers: fractions, repeating and terminating decimals, integers, and whole numbers	5
estimate	sums of rational numbers	any number
find	sums of rational numbers	any number
solve	equations involving rational numbers	any number
	inequalities involving rational numbers	any number
explain	how adding and subtracting rational numbers follow the same principles as adding and subtracting integers	2
use	rational numbers to write three examples of the Commutative Property	3
	rational numbers to write three examples of the Associative Property	3
	rational numbers to write three examples of the Identity Property	3
	rational numbers to write three examples of the Inverse Property	3



Two-Tab Book



Book



**Concept Map** 





Four-Tab Book





Two-Tab Book



Shutter Fold



Rational Numbers: Fractions
-----------------------------

Skill	Activity Suggestion	Foldable Parts
define	fractions three ways: as part of a whole as multiplication $\left(\frac{3}{5}\right)$ means 3 times $\frac{1}{5}$	
	as division $\left(\frac{3}{5}\right)$ means 3 divided by 5	3
differentiate between	proper and improper fractions	2
rename	whole numbers as improper fractions with a given denominator	2
order	ten fractions from least to greatest	10
graph	five fractions on a number line	5
use	a number line to determine if fractions are equivalent	any number
express	six ratios as fractions in simplest form	6
determine	if five fractions are in their simplest form by checking to see if the GCF of the numerator and the denominator is 1	5
list	examples of fractions in simplest form and fractions that are not in simplest form	any number
explain	why it is easier to compare fractions with the same denominator	1
describe	how the least common denominator of fractions could be used to compare them	1
define	a mixed number as the sum of a whole number and a fraction	1
write	mixed numbers as improper fractions and improper fractions as mixed numbers	2
compare	ompare fractions and decimals	
chart	equivalent fractions and decimals	
Venn diagram	given specific examples, compare characteristics of like fractions, unlike fractions, and both	3
explain	how to add like and unlike fractions in words and symbols	4
add	fractions with like and unlike denominators	2
subtract	fractions with like and unlike denominators	2
explain	how to subtract fractions with like and unlike denominators	2
compare and contrast	adding and subtracting unlike fractions	2
multiply	fractions with like and unlike denominators	2
explain	how to multiply fractions with like and unlike denominators in words and symbols	4
divide	fractions with like and unlike denominators	2
prove	that dividing by 2 is the same as multiplying by $\frac{1}{2}$ , its multiplicative inverse	2
write	word problems that contain fractions	any number
express	given fractions as percents	2
tell	how you know if a fraction is greater than 100% or less than 1%	1
compare and contrast	a fraction and an algebraic fraction	2
write	six algebraic fractions in simplest form	6

©Glencoe/McGraw-Hill

Rational	Numbers:	Decimals

Terminating Decimals	Repeating Decimals

Two-Tab Book

Skill	Activity Suggestion	Poloable Parts
order	ten decimals from least to greatest	10
rename	five decimals as fractions	5
explain	why decimals can be written as fractions with denominators that are powers of ten	1
find	equivalent decimals and fractions	2
differentiate	between terminating decimals, repeating decimals, and decimals that do not terminate nor repeat	3
compare and contrast	terminating and repeating decimals	2
find	examples of decimals that do not terminate or repeat	any number
write	four fractions as terminating or repeating decimals	4
define	terminating decimals	1
describe	repeating decimals	1
Venn diagram	characteristics of terminating decimals, repeating decimals, both	3
estimate	sums of six decimals using rounding and describe each	6
find	six sums of decimals and describe the process	6
estimate	six differences of decimals and write about the process	6
find	six differences of decimals and explain the process	any number
state	additive inverses of five decimals example: 8.45 and -8.45	5
illustrate	the rule for placement of the decimal point when multiplying decimals	1
explain	in your own words how to divide by a decimal	1
simplify	four expressions with decimals and explain each step	4
evaluate	five expressions with decimals and explain each step	5







Three-Tab Venn Diagram

Decimals 1.0 .50 .50 .25 .25 125 .125 .25 125 128 25 125 125 120



Three-Tab Concept Map



**Folded Chart** 



Two-Tab Book



Three-Tab Book



Half Book



**Bound Book** 

Skill	Activity Suggestion	Foldable Parts
define	percent as a ratio that compares a number to 100 or tells how many out of 100	1
explain	why percent also means hundredths, or per hundred	1
write	five percents as fractions and explain	5
use	the percent symbol when writing percents	any number
	equations to solve problems with percents	any number
make a table	that expresses decimals and fractions as percents	3
	that expresses percents as decimals and fractions	3
describe	times when it is more advantageous to use percent and times when it is more advantageous to use fractions	2
use	the percent proportion to write five fractions as percents	5
solve	six problems involving percents	6
find	the percent proportion of four numbers and explain Example: find 10% of 160	4
estimate	three percents and outline the process	3
solve	two percent problems with percent equations and sequence the steps	2
	two real-world problems involving percent	2
write	expressions for percents	any number
use	percents to estimate	any number
explain	how to estimate $x\%$ of a number	1
list	five examples of percents used in everyday life such as weather bureau's rain prediction, interest rates, discounts, and commissions and explain	5
1 1	their use	5
describe	change to the original amount	1
differentiate	between percent of increase and percent of decrease	2
calculate	percent of increase and percent of decrease	2



### Percents

Skill	Activity Suggestion	Foldable Parts
define	ratio as a comparison of two numbers by division	1
write	four ratios four different ways	
	Example: 2 to 3, 2:3, $\frac{2}{3}$ , and 2 ÷ 3	4
	five ratios as fractions in simplest form	5
	expressions for five ratios	5
describe	rate as a ratio that is a comparison of two measurements with different units of	
	measurement	1
Venn diagram	characteristics of ratios, rates, and both	3
make a table	that shows five or more ratios and rates as	
	fractions in simplest form	5+
give	three examples of unit rate	3
express	given ratios as unit rates	any number
research	the history of the golden ratio and explain its purpose	2
investigate and discover	three examples of how the golden ratio has been used over the last 4000 years to create art and architecture	
	Example: Pyramid of Khufu in Giza	3
describe	the golden ratio in your own words	1
define	a scale drawing as a drawing that is either smaller or larger than the actual object and	
	give examples of scale drawings	2
explain	scale as the ratio of the lengths on a drawing to the actual lengths of an object	1

### Ratios







Three-tab Venn diagram



Two-Tab Book



Pyramid Fold

Terms and Examples
Ratio
Rate
Unit Rate
Golden Ratio
Scale
Proportion
pi = Constant Proportion

Layered Book (4 sheets of paper)

### Proportions

Skill	Activity Suggestion	Foldable Parts
define	proportion as two equal fractions, or an equivalent relationship between two ratios	1
solve	given proportions	any number
determine	if two ratios form a proportion by checking their cross products	
	Example: ratios, check, results	3
state	the property of proportions in your own words	1
define	extremes and means	2
demonstrate	how cross products can be used to tell whether two fractions form a proportion	any number
use	proportions to solve real-world problems	any number
	proportions to estimate populations	any number
Venn diagram	ratios, proportions, both	3
explain	pi as a constant of proportionality and give examples	2

#### ©Glencoe/McGraw-Hill



Shutter Fold

Rational	Irrational
Numbers	Numbers

Pocket Book



Two-Tab Book



**Standing Cube** 

	Square	Square	Square	Square
	Root of	Root of	Root of	Root of
l	49	25	81	64

Four-Tab Book

### **Irrational Numbers**

Skill	Activity Suggestion	Foldable Parts
define	irrational numbers as numbers that cannot be	
	expressed as fractions $\frac{a}{b}$ , where a and b are	
	integers and $b$ does not equal 0	1
explain	irrational numbers in words and symbols	2
determine	whether three given numbers are rational or irrational and explain your reasoning	3
compare and contrast	rational and irrational numbers	2
give examples	of irrational numbers that are less than $-15$	any number
describe	why pi and the square root of 3 are examples of irrational numbers	2

### **Real Number System**

Skill	Activity Suggestion	Foldable Parts
design a concept map	that shows the set of real numbers is composed of the set of rational numbers and the set of irrational numbers	2
identify	numbers in the real number system	any number
explain	in words and symbols the real number system	2
Venn diagram	the real number system	3
chart	numbers into the categories of whole number, integer, rational, irrational, and real squares and square roots	6
define	a square root as one of two equal factors of a number	1
describe	a square root in words and symbols	2
find	the square root of 49, 25, 81, and 64	4
estimate	square roots	any number
solve	equations by finding square roots	any number
compare and contrast	numbers that are and are not perfect squares	2



Foldable

Parts

1

1

1

1

2

3 or 4

1

1

2

any number

any number

2

2

4

3

2

4

Numeric Expression	
Both	
Algebraic Expression	

Three-Tab Venn Diagram



Three-Tab Book



Two-Tab Book





# Sets and Variables

problems

and algebraically

replaced with *b*.)

variables

variables

**Activity Suggestion** 

a variable as a placeholder used in algebra

like terms as terms with the same variable

or expressions with and without variables

how the use of a variable can help solve algebra

a numeric expression and an algebraic expression,

expressions in words and symbols, numerically,

the Substitution Property of Equality (For all numbers a and b, if a = b, then a may be

the use of the Substitution Property of Equality

multiplication and division notations used with

the meaning of several algebraic expressions

verbal phrases into algebraic expressions using

verbal phrases for given algebraic expressions

subtraction, multiplication, and division when reading or writing algebraic expressions

the use of the following symbols in algebra:

(1845-1918) developer of the theory of sets

an independent variable and a dependent variable

the "who, what, when, where" of: Georg Cantor

words that can be used to denote addition,

expressions containing variables

parentheses, brackets, and braces

as to why variables are usually letters

Skill

define

define

contrast

chart

state

show

write evaluate

write

chart

describe

compare

research

translate

compare and

demonstrate

speculate explain



Two-Tab Book



Shutter Fold

Write	Write	Write
Expression	Is Expressions	Expressions
Using	Using	Using
4,8,6	5,9,12	3,8,15

Three-Tab Book

Skill	Activity Suggestion	Foldable Parts
define	a mathematical expression as any combination of numbers and operations such as addition, subtraction, multiplication, and division	1
describe	what it means to evaluate an expression	1
demonstrate	how an expression can have several numerical values	any number
explain	why it is important to have an order of operations when evaluating expressions	1
sequence	the steps used to find the value of an expression	any number
evaluate	expressions without grouping symbols using the order of operations	2
	expressions with grouping symbols using the order of operations	2
demonstrate	how the order of operations can be changed using grouping symbols	any number
illustrate	the use of brackets [] and parentheses ()	2
write	ten expressions and find their values	10
show	different ways to indicate multiplication in an expression	2
	different ways to indicate division in an expression	any number
select	three numbers and use them to write as many expressions as you can	3
compare and contrast	expressions with and without variables	2
explain	that an expression is in its simplest form when it has no like terms and no parentheses	1
chart	expressions that are and are not in their simplest form	2
describe	radical expressions and give examples	2
explain	how to add, subtract, multiply and divide radical expressions	4

Expressions



-he	-	X	
plus Sum More than Botal in all	minus difference less than Subtract decreased by	times product multiplied each of	divided. Buiotient

	Properties	
Skill	Activity Suggestion	Foldable Parts
write	the Commutative and Associative Properties of Addition and Multiplication numerically and algebraically	4
use	the Commutative Properties of Addition and Multiplication to evaluate expressions	2
rewrite	expressions using the Commutative Property	2
use	the Associative Properties of Addition and Multiplication to evaluate expressions	2
rewrite	expressions using the Associative Property	any number
compare and contrast	the Associative and Commutative Properties	2
describe	the importance of the Identity Properties of Addition and Subtraction	2
describe and use	the Zero Product Property	2
make a table	to show seven properties of addition and multiplication	7
write	the Distributive Property in words and numerically	2
read	the expression $a(b + c)$ as "a times the quantity b plus c"	1
describe	in your own words the purpose of the Distributive Property	1
rewrite	expressions different ways using the Distributive Property	any number
restate	expressions using the Distributive Property	any number
show	how the Distributive Property can be used to simplify expressions with like terms	1
make a table	to describe and give examples of: Commutative Property of Addition Commutative Property of Multiplication Associative Property of Addition Associative Property of Multiplication Identity Property of Addition Identity Property of Multiplication Zero Product Property	any number
use	the Product Property of Radicals and the Quotient Property of Radicals to evaluate expressions	2

### Pronortios

Seven properties of addition and multiplication
11
2
3
4
5
6
7

Layered Book (4 sheets of paper)



**Folded Chart** 



Layered Book (3 sheets of paper)









Two-Tab Book



Three-Tab Venn Diagram



**Folded Chart** 







Two-Tab Book

### Equations

Skill	Activity Suggestion	Foldable Parts
differentiate between	an expression and an equation	2
compare	an equation to a balance	2
Venn diagram	characteristics of equations, open sentences, and both	3
list	examples of equations	any number
tell	about equations that have no solution, or have a solution set that is null or empty	2
draw	two symbols that represent the empty or null set	2
compare and contrast	solution sets that are never true and solution sets that are always true	2
explain	why equations that contain variables are called open sentences	1
find	values for variables that make equations true	any number
explain	the solution of an equation	1
solve	equations with variables and write about how you found the solution	2
chart	solutions and open sentences	2
solve	equations with variables on each side	any number
	equations using inverse operations	any number
describe	how inverse operations "undo" each other	1
write	inverse operations for addition equations	2
	inverse operations for subtraction equations	2
solve	equations using the Addition Property of Equality	any number
solve	equations using the Subtraction Property of Equality	any number
write	examples of equations that are and are not equivalent	2
explain	when to use the Addition Property of Equality to solve an equation and give examples	2
solve	equations using the Division Property of Equality	any number
	equations using the Multiplication Property of Equality	any number
	six equations using rational numbers	6
	six equations with variables on each side	6
	six equations with grouping symbols	6
	ten equations that have an infinite number of solutions	10
explain	what is meant by the root, or roots, of three equations	3
use	integers in equations	any number
solve	equations containing rational numbers	any number
	equations with two or more operations	any number
write	five verbal problems for equations with two or more operations	5

		• _ •	•
Ined	นล	liti	les

Skill	Activity Suggestion	Foldable Parts
define	inequalities as mathematical sentences that	1
write	inequalities that are true and inequalities that are false	2
	inequalities that are open, or contain a variable that must be replaced with a number	any number
chart	inequalities that are true, false, and open	3
explain	inequality signs that are a combination of the equals sign and the inequality symbols	2
chart	common phrases that are heard in everyday life that correspond to inequalities	any number
Venn diagram	methods for solving equations, inequalities, and both	3
solve	ten inequalities	10
write	sentences for inequalities and translate sentences into inequalities	2
	five inequalities and graph the solutions	5
solve	inequalities mentally	any number
state	in your own words the Addition Property of Inequality and give two examples	2
explain	the Subtraction Property of Inequality to someone	1
solve	inequalities by using the Addition and Subtraction Properties of Inequality	2
describe	the Addition and Subtraction Properties of Inequality in words and symbols	4
write	the Multiplication and Division Properties of Inequalities in words and symbols	4
solve	inequalities by multiplying or dividing by a positive number	2
	inequalities by multiplying by a negative number	2
solve	inequalities that involve more than one operation	2
Venn diagram	method for solving an inequality involving multiplication, and for solving an inequality involving division, both	3
use	inequality symbols when comparing fractions	any number
solve	inequalities containing rational numbers	any number
Venn diagram	solving an inequality with rational numbers, solving an inequality involving integers	3
solve	inequalities with multiple steps	any number
write	verbal problems with inequalities	any number
describe	a compound inequality as two inequalities connected by "or" or "and" and give examples	2



Two-Tab Book



Three-Tab Venn Diagram



**Folded Chart** 









**Three-Tab Book** 



Two-Tab Concept Map Book



**Folded Chart** 



Two-Tab Book



©Glencoe/McGraw-Hill

## **Relations and Functions**

Skill	Activity Suggestion	Foldable Parts
define	relations, functions, and graphing	3
Venn diagram	all functions are relations, but not all relations are functions	3
make	a concept map to show a relation as domain and range	2
write	the domain and range of given relations	3
define	function as a relation in which each element of the domain is paired with exactly one element in	
	the range	1
graph	five relations to determine if they are functions	5
determine	whether four relations are functions by using the vertical line test	4
use	functions to describe relationships between two quantities	2
make	function tables	any number
use	function tables to find output values	any number
describe	the inverse of a relation	1



	Factors	
Skill	Activity Suggestion	Foldable Parts
explain	that the factors of a whole number divide that number with a remainder of 0	1
use	the phrase "divisible by" when describing the factors of a given number	1
determine	whether one number is a factor of another	any number
make a chart	of divisibility rules, examples, and descriptions	3
differentiate between	even and odd numbers and explain how they relate to factors	2
describe	multiplication facts as they relate to factors	1
explain	why 1 is a factor of every nonzero number	1
mentally determine	what five numbers are divisible by Example: 27, 64, 189, 370, 455	5
chart	numbers with exactly 2, 3, 4, 5, and 6 factors	5
define	the greatest common factor of two or more numbers as the greatest factor these numbers have in common	1
list	the factors of three sets of numbers and find the greatest factor each set has in common	3
read	GCF as the "greatest common factor"	1
use	prime factorization to find the GCF of a set of numbers	any number
explain	how the product of the common prime factors of two or more monomials is their GCF	1
Venn diagram	find the GCF of two numbers by making a Venn diagram of their factors	3
define	relatively prime numbers as numbers with 1 as their only common factor	1
determine	whether given pairs of numbers are relatively prime	any number
define	a prime number as a whole number greater than one that has exactly two factors, one and itself	1
	a composite number as a whole number greater than one that has more than two factors	1
differentiate between	prime and composite numbers	2
prove	that a composite number can always be expressed as a product of two or more products	any number
explain why	0 and 1 are considered neither prime nor composite	2
list	the factors of 1 and explain your list	1
describe	every whole number greater than 1 is either prime or composite	1

-----



Two-Tab Book







Three-Tab Venn Diagram





Three-Tab Venn Diagram

Multiples of	
2	-
3	
4	
5	_
6	
7	
8	
9	
10	

Layered Book (5 sheets of paper)



Three-Tab Venn Diagram

Skill	Activity Suggestion	Foldable Parts
define	a multiple of a number as a product of that number and a whole number	1
chart	the multiples of 2, 3, 4, 5, 6, 7, 8, 9, and 10	9
differentiate	between factors and multiples	2
find	the common multiples of two numbers such as 2 and 5	2
determine	the least common multiple of two numbers	2
read	LCM as Least Common Multiple	1
use	a Venn diagram to find the LCM of two numbers using their prime factorization	3
find	the LCM of a set of numbers or algebraic expressions	any number
read	LCD as Least Common Denominator	1
find	the LCD for given pairs of fractions	any number
Venn diagram	finding a LCM, finding a LCD, both	3
explain	why fractions need the same denominator to be compared	1
find	factors and multiples	2

**Multiples** 



**Folded Chart** 



Skill	Activity Suggestion	Foldable Parts
define	a monomial as an integer, a variable, or a product of integers and one or more variables	1
	a constant as a monomial that is a real number	1
Venn diagram	characteristics of monomials, constants, and both	3
list	ten examples of monomials and explain what they have in common	10
determine	whether an expression is or is not a monomial and explain your reasoning	2
multiply	monomials	any number
describe	in words and symbols the Power of a Monomial	2
Venn diagram	Power of a Product Property, Power of a Power Property, both = Power of a Monomial	3
divide	monomials	any number
explain	the degree of a monomial as the sum of the exponents of its variables	1
list	four monomials and their degrees	4
chart	examples of polynomials, or algebraic expressions, with one, two, three, and many terms	4
	examples of monomials, binomials, and trinomials	3
define	polynomial as a monomial, or a sum of monomials, and give four examples	4
find	<ul><li>the degree of three polynomials using the following:</li><li>1. find the degree of each term</li><li>2. determine the greatest degree of the terms</li><li>3. state the greatest degree of any term as the</li></ul>	
	degree of the polynomial	3
add	polynomials and write about the process	any number
subtract	polynomials and write about the process	any number
find	the additive inverses of five polynomials	5
multiply	a polynomial by a monomial and outline the steps	2
simplify	four expressions involving polynomials	4
use	the FOIL method to multiply two binomials and the four steps	4

### **Monomials and Polynomials**









Two-Tab Matchbook



Three-Tab Venn Diagram



Two-Tab Book



©Glencoe/McGraw-Hill

Teaching Mathematics with Foldables



Two-Tab Book



Two-Tab Matchbook



Vocabulary Book



Three-Tab Book

### **Powers and Exponents**

Skill	Activity Suggestion	Foldable Parts
define	powers as numbers that are expressed using exponents	1
read	expressions containing powers	any number
describe	how the second and third powers have special names related to geometry	2
write	expressions containing powers	any number
	expressions containing powers as multiplication expressions	any number
write	powers as multiplication expressions	any number
explain	how to multiply powers that have the same base	1
	how to divide powers that have the same base	1
compare and contrast	products of powers and quotients of powers	2
use	powers in expressions and equations	2
define	scientific notation as numbers written as the product of a factor and a power of 10	1
write	ten numbers using scientific notation	10
read	scientific notation	any number
order	numbers written in scientific notation	any number
compare	numbers in scientific notation with positive and negative exponents	2
use	scientific notation to evaluate five equations	5
outline	Properties of Powers—Power of a Power, Power of a Product, and Power of a Quotient	3
explain	how exponents are used to tell how many times a number is used as a factor	1
	rational exponents in words and symbols	2
define	the term base as it relates to exponents	1
write	four expressions using exponents	4
	three expressions with rational exponents in simplest radical form	3
evaluate	five expressions using exponents	5
show	expressions in either exponential or radical form	2
	numbers in standard and expanded form	2
use	the order of operations to evaluate algebraic expressions with powers	any number
write	expressions using positive and negative exponents	2
compare	the square of a difference and the square of a sum	2
tell	whether given expressions are in simplest form and why	2



Skill	Activity Suggestion	Foldable Parts
define	an arithmetic sequence	1
explain	how to describe even and odd numbers as arithmetic sequences	2
differentiate between	numbers in a sequence and numbers in an arithmetic sequence	2
compare and contrast	sequences that are and are not arithmetic	2
describe	the terms of a sequence	1
find	the next terms of five given sequences	5
determine	the common differences of three arithmetic sequences	3
write	an original arithmetic sequence	1
outline	the steps you took to write an arithmetic sequence	
write	expressions that represent terms in a sequence	any number
research	the Fibonacci sequence and why the Fibonacci sequence is not arithmetic	2
define	a geometric sequence	1
explain	how each term in a geometric sequence increases or decreases by a common factor, called the common ratio	2
determine	if given sequences are geometric	2
find	the common ratio of a geometric sequence and list the next five terms	3

### Sequences







Three-Tab Venn Diagram



Shutter Fold







Five-Tab Book



### **Matrices**

Skill	Activity Suggestion	Foldable Parts
define	matrix, matrices, element, dimensions, matrix logic	5
explain	how matrices organize data and give an example	2
give	two examples of square matrices	2
use	the singular word "matrix" and its plural form "matrices" correctly	2
compare and contrast	a matrix and a table	2
illustrate	how a matrix can be used to add, subtract, and multiply quantities	3
describe	how a matrix can be used to solve systems of equations with one, two, and three variables	3
research	the "what, where, when, why/how" of discrete mathematics	4
	Nine Chapters on the Mathematical Art, 250 B.C.	4
list	and explain algebraic rules for using matrices: scaler multiplication of a matrix, addition and subtraction of matrices, and multiplying matrices	any number
give	two examples of probability matrices	2
write	the identity matrices for three square matrices	3
find	the inverses of three $2 \times 2$ matrices	3
compare and contrast	the multiplicative inverse for real numbers to the inverse matrix	2





Skill	Activity Suggestion	Foldable Parts
describe	a point as a specific location in space with no size or shape that is represented by a dot and named with a capital letter	1
identify	and model points and coplanar points	2
graph	eight ordered pairs on a coordinate plane	8
find	the distance between two points on a number line and two points in a coordinate plane	2
identify	how many end points a line, line segment, and a ray have	3

### Points



Half Book

## **Lines and Line Segments**

Skill	Activity Suggestion	Foldable Parts
define	a line as a collection of points that extends	1
list	in two directions, snown by arrowneads	1
explain	a line segment as part of a line containing two	2
•p.a	endpoints and all of the points between	1
describe	how line segments are named	1
draw	and name five line segments	5
identify	and model lines that do and do not intersect	2
differentiate	between parallel lines and perpendicular lines	2
	between lines that intersect at a right angle and those that do not	2
illustrate	and explain a line called a transversal	2
find	the slopes of lines and use slope to identify parallel and perpendicular lines	2



Two-Tab Book

### Rays

Skill	Activity Suggestion	Foldable Parts
define	a ray as a portion of a line that extends from one point infinitely in one direction	1
describe	how a ray is named	1
Venn diagram	characteristics of a line segment, a ray, and both	3
illustrate	how two rays form and define an angle	2
compare and contrast	collinear and noncollinear rays	2



Three-Tab Venn Diagram



Pyramid Fold



Four-Tab Book



Three-Tab Concept Map



Pyramid Fold

Angles
--------

Skill	Activity Suggestion	Foldable Parts
describe	an angle as two rays with the same endpoint	1
draw and label	the parts of an angle-vertex and sides	2
make	a concept map for "angles"	any number
summarize	and demonstrate how angles are measured and named	2
measure and name	ten angles using a protractor and report the measures in degrees	10
demonstrate	how a protractor can be used to draw an angle of a given measure	any number
differentiate	between acute, obtuse, and right angles	3
Venn diagram	characteristics of acute angles, obtuse angles, and both	3
classify	angles as acute, right, obtuse, or straight	4
explain	how an angle separates a plane into three parts: interior of the angle, exterior of the angle, and	
	and the angle itself	3
draw	an angle that is congruent to a given angle	1
construct	the bisectors of four given angles	4

## **Angle Relationships**

Skill	Activity Suggestion	Foldable Parts
justify	a straight line being called a "straight angle"	1
use	the term "transversal" when describing a line that intersects two parallel lines	1
draw	two intersecting lines and measure the angles formed	2
	parallel lines and measure the angles formed	2
	perpendicular lines and a transversal and explain why intersecting perpendicular lines form four right angles	2
show	rays and line segments can be perpendicular	2
describe	how the following are formed and give examples: vertical angles, adjacent angles, linear pair	3
differentiate	between complementary and supplementary angles	2
explain	alternate interior angles, alternate exterior angles, and corresponding angles	3
prove	that corresponding angles are congruent, alternate interior angles are congruent, and alternate exterior angles are congruent	3
compare and contrast	supplementary and complementary angles	2

Skill	Activity Suggestion	Foldable Parts
describe	a plane as a flat surface with no edges, or boundaries	1
explain	why lines in the same plane either intersect or are parallel	2
define	skew lines as two lines that do not intersect and are not in the same plane	1
draw	two examples of skew lines and explain why they are skew lines	2
find similarities and differences	between intersecting, parallel, and skew lines	2
Venn diagram	characteristics of parallel lines, skew lines, and both	3
illustrate	a rectangular prism and explain how it is formed by six planes	2
find	five examples of planes in your daily life	5
model	planes that do and do not intersect	2
write	five plane relationships and draw and label a figure for each	5
describe	and give four examples of coplanar points	5
compare	plane geometry and spherical geometry	2

### Planes



Two-Tab Book



Three-Tab Book









Three-Tab Venn Diagram



Two-Tab Book



**Vocabulary Book** 



Three-Tab Concept Map



Six-Tab Book



Half Book

### Polygons

Skill	Activity Suggestion	Foldable Parts
define	polygons as simple closed figures in a plane formed by three or more line segments	1
classify	polygon as convex or concave	2
determine	the sum of the measures of the interior and exterior angles of a polygon	2
	how and why polygons are classified by their sides	2
explain	the meaning of the following prefixes—tri-, quad-, penta-,hexa-, hepta-, octa-, nona-, deca-, dodeca-, n-	9
draw and label	a triangle, a quadrilateral, a pentagon, a hexagon, an octagon, and a decagon	6
label	the vertices of the polygons you draw	any number
define	a diagonal as a line segment that joins two nonconsecutive vertices	1
explain	diagonals can not be drawn in a triangle, but can be drawn in any polygons with more than three sides	2
make a table	to show the number of sides, diagonals, and triangles formed in several different polygons— quadrilateral, pentagon, hexagon, heptagon, octagon	5
make a concept map	that shows a regular polygon is equilateral and equiangular	2
show	examples of interior and exterior angles of a polygon	2
differentiate between	polygons that are regular and polygons that are not regular	2
find	the sum of the measures of the interior angles of four different polygons heptagon = 900° nonagon = 1260° decagon = 1440° dodecagon = 1800°	4
make a table	to show the measures of the interior and exterior angles of three regular polygons	3
find	the perimeters of different polygons	any number
make a collage	of pictures of polygons	1
draw	a tessellation	1
determine	if three polygons will each tessellate	3
observe	tessellations in the form of quilts, fabric patterns, modern art, and more	any number
identify	regular and semi-regular (uniform) tessellations	2
define	transformations as movements of geometric figures	1
make a concept map	to show three types of transformations: translation, rotation, and reflection	3
draw	examples of translations, rotations, and reflections	3

## Triangles

Skill	Activity Suggestion	Foldable Parts
define	a triangle as a three-sided polygon formed by three line segments that intersect only at their endpoints	1
	similarity of triangles as reflexive, symmetric, and transitive	3
	medians, altitudes, angle bisectors, and perpendicular bisectors	4
draw and label	a triangle and its vertices	2
name	triangles by their vertices	any number
find	the areas of three triangles	3
measure	the angles of four triangles	4
draw a conclusion	about the sum of the measures of the angles of all triangles	1
describe	the six types of triangles—acute, right, obtuse, equilateral, isosceles, and scalene	6
explain	how triangles are classified and classify four triangles by their angles and sides	4
draw and describe	two congruent triangles and their corresponding parts	2
make	a concept map on congruent triangles that explains how their corresponding sides are congruent and their corresponding angles are	2
explain	how to find the area of a triangle in words and symbols	2
make a table	to define and give examples of the following: SSS, SAS, ASA, AAS	4
write	the Triangle Inequality Theorem and use it to show that some sets of line segments cannot be used to form triangles	2



Four-Tab Book

_	£.
Triangle	h
Quadrilateral	
Pentagon	
Hexagon	
Heptagon	
Octagon	

Six-Tab Book







## **Right Triangles**



Four-Door Book

Skill	Activity Suggestion	Foldable Parts
label	the parts of a right triangle—right angle, legs, hypotenuse	3
research	the history of the Pythagorean Theorem	4
explain	the Pythagorean Theorem in words and symbols	2
use	the Pythagorean Theorem to find the length of a side of a right triangle	1
determine	whether a triangle is a right triangle and explain your reasoning	2
describe	how to find the length of a leg of a right triangle if you know the lengths of the hypotenuse and the other leg	1
draw and label	a diagram to show the three altitudes of a right triangle	2
construct	right triangles from a square and form an equilateral triangle	2
compare and contrast	45°-45° right triangles, and 30°-60° right triangles	2
	tests for triangle congruence and tests for congruence of right triangles	2
illustrate	LL, HA, and LA as tests for congruence of right triangles	3




Right	Trianole	Trigonometry	/
ngnu	many(	. mgonometry	

Skill	Activity Suggestion	Foldable Parts
describe	trigonometry as the study of triangle properties and relationships	1
explain	the etymology of the word trigonometry	1
define	trigonometric ratios as the ratios of the measures of the sides of a right triangle	1
investigate	the following trigonometric ratios—sine, cosine, tangent ratios	3
report on	the trigonometic ratios sine, cosine, and tangent in words and symbols	3
compare and contrast	the sine ratio with the cosine ratio	2
tell	how to decide whether to use sine, cosine, or tangent when trying to measure an acute angle in a right triangle	3
describe	an angle of elevation and how it is formed by a horizontal line and a line of sight above it	2
show	an angle of depression and how it is formed by a horizontal line and a line of sight below it	2
draw	a diagram of an angle of elevation and an angle of depression	2
Venn diagram	characteristics of angle of elevation, an angle of depression, and both	3



Two-Tab Book



Three-Tab Venn Diagram





3 x 4 Folded Table







**Folded Chart** 

	Ľ
Parallelogram	
Quadrilateral	
Trapezoid	
Rectangle	
Square	
Rhombus	I
	1

Six-Tab Book



Skill	Activity Suggestion	Foldable Parts
define	a quadrilateral as a closed figure formed by four line segments that intersect only at their andpoints	1
draw and label	a quadrilateral and its vertices	2
compare and contrast	a quadrilateral and a non-example of a quadrilateral	2
measure	the angles of several quadrilaterals	any number
draw a conclusion	about the sum of the measures of the angles of a quadrilateral	1
explain	how quadrilaterals can be classified	1
describe	<ul> <li>six types of quadrilaterals:</li> <li>1. quadrilaterals with no pairs of parallel lines</li> <li>2. parallelogram = quadrilateral with two pairs of parallel sides</li> <li>3. trapezoid = quadrilateral with exactly one pair of parallel sides</li> <li>4. rectangle = parallelogram with four congruent angles</li> <li>5. square = parallelogram with congruent sides and congruent angles</li> <li>6. rhombus = parallelogram with congruent sides</li> </ul>	6
make	that shows the six types of quadrilaterals	
a concept map		6
illustrate	different quadrilaterals and their diagonals	any number



Three-Tab Concept Map



# Squares, Rectangles, and Rhombi

Skill	Activity Suggestion	Foldable Parts
describe	a square and a rectangle in words and symbols	2
Venn diagram	characteristics of a square, a rectangle, and both	3
describe	and illustrate two different quadrilaterals with four right angles—a square and a rectangle	2
find	the perimeters of rectangles, squares, and rhombi	3
	the areas of rectangles, squares, and rhombi	3
describe	equilateral and equiangular figures	2
draw	a square and a rectangle with the same area on grid paper	2
illustrate	the diagonals of squares and rectangles	2
make a table	<ul> <li>to compare and contrast the following characteristics of squares and rectangles:</li> <li>are diagonals congruent?</li> <li>are pairs of opposite sides congruent?</li> <li>are diagonals perpendicular?</li> <li>is one pair of opposite sides parallel and congruent?</li> </ul>	any number
summarize	<ul> <li>and diagram the properties of a rectangle:</li> <li>opposite sides are congruent and parallel</li> <li>opposite angles are congruent</li> <li>consecutive angles are supplementary</li> <li>diagonals are congruent and bisect each other</li> <li>all four angles are right angles</li> </ul>	5
compare and contrast	squares and rhombi	2
diagram	the diagonals of a rhombus and prove that they are perpendicular	2
	the diagonals of a rhombus and show how they bisect opposite angles	2
Venn diagram	characteristics of rhombi, rectangles, and both	3



Three-Tab Concept Map







Three-Tab Venn Diagram



Two-Tab Concept Map



Two-Tab Book





Half Book



Two-Tab Book

F	Property 1	
	Property 2	
	Property 3	
	Property 4	
	Property 5	Ì

Five-Tab Book

# Parallelograms

Skill	Activity Suggestion	Foldable Parts
define	a parallelogram as a four-sided figure with both pairs of opposite sides parallel	1
draw	an example of a parallelogram	1
find similarities	between a general quadrilateral and a parallelogram	2
label	the base and the height of a parallelogram	2
find	the area of given parallelogram by multiplying the measures of the base and the height	any number
illustrate	a parallelogram and show its diagonals	2
describe	how to find the area of a parallelogram in words and in symbols	2
diagram	<ul> <li>and explain the following five properties of parallelograms:</li> <li>opposite sides are parallel</li> <li>opposite sides are congruent</li> <li>opposite angles are congruent</li> <li>consecutive angles are supplementary</li> <li>the diagonals bisect each other</li> </ul>	5
use	the properties above to test four quadrilaterals to determine if they are parallelograms	4
write	a two-column proof and a paragraph proof for the following theorem: If one pair of opposite sides of a quadrilateral are parallel and congruent, then the quadrilateral is a parallelogram.	2
prove	that a quadrilateral with four congruent sides is a parallelogram	1
Venn diagram	characteristics of a rhombus, a parallelogram, and both	3





Three-Tab Venn Diagram

Skill	Activity Suggestion	Foldable Parts
define	a trapezoid as a quadrilateral with exactly two parallel sides called bases	1
draw	a trapezoid and label the bases, legs, and height or the altitude	2
explain	how you can use triangles to find the area of different trapezoids	any number
describe	how to find the area of a trapezoid in words and symbols	2
compare and contrast	the altitude of a triangle and the altitude of a trapezoid	2
draw	a parallelogram, a triangle, and a trapezoid with the same area on grid paper	3
illustrate	the diagonals in given trapezoids	any number
construct	the median of a trapezoid and outline the steps	2
compare	an isosceles triangle and an isosceles trapezoid	2
Venn diagram	characteristics of an isosceles trapezoid, a non-isosceles trapezoid, and both	3
recognize	<ul> <li>the properties of trapezoids:</li> <li>the bases are parallel</li> <li>the median is parallel to the bases and its measure is half of the sum of the measures of the bases</li> </ul>	2

#### Trapezoids



Two-Tab Book



**Three-Tab Book** 











Two-Tab Concept Map



Two-Tab Book



Half Book



Four-Tab Book



Top-Tab Book

rcl	les
	rc

Skill	Activity Suggestion	Foldable Parts
use	a compass to draw circles	any number
define	center, radius, diameter, and circumference	4
label	the center, radius, diameter, and circumference of a circle	4
explain	how to find the radius of a circle if the diameter is known	any number
draw	three circles on grid paper and estimate their areas by counting grid squares	3
find	the circumference of a circle if given the radius and find the circumference given the diameter	2
	the area of a circle	any number
describe	in words and symbols how to find the area of a circle	2
explain	how to find the area of a circle if you know the measure of the radius	1
investigate	the history of and the use of pi, or 3.14159	2
explain	why pi is not a rational number and give rational numbers that could be used as approximations for pi	2
illustrate	three chords of a circle	3
describe	the diameter of a circle as the longest chord that can be drawn and illustrate	2
illustrate	a central angle of a circle and describe it as an angle whose vertex is the center of a circle	2
label and measure	a central angle and the major and minor arcs it intercepts	2
compare and contrast	a central angle and an inscribed angle	2
use a compass	to draw a semicircle	1
differentiate	between concentric circles and congruent circles	2
	chords, tangents, and secents	2
recognize	tangents and use properties of tangents	2



# **Three-Dimensional Figures**

Skill	Activity Suggestion	Foldable Parts
identify	three-dimensional figures	any number
Venn diagram	characteristics of two-dimensional figures, three-dimensional figures, and both	3
explain	surface area and volume as they relate to three-dimensional figures	2
list	examples of ways in which you use surface area and volume in your daily life	2
describe	how surface area is measured by square units and volume is measured in cubic units	2
use	top, front, side, and corner views of three- dimensional solids to make models	
draw	pyramids, cones, cylinders, and prisms	4
define	polyhedron and give three examples	3
illustrate	the five types of regular polyhedra, also called the Platonic solids	5
name	the edges, faces, and vertices of polyhedrons you draw	any number



Three-Tab Venn Diagram



Two-Tab Concept Map





Three	Dimensio	mal Figu	res
Curve	ed Sides	Polygo	m Sides
cone	cylinders	The P	Pro



Two-Tab Concept Map



Half Book

Rectangular Prisms	
Triangular Prisms	

their bases 1 examples of rectangular prisms and triangular draw prisms 2 2 show the nets of a rectangular and a triangular prism find the surface area of a rectangular prism 1 find the surface area of a triangular prism 1 find the volumes of a rectangular prism and a 2 triangular prism describe in words and symbols how to find the volume of a 2 prism list examples of prisms you encounter in your daily life any number define cylinder as a three-dimensional shape with two parallel, congruent, circular bases 1 2 draw a cylinder and label the bases and an altitude list examples of cylinders you encounter in a week's any number time show the net of a cylinder 1 find the surface area of a cylinder 1 find the volume of a cylinder 1 describe in words and symbols how to find the volume of 2 a cylinder Venn diagram method for finding the volume of a prism, the volume of a cylinder, and both 3

**Prisms and Cylinders** 

prism as a solid figure that has two parallel

why you think prisms are named by the shape of

congruent sides, called bases

Foldable

Parts

1

Two-Tab Book

Cylinders Volume Volume = area of base × height V = Bh V = Tr² h or Tr²h Pri Total Burface Area = T = 271111 + 27114

# Skill Activity Suggestion

define

explain

. .

HI
Square
Triangulai pyramid
Shutter Fold

# **Pyramids and Cones**

Skill	Activity Suggestion	Foldable Parts
define	pyramid as a solid figure that has a polygon for a base	1
explain	why you think pyramids are named by their bases	1
compare and contrast	a square pyramid and a triangular pyramid	2
describe	a pyramid's base, lateral faces, and vertex	3
illustrate	a pyramid's slant height and a pyramid's net	2
find	the surface area of a rectangular or triangular pyramid	1
	the volume of a rectangular or triangular pyramid	1
describe	in words and symbols how to find the volume of a pyramid	2
define	cone as a three-dimensional shape with a circular base and one vertex	1
show	the slant height and the net of a cone	2
explain	in your own words how to find the surface areas of a cone and a pyramid	2
describe	in words and symbols how to find the volume of a cone	2
Venn diagram	characteristics of a cone, a pyramid, and both	3



Two-Tab Book





Three-Tab Venn Diagram



Two-Tab Book



Three-Tab Book

### **Coordinate Geometry**

Skill	Activity Suggestion	Foldable Parts
describe	a coordinate system as the intersection of two number lines that meet at their zero points	1
explain	how a point can be located using a coordinate system	1
define	origin as the intersection point of two number lines at their zero points	1
differentiate between	the <i>x</i> -axis and the <i>y</i> -axis	2
draw	a coordinate system and label the origin, <i>x</i> -axis, and <i>y</i> -axis	2
describe	how to use an ordered pair to graph a point on a coordinate system	1
mark and name	points on a grid	any number
name	the ordered pairs for given points a grid	any number
find	examples of coordinate systems used in your daily life	any number
Venn diagram	characteristics of latitude lines, longitude lines, and both	3
describe	how the two axes of a coordinate system to divide the coordinate plane into four regions called quadrants	4
draw	a coordinate system and label the origin, axes, and quadrants	3
explain	what it means to graph or plot a point	1
plot	points such as $(5, 7)$ and $(7, 5)$ and explain how they differ	any number
graph	points on a coordinate plane and name them	any number



Three-Tab Venn Diagram



# Slope

Skill	Activity Suggestion	Foldable Parts
define	the slope of a line	1
differentiate between	the vertical change, or the change in $y$ , and the horizontal change, or the change in $x$	2
find	the slope of a line when given two points on the line	any number
explain	in words and symbols how to find the slope of a line	2
illustrate	the rise (vertical change) and the run (horizontal change) of a line	2
describe	slope as "rise over run"	1
define	parallel lines as lines that will never intersect	1
explain	the relationship between the slopes of parallel lines	1
make a conjecture	about the slopes of perpendicular lines	1



Two-Tab Concept Map



Two-Tab Book





Half Book



Three-Tab Venn Diagram



Shutter Fold

# **Graphing Equations and Inequalities**

Skill	Activity Suggestion	Foldable Parts
graph	linear equations in two variables	any number
find	the <i>x</i> - and <i>y</i> -intercepts of graphs	any number
graph	linear equations using the <i>x</i> - and <i>y</i> -intercepts	any number
Venn diagram	characteristics of linear equations, nonlinear equations, and both	3
compare and contrast	quadratic equations and cubic equations	2
explore	the characteristics of slope	1
find	the slope of a line given its equation	any number
investigate	rate of change	1
graph	linear inequalities	any number
define	parabola	1
illustrate	the graph of a parabola	1
use	tables and graphs to write linear functions	2
define	inequalities	1
explain	how to graph inequalities	1



Two-Tab Book





Two-Tab book

Skill	Activity Suggestion	Foldable Parts
investigate	the development of the metric system of measurement by French scientists in 1795	1
define	a meter (m) as $\frac{1}{10,000,000}$ of the distance	
	between the North Pole and the Equator	1
chart	the prefixes used with the metric system	any number
note	each place value is 10 times the place value to its right	any number
make	a place value chart for the metric system	any number
convert	measurements within the metric system	any number
	Customary units to metric units	any number

#### **Metric Measurement**



Four-Door Book

# Length, Width, and Height

Skill	Activity Suggestion	Foldable Parts
research	the history of the measurement of length, width, and height	3
explain	inches, feet, yards	3
	millimeters, centimeters, meters	3
write	word problems based upon length and width	any number
	measurments in numbers and words	any number
read	Customary and metric measurements of length and width	2
	instruments used to record length, width, and	
	height	any number
record	common uses of length and width	any number





Three-Tab Book



Skill	Activity Suggestion	Foldable Parts
define	distance as the space between two points or locations	1
research	the history of the measurement of distance	any number
explain	inches, feet, yards, miles	4
	centimeters, meters, kilometers	3
write	word problems based upon distance	any number
read	instruments used to measure distance	any number
investigate	light-years and explain how and why this unit of measurement was developed	2
	astronomical units (AU)	1
	microns, or millionths of a meter, and millimicrons, or thousandths of a micron	2

Distance



# Weight

Skill	Activity Suggestion	Foldable Parts
define	weight as the gravitational force, or pull, on an object	1
explain	why objects have no weight in space	1
	why objects on a planet smaller than Earth would weigh less than they do on Earth	1
investigate	common units of weight measurement: ounce/pound and gram/kilogram	2
estimate	weight based upon experiences	any number



Skill	Activity Suggestion	Foldable Parts
define	volume as the amount of space something occupies	1
compare and contrast	the measurement of volume of a solid and a liquid	2
find	the volume of two rectangular solids by using the formula $V = \ell wh$	2
	the volume of a cylinder using the formula $V = \pi r^2 h$	1
	the volume of a sphere using the formula $V = \frac{4}{3}\pi r^{3}$	1
evaluate	the number of cubic inches in a cubic foot and the number of cubic centimeters in a cubic meter	2
describe	how liquids are measured in the customary system and in the metric system	2
use	gallons, quarts, pints, and fluid ounces	4
	liters and milliliters	2

#### Volume





Three-Tab Book



Layered-Look Book (2 sheets of paper)

#### Temperature

Skill	Activity Suggestion	Foldable Parts
research	the history of the measurement of temperature	any number
write	three word problems based upon temperature	3
read	and report metric and customary system measurements of temperature	2
differentiate	between degrees Celsius and degrees Fahrenheit	2
research and graph	the average body temperatures of five animals	5
make a table	of average air temperatures of different geographic regions or areas	any number
	of average surface and core temperatures of the planets in our solar system	2
record	temperatures at predetermined intervals over a given period of time	2
read	instruments used to measure temperature	any number
investigate	the International Temperature Scale of 1990	1
	Kelvin, K, the unit of thermodynamic temperature	1
	absolute zero, -273.15°C or -459.67°F	1





Pyramid Fold



**Trifold Book** 



**Statistics** 

Skill	Activity Suggestion	Foldable Parts
define	statistics as a branch of mathematics that	
1 .1	involves collecting and presenting data	1
describe	data ways in which statisticians collect and present	2
define	mean, median, and mode individually and collectively as measures of central tendency of a set of data	3
analyze	data using mean, median, and mode	3
find	the mean and median for a set of data	2
explain	the range of a set of numbers	1
determine	the range of a set of data	any number
separate	a large set of data into four equal parts, or quartiles	4
illustrate	how the median of a set of data divides the data in half	2
write	the definition of interquartile range in words and symbols	2
	<ul> <li>range of a set of data.</li> <li>1. List the data from least to greatest.</li> <li>2. Find the median.</li> <li>3. Find the upper quartile, or the median of the upper half.</li> <li>4. Find the lower quartile, or the median of the lower half.</li> <li>5. Find the interquartile range by subtracting the upper quartile range from the lower quartile range.</li> </ul>	5
use	measures of variation to compare data	any number
list	ways in which measures of variation are used in everyday life or in a work place	any number
find	the range, median, upper quartile, lower quartile, and the interquartile range for sets of data	5
describe	how statistics are used in written and oral communication to prove points and influence opinions	2
explain	ways in which statistics might be misleading	any number
recognize	and find examples of misleading statistics	any number
find	examples of graphs in a newspaper or magazine, determine if they are or are not misleading, and explain why or why not	2
list	things you might question when reading the results of a survey, test, or poll	any number
use	the same data with two different scales and explain how these graphs look different	2

Three-Tab Book

Foldable

Parts

 $\frac{1}{2}$ 

2

2

1

any number

any number

any number

any number

 $\frac{2}{1}$ 

3

	Collect data	Display data
Ц		н

Two-Tab Book



Two-Tab Concept Map



Three-Tab Venn Diagram

# **Box-and-Whisker Plots**

Skill	Activity Suggestion	Foldable Parts
define	quartiles and extreme values of a set of data as each relate to a box-and-whisker plot	2
display	data in box-and-whisker plots	any number
explain	the purpose for using box-and-whisker plots and describe how they present important characteristics of data visually	1
sequence	<ul> <li>the steps for constructing a box-and-whisker plot.</li> <li>1. Draw a number line for the range of the data.</li> <li>2. Above the number line, mark points for the upper and lower extremes, the median, and the upper and lower quartile values.</li> <li>3. Draw a box that contains the quartile values.</li> <li>4. Draw a vertical line through the median value.</li> <li>5. Extend the whiskers from each quartile to the upper and lower extreme data points.</li> </ul>	5
list	five things that can be learned from a box-and-whisker plot	5
define	outliers as data that are more than 1.5 times the interquartile range from the quartiles	1
Venn Diagram	characteristics of a box-and-whisker plot, a stem-and-leaf plot, and both	3



Three-Tab Venn Diagram



(3 sheets of paper)

# Stem-and-Leaf Plots Activity Suggestion

how to organize data into stems and leaves

how data values with numerous digits can be rounded so that each leaf has only one digit

data that can be organized into a stem-and-leaf

the steps used for making a stem-and-leaf plot

data presented in stem-and-leaf plots made by

a regular stem-and-leaf plot and a back-to-back

charactertistics a stem-and-leaf plot, a bar graph,

the purposes of the "stem" and the "leaf"

plot, such as student grades on a test

a back-to-back stem-and-leaf plot

data in stem-and-leaf plots

a stem-and-leaf plot

the stem and leaf

classmates

and both

stem-and-leaf plot

Skill

describe

illustrate

explain

show

collect

display

sequence

interpret

contrast

make

compare and

Venn Diagram

define





Two-Tab Book

# Tree diagram

Half Book



Two-Tab Book

# **Fundamental Counting Principle**

Skill	Activity Suggestion	Foldable Parts
explain	the Fundamental Counting Principle	1
draw	a tree diagram to show the possible outcomes for two events, such as tossing a dime and then tossing a nickel, and explain your drawing	2
describe	independent events and dependent events as they relate to the Fundamental Counting Principle	2

# **Frequency Tables**

Skill	Activity Suggestion	Foldable Parts
describe	the purpose of a frequency table	1
differentiate between	a frequency table and a bar graph	2
explain	why a frequency table is good when you want to know specific numbers	1

# Pascal's Triangle

Skill	Activity Suggestion	Foldable Parts
define	the following terms as they relate to Pascal's triangle: expand powers, binomials, binomial theorem exponents coefficients	5
explain	Pascal's triangle in your own words	1
1	the Binomial Theorem in your own words	1
describe	how to form two additional rows of Pascal's triangle	2
research	the "who, what, where, when" of: Blaise Pascal and Pascal's triangle	4
	Sir Isaac Newton and his discovery of ways in which the Binomial Theorem can lead to an infinite series	4
make a timeline	of the history of this triangle	any number



Skill	Activity Suggestion	Foldable Parts
define	permutation as an arrangement or listing in which order is important	1
use	the symbol $P(6, 3)$ to represent the number of permutations of 6 things taken 3 at a time	1
find	values for problems such as $P(5, 5)$ and make models to illustrate their meaning	2
observe	two ways in which you might use permutations in your daily life	2
list	three examples of permutations	3
write	four permutations as word problems	4
differentiate	between linear permutations and circular permutations	2
explain	the rule for permutations with repetitions in writing and give an example	2
determine	whether something is a combination or a permutation	2

#### Permutations



Two-Tab Book







Shutter Fold

Skill	Activity Suggestion	Foldable Parts
differentiate between	permutations and combinations	2
summarize	the difference between a permutation and a combination of 3 things taken 2 at a time	2
draw	models to illustrate two combinations	2
define	combinations as arrangements or listings where order is not important	1
use	the symbol $C(6, 3)$ to represent the number of combinations of 6 things taken 3 at a time	any number
observe	ways in which you might use combinations in your daily life	any number
list	examples of combinations	any number
find	values for problems such as $C(5, 4)$	any number
write	word problems involving combinations	any number

# Combinations



Three-Tab Book



Two-Tab Book



Two-Tab Concept Map

Odds of	Probability
event	of an
occurring	event
given the	occurring
probability	given
4	the odds

Two-Tab Book

ſ	Simple events	Compound events
Ц		4

Two-Tab Book



Two-Tab Book

Probabilit	y
------------	---

Skill	Activity Suggestion	Foldable Parts
define	probability as the chance that some event will happen	1
describe	probability as the ratio of the number of ways a certain event can occur to the number of possible outcomes	1
explain	the set of all possible outcomes as the sample space	1
find	the probability of three simple events	3
	the probability of two compound events	2
describe	the probability of two independent events in words and symbols	2
	the probability of two dependent events in words and symbols	2
define	the term <i>odds</i> as a way to describe the chance of an event occurring	1
explain	odds in favor and odds against	2
	probability of success and failure	2
differentiate	between probability and odds	2
give	examples of mutually exclusive events	any number
describe	how to find the probability of mutually exclusive events in words and symbols	2
define	inclusive events and give two examples	2
describe	how to find the probability of inclusive events in words and symbols	2
compare and contrast	mutually exclusive and inclusive events	2
	dependent and independent events	2
make	a vocabulary book for the following terms: dependent events, experimental probability, inclusive, independent events, mutually exclusive, odds, relative frequency, simulation	8
state	the odds of an event occurring given the probability and the probability of an event occurring given the odds	2

Skill	Activity Suggestion	Foldable Parts
define	a scatter plot as a graph that shows the general relationship between two sets of data	1
construct	scatter plots	any number
interpret	scatter plots	any number
differentiate between	scatter plots that show a positive relationship, negative relationship, and no relationship	3
write	about three ways in which scatter plots might be used: display data, examine trends, make predictions	3
describe	how to draw a scatter plot for two sets of data	1
create	a scatter plot to analyze data	1
draw	lines of fit for sets of data on a scatter plot	1
use	lines of fit to make predictions about data	1
define	and determine a prediction equation	2

#### **Scatter Plots**



Two-Tab Book



Folded Book



Three-Tab Book



Layered-Look Book (2 sheets of paper)



Two-Tab Concept Map



Half Book



Four-Door Book

# Explore Plan Solve Examine

Four-Tab Book



Two-Tab Book



**Folded Chart** 

# **Problem-Solving Plan**

Skill	Activity Suggestion	Foldable Parts
describe	the four steps of the problem-solving plan in writing	4
solve	problems using the four-step problem-solving plan	any number
explain	how the four-step plan gives you an organized method for solving problems	1
demonstrate	how to use the problem-solving plan	1
choose	appropriate methods of computation when using the problem-solving plan	4
describe	how looking for a pattern is a good problem- solving technique	1

# **Problem-Solving Strategies**

Skill	Activity Suggestion	Foldable Parts
give	three examples of inductive reasoning	3
	three examples of deductive reasoning	3
compare and contrast	inductive and deductive reasoning	2

Foldable

Parts

1

any number

3

any number

1

any number

2

3

any number

any number

# Oral Written Algebraic

Three-Tab Book

	Bar Gra	aph	0
F	Cluste Data	er l	
	Outlin	ot	0
F	Statisti		
P	robabi	/s	
L	Sampli	ng	

**Vocabulary Book** 

### Journals

Skill	Activity Suggestion	Foldable Parts
explain	descriptively what you are learning	1
define	terms, concepts, properties, and more in your math journal	any number
write	about personal associations and experiences called to mind during the learning process	any number
evaluate	the direction and progress of your learning in your journal	1
list	examples of ways in which new knowledge has or will be used in daily life experiences	any number
read	journal notes of fellow students and compare their experiences with your own	2
describe	positive and negative experiences during your learning process	2
use	journals for self-questioning by recording questions that arise during learning	any number
	journals to organize thinking by including sketches, diagrams, and examples	any number



**Bound Book** 



Two-Tab Book

# Skill Activity Suggestion

frequently as possible

properties, or functions

terms by giving written examples

the definition of terms concisely

words

explain

define

write

use

self-check

quiz

**Vocabulary and Writing Definitions** 

the meaning of a word or process in your own

terms orally, in writing, and algebraically

a descriptive paragraph using the vocabulary words and concepts introduced in a lesson

a dictionary to find definitions of your math vocabulary words and compare the dictionary definition to the definition given in your textbook

vocabulary words in your speech and writing as

the Internet to find definitions and examples of

friends and family members to see if they know

your knowledge of terms and concepts by observing a word and mentally defining it

the meaning of your vocabulary words



Three-Tab Book

Measurement

**Concept Map** 

Metric

Customary

# **Outline**, List, and Sequence

Skill	Activity Suggestion	Foldable Parts
note	the order in which concepts are presented in lessons and texts	1
explain	why certain concepts are presented in a specific sequence	1
	why there is an order of operations	1
describe	an order of operations as a sequence and describe its importance	2
outline	the steps used to solve given problems	any number
	how several students reached a solution and compare and contrast the outlines	any number
	the main ideas and supporting facts presented in a lesson or chapter	any number
list	examples of specific things studied, such as operations, processes, properties, and more	any number

#### **Concept Maps**

Skill	Activity Suggestion	Foldable Parts
explain	the use of a concept map	1
design	a concept map to organize information presented in a lesson or text chapter	any number
use	a concept map as a study guide to review main ideas and supporting information	any number





Layered-Look Book

# Writing Instructions

Skill	Activity Suggestion	Foldable Parts
explain	the importance of writing clear, concise instructions	1
write	a set of instructions on how to do something presented in a lesson	any number
ask	students to follow their own instructions to check them for accuracy and clarity	2
	students to follow instructions written by classmates to check them for accuracy and	
	clarity	2

# **Main Ideas and Note Taking**

Skill	Activity Suggestion	Foldable Parts
determine	main ideas	any number
outline	main ideas and supporting information or facts	any number
describe	note taking as a skill that is based upon listening or reading for main ideas and then recording these ideas for future reference	1
use	a journal to take notes on a specific topic	any number
	a concept map to record a main idea and supporting facts	any number



Bound Book

#### Annotations

Skill	Activity Suggestion	Foldable Parts
write	annotations or notes to organize the text they are reading for review or study	any number
write	annotations that include the following: key points highlighted or copied into a journal reader questions that arise reader comments reader reactions to text short summaries steps or data numbered by reader	any number



# Questioning

Skill	Activity Suggestion	Foldable Parts
note	different ways in which questioning is used in the learning process	any number
develop	the skill of self questioning during learning	2
write	personal questions that arise during learning	1
practice	asking questions in a clear and concise manner	any number
differentiate	between questions that can be answered using <i>yes</i> or <i>no</i> responses to those that are open ended	2
find	examples of the following: questions without answers questions that have only one answer questions with multiple answers	3
formulate	questions that can be addressed with data and collect, organize, and display data to answer the questions	any number







**Concept Map** 



Half Book



**Folded Chart** 



**Bound Book** 



Six-Tab Book



# **Tables and Charts**

Skill	Activity Suggestion	Foldable Parts
chart	information using rows or columns	any number
describe	a data table as having rows and columns	1
	the importance of labeling the title of a data table and labeling the rows and columns	1
make	a data table	any number
outline	steps taken to make a specific data table	any number
write	information in the appropriate columns and rows of a data table	any number
use	data collected in a table to write a summary	1

# **Circle Graphs**

Skill	Activity Suggestion	Foldable Parts
explain	how circle graphs show the parts of something as they relate to the whole	1
	why circle graphs are also called pie graphs or pie charts	1
make and label	a circle graph based upon data expressed as percents	2
	a circle graph based upon data that is not expressed as percents	2
convert	data into percents and report it using a circle graph	any number
describe	each section of a circle graph as a segment of the circle	2
use	a protractor to measure the central angles of three circle graphs	1
	a protractor to draw the central angles of three circle graphs	1
sequence	the steps for converting data into percents so it can be presented using a circle graph	6
Venn diagram	characteristics of circle graphs, bar graphs, and both	3

©Glencoe/McGraw-Hill

# **Bar Graphs and Histograms**

Skill	Activity Suggestion	Foldable Parts
describe	a histogram as a bar graph that shows the frequency distribution of data	1
make and label	a bar graph	2
	a histogram	2
explain	single and double bar graphs	2
define	a double bar graph as a comparative graph	1
explain	how a double bar graph can be used to show trends	1
make and label	a double bar graph	2
use	a bar graph to compare increases and decreases in quantity over a period of time	2
collect	examples of bar graphs encountered in daily life	any number







Venn Diagram











#### Matchbook

Line Graphs
Activity Suggestion

Skill	Activity Suggestion	Foldable Parts
explain	how line graphs can be used to show how values change over a period of time	1
use	line graphs to compare numbers	any number
	line graphs to show trends or patterns	any number
develop	a grid and make your own line graph	1
label	and explain the vertical and horizontal axes of your line graph	2
describe	which axis shows frequency and which shows categories	2
	what the points on a line graph indicate and explain why straight lines are used to connect the points	2
make and label	<ul><li>line graphs to show the following:</li><li>student grades over a period of time</li><li>production level or sales over time</li><li>population of an area over time</li></ul>	
	• income over time	2



Venn Diagram

# Pictographs

Skill	Activity Suggestion	Foldable Parts
explain	how pictographs use pictures or symbols to show how specific quantities compare	1
make and label	a pictograph and determine what value each symbol will represent	2
research	the historic origins of pictographs	4
compare and contrast	pictographs and bar graphs	2
collect	examples of pictographs and explain their use	any number
list	advantages and disadvantages of using pictographs	2
note	where and how pictographs are used	2



**Bound Book** 



**Concept Map** 

#### **Venn Diagrams**

Skill	Activity Suggestion	Foldable Parts
explain	how a Venn diagram can be used to display data and show how the data is related	2
	how a Venn diagram can be used to find similarities in data	1
describe	the purpose of a rectangle, circles, and the space formed by overlapping circles in a Venn diagram	3
differentiate between	using a two circle and a three circle Venn diagram	2
make	a Venn diagram to display given data and outline the procedure you used	2
compare and contrast	data presented in a Venn diagram	2
use	Venn diagrams to illustrate two conditional statements	2
write	three conditional statements based upon data illustrated by a Venn diagram:	2
	It, then	3
draw	a Venn diagram to illustrate data and write four true statements	4

# Index

absolute value	)
angle relationships	
in polygons	)
angles	
area	
bar graphs 88, 89, 90	)
hox-and-whisker plots 79	)
charte 88	
	,
circles	
circumference	j
combinations	
communication	
annotations	
concept maps	)
journals	
main ideas 87	r
note taking 97	,
outling	
outilite	,
questioning	
sequence	)
vocabulary	
writing definitions	j
cones	
coordinate geometry	
cylinders	1
decimals	2
deductive reasoning	
equations 48	
exponents 54	
avprassions 46	
factorization 51	,
FOIL	
fractions	)
frequency tables	)
functions	)
Fundamental Counting Principle	)
geometry	÷
graphing	
equations	-
inequalities 74	
on a number line 36	
histograms 80	, ,
	•
inequalities	
integers	
adding	
dividing	,
multiplying	
subtracting	!
irrational numbers	-
line graphs	,
line segments 57	,

lines	.57
lines of fit	.83
matrices	.56
mean	.78
measurement	-77
distance	.76
metric	.75
temperature	.77
volume	.77
weight	.76
measures of central tendency	.78
median	78
misleading statistics	.70 78
mode	.70 78
monomials	.70 53
multiples	.55 57
adda	.32 09
0dds	.02
order of operations	86
parabola	.74
parallelograms	.66
Pascal's triangle	.80
percents	42
perimeter	65
permutations	.81
pi	68
pictographs	.90
planes	.59
points	.57
polygons	.60
polynomials	.53
powers	.54
prime numbers	51
prisms	.70
probability	.82
problem solving	.84
proof 65	66
properties 35 39 47 48	49
proportions	43
nvramide	71
Pythagorean theorem	.71 62
augdrilgterals 64 65 66	.02 67
quadmaterials	71
rational numbers	./4 1
	41
	.43 57
rays	.57
real number system	.44
rectangles	.65
reflections	.60
relations	.50
rhombi	.65
right triangles	63
rotations	.60
scatter plots	.83
scientific notation	.54

.....

.....

sequences
sets
slope
square roots
squares
statistical graphs
bar graph
circle graph
histogram
line graph
pictograph
statistics
stem-and-leaf plots
surface area

tables
function
tessellations
three-dimensional figures
transformations
translations
trapezoids
triangles
right triangles
trigonometry
variables
Venn diagrams
volume
whole numbers

.