



Making Sense of Problem Solving: Targeting NCTM Curriculum Focal Points

Level A/Kindergarten

Introduction

How this Resource Supports NCTM Curriculum Focal Points
Research Findings: Results of Using this Program

Section I: Developing a Problem Solving Environment

Chapter A: Readiness for Problem Solving
Chapter B: Fostering Critical Thinking
Chapter C: Creating and Sustaining a Safe Classroom Environment

Section II: Targeting NCTM Curriculum Focal Points (CFP) and Connections (C)

A.1	How Many Buttons? <i>CFP: Number and Operations</i>	Joining Sets
A.2	Time for Tea <i>CFP: Number and Operations</i>	Comparing and Ordering Sets
A.3	Playground Puzzlers <i>CFP: Number and Operations</i>	Simple Separating Situations
A.4	Over and Under <i>CFP: Geometry</i>	Spatial Orientation
A.5	Who's on First? <i>CFP: Geometry</i>	Ordinal Numbers & Geometric Shapes
A.6	Block and Roll <i>CFP: Geometry</i>	Spatial Reasoning with 3-D Shapes
A.7	Be a Builder <i>CFP: Geometry</i>	Construct More Complex 3-D Shapes
A.8	Pound or Not a Pound? <i>CFP: Measurement</i>	Ordering by Weight (More or Less than a Pound)
A.9	Longer, Shorter or the Same? <i>CFP: Measurement</i>	Compare Lengths with a 3 rd Object
A.10	Going to Great Lengths <i>CFP: Measurement; C: Data Analysis</i>	Sorting and Ordering Objects by Length
A.11	Where Does It Go? <i>C: Data Analysis</i>	Sorting with a Venn Diagram
A.12	What Do You Like? <i>C: Data Analysis</i>	Collect Data
A.13	How Do I Get There from Here? <i>C: Geometry</i>	Following Directions
A.14	A String of Beads <i>C: Algebra</i>	Extending Repeating Patterns
A.15	How Does Your Pattern Grow? <i>C: Algebra</i>	Extending Growing Patterns



Making Sense of Problem Solving: Targeting NCTM Curriculum Focal Points

Level B/Grade 1

Introduction

How this Resource Supports NCTM Curriculum Focal Points
Research Findings: Results of Using this Program

Section I: Developing a Problem Solving Environment

Chapter A: Readiness for Problem Solving
Chapter B: Fostering Critical Thinking
Chapter C: Creating and Sustaining a Safe Classroom Environment

Section II: Targeting NCTM Curriculum Focal Points (CFP) and Connections (C)

B.1	Ladybugs <i>CFP: Number and Operations and Algebra</i>	Joining, Result Unknown
B.2	Who Took My Hat? <i>CFP: Number and Operations and Algebra</i>	Joining, Result Unknown; Separating, Result Unknown
B.3	Gone Fishing <i>CFP: Number and Operations and Algebra</i>	Joining, Start Unknown
B.4	Nests of Stone <i>CFP: Number and Operations and Algebra</i>	Joining, Change Unknown; Separating, Result Unknown
B.5	Place Value Penguins <i>CFP: Number and Operations</i>	Groupings of 10
B.6	Base-10 Bats <i>CFP: Number and Operations</i>	Hundreds, Tens, Ones
B.7	Who's the Closest? <i>CFP: Number and Operations</i>	Represent Numbers on a Number Line
B.8	London Bridge <i>CFP: Geometry</i>	Compose & Decompose Pattern Blocks
B.9	Try This Angle <i>CFP: Geometry</i>	Compose & Decompose Shapes, Attributes
B.10	Kite Capers <i>CFP: Geometry</i>	Symmetry
B.11	Pennies for Pets <i>C: Number and Operations and Algebra</i>	2-Digit Addition
B.12	Spin to Shop <i>C: Number and Operations and Algebra</i>	Collect Data
B.13	Measuring Me <i>C: Measurement & Data Analysis</i>	Representing Measurements and Discrete Data
B.14	Matching Mittens <i>C: Algebra</i>	Even and Odd
B.15	In and Out and... <i>C: Algebra</i>	Number Patterns



Making Sense of Problem Solving: Targeting NCTM Curriculum Focal Points

Level C/Grade 2

Introduction

How this Resource Supports NCTM Curriculum Focal Points
Research Findings: Results of Using this Program

Section I: Developing a Problem Solving Environment

Chapter A: Readiness for Problem Solving
Chapter B: Fostering Critical Thinking
Chapter C: Creating and Sustaining a Safe Classroom Environment

Section II: Targeting NCTM Curriculum Focal Points (CFP) and Connections (C)

C.1	Number Has Its Place <i>CFP: Number and Operations</i>	Place Value
C.2	Roll 'Em <i>CFP: Number and Operations</i>	Comparing Numbers
C.3	Digit Game <i>CFP: Number and Operations</i>	Ordering Numbers
C.4	Flower Garden <i>CFP: Number & Operations and Algebra</i>	Addition and Subtraction
C.5	Toy Store <i>CFP: Number & Operations and Algebra</i>	Addition and Subtraction with Money
C.6	Dollar Days <i>CFP: Number & Operations and Algebra</i>	Subtraction with Money
C.7	My Foot <i>CFP: Measurement</i>	Non-standard Measurement
C.8	Measuring Salamanders <i>CFP: Measurement</i>	Standard Measurement
C.9	Frog Jump <i>CFP: Measurement</i>	Measuring Lengths and Transitivity
C.10	Sum Fun <i>CFP: Number and Operation; C: Number and Operations</i>	Composing and Decomposing Numbers
C.11	Sea Turtles <i>C: Number and Operations; C: Geometry and Measurement</i>	Repeated Addition & Geometry
C.12	Different Sizes and Shapes <i>C: Geometry and Measurement</i>	Composing and Decomposing 2-D Shapes
C.13	Arctic Animals <i>CFP: Measurement; C: Geometry and Measurement</i>	Estimating and Measuring Lengths
C.14	The Pelican's Pouch <i>CFP: Number and Operations and Algebra; C: Algebra</i>	Skip Counting
C.15	Trip to the Zoo <i>CFP: Number and Operations and Algebra; C: Algebra</i>	Foundation for Multiples



Making Sense of Problem Solving: Targeting NCTM Curriculum Focal Points

Level D/ Grade 3

Introduction

How this Resource Supports NCTM Curriculum Focal Points
Research Findings: Results of Using this Program

Section I: Developing a Problem Solving Environment

Chapter A: Fostering Critical Thinking
Chapter B: Developing Problem Solving
Chapter C: Promoting Confidence

Section II: Targeting NCTM Curriculum Focal Points (CFP) and Connections (C)

D.1	Bloomin' Flowers <i>CFP: Number and Operations and Algebra</i>	Repeated addition
D.2	Art Class <i>CFP: Number and Operations and Algebra</i>	Division
D.3	Room Change <i>CFP: Number and Operations and Algebra</i>	Division
D.4	Brownies <i>CFP: Number and Operations and Geometry</i>	Fractions
D.5	Color Me Green <i>CFP: Number and Operations</i>	Fractions
D.6	Ship Shape <i>CFP: Number and Operations</i>	Fractions
D.7	What's My Shape? <i>CFP: Geometry</i>	Sides and angles
D.8	Butterfly Wings <i>CFP: Geometry</i>	Symmetry
D.9	Five, Four, Three, Two, One... <i>CFP: Geometry</i>	Transformations
D.10	Garden Patterns <i>C: Algebra</i>	Multiplication patterns
D.11	Legs, Legs, Legs <i>C: Algebra</i>	Functional relationships
D.12	Fancy Frame <i>C: Measurement</i>	Perimeter
D.13	Weather Report <i>C: Data Analysis</i>	Graphing data
D.14	Ordering Ice Cream <i>C: Data Analysis</i>	Pictographs
D.15	Cool Numbers <i>C: Number and Operations</i>	Number Sense



Making Sense of Problem Solving: Targeting NCTM Curriculum Focal Points

Level E/Grade 4

Introduction

How this Resource Supports NCTM Curriculum Focal Points
Research Findings: Results of Using this Program

Section I: Developing a Problem Solving Environment

Chapter A: Fostering Critical Thinking
Chapter B: Developing Problem Solving
Chapter C: Promoting Confidence

Section II: Targeting NCTM Curriculum Focal Points (CFP) and Connections (C)

E.1	Carnival Capers CFP: <i>Number and Operations and Algebra</i>	Multiplying Whole Numbers
E.2	Places, Everyone! CFP: <i>Number and Operations and Algebra</i> ; CFP: <i>Measurement</i>	Multiplying w/arrays & area
E.3	Patterns CFP: <i>Number and Operations and Algebra</i> ; C: <i>Algebra</i>	Squaring & Doubling numbers
E.4	Divvy it Up CFP: <i>Number and Operations</i>	Fraction/Decimal Equivalents
E.5	Which Group is Taller? CFP and C: <i>Number and Operations</i>	Fraction/Decimal Equivalents
E.6	School Store CFP and C: <i>Number and Operations</i>	Equivalent Fractions
E.7	Bulletin Board CFP: <i>Measurement</i>	Area as covering space
E.8	Ta-Da! A Formu-la! CFP: <i>Measurement</i>	Area of Rectangles
E.9	Can You Figure This? CFP: <i>Measurement</i> ; C: <i>Geometry</i>	Area of Triangles and Trapezoids
E.10	Playground Problem CFP: <i>Measurement</i>	Area of irregular polygons
E.11	Lake Oscawana C: <i>Algebra</i>	Finding a pattern & multiplying decimals
E.12	Transforming Cats C: <i>Geometry</i>	Similar Irregular Polygons
E.13	“Presto Change-o” C: <i>Geometry</i>	Transformations
E.14	Treasure Hunt C: <i>Measurement</i>	Measure & Classify Angles
E.15	What’s On TV? C: <i>Data Analysis</i>	Graphic Displays



Making Sense of Problem Solving: Targeting NCTM Curriculum Focal Points

Level F/Grade 5

Introduction

How this Resource Supports NCTM Curriculum Focal Points
Research Findings: Results of Using this Program

Section I: Developing a Problem Solving Environment

Chapter A: Fostering Critical Thinking
Chapter B: Developing Problem Solving
Chapter C: Promoting Confidence

Section II: Targeting NCTM Curriculum Focal Points (CFP) and Connections (C)

F.1	Baseball CFP: <i>Number and Operations and Algebra</i>	Division and Unit Pricing
F.2	Let's Go! CFP: <i>Number and Operations and Algebra</i>	Division
F.3	Who's Here? CFP: <i>Number and Operations and Algebra</i>	Division
F.4	Pizza Pizza CFP: <i>Number and Operations</i>	Add & Subtract Fractions
F.5	School Clothes CFP: <i>Number and Operations</i>	Making Change
F.6	Party Hearty CFP: <i>Number and Operations</i>	Multiplying Fractions
F.7	Boxing In and Out CFP: <i>Geometry and Measurement and Algebra</i>	Modeling Volume
F.8	How Much Is In This? CFP: <i>Geometry and Measurement and Algebra</i>	Surface Area & Volume
F.9	Constructing Pyramids CFP: <i>Geometry and Measurement and Algebra</i>	Surface Area of Pyramids
F.10	Soccer Snacks C: <i>Algebra</i>	Writing and Solving Equations
F.11	Jog-a-Thon C: <i>Algebra</i>	Graphing Lines
F.12	How Close Can You Get? C: <i>Measurement</i>	Weight and Capacity
F.13	Toledo Swim Pool C: <i>Data Analysis</i>	Double Bar & Double Line Graphs
F.14	The Growth of Children C: <i>Data Analysis</i>	Line Graphs from data
F.15	For Profit or Not? C: <i>Number and Operations</i>	Cost vs. Earnings



Making Sense of Problem Solving: Targeting NCTM Curriculum Focal Points

Level G/Grade 6

Introduction

How this Resource Supports NCTM Curriculum Focal Points
Research Findings: Results of Using this Program

Section I: Developing a Problem Solving Environment

Chapter A: Fostering Critical Thinking
Chapter B: Developing Problem Solving
Chapter C: Promoting Confidence

Section II: Targeting NCTM Curriculum Focal Points (CFP) and Connections (C)

G.1	Scale Models <i>CFP: Number and Operations (#1)</i>	Relationship of Decimals & Fractions
G.2	Math Club <i>CFP: Number and Operations (#1)</i>	Modeling & Multiplying Fractions
G.3	Help the Cook <i>CFP: Number and Operations (#1)</i>	Multiplying & Dividing Fractions
G.4	Bike Race <i>CFP: Number and Operations (#2)</i>	Rate
G.5	Which Way is Shorter? <i>CFP: Number and Operations (#2)</i>	Scale on a Map
G.6	Corresponding Sails <i>CFP: Number and Operations (#2)</i>	Ratio
G.7	Rate This <i>CFP: Number and Operations (#2)</i>	Rate
G.8	Phone Home <i>CFP: Algebra</i>	Write & Solve Algebraic Equations
G.9	Math Magic <i>CFP: Algebra</i>	Algebraic Expressions
G.10	Fast Food <i>CFP: Algebra</i>	Mathematical Expressions
G.11	Fitness <i>CFP: Algebra</i>	Graphing Algebraic Expressions
G.12	Coming to Terms <i>C: Algebra</i>	Rules for Patterns
G.13	Chores Pay Off <i>C: Number and Operations</i>	Multiplicative & Additive Increases
G.14	We've Got You Covered <i>C: Measurement and Geometry</i>	Area to Dimensions
G.15	Area Problems <i>C: Measurement and Geometry</i>	Area on a Grid



Making Sense of Problem Solving: Targeting NCTM Curriculum Focal Points

Level H/Grade 7

Introduction

How this Resource Supports NCTM Curriculum Focal Points
Research Findings: Results of Using this Program

Section I: Developing a Problem Solving Environment

Chapter A: Fostering Critical Thinking
Chapter B: Developing Problem Solving
Chapter C: Promoting Confidence

Section II: Targeting NCTM Curriculum Focal Points (CFP) and Connections (C)

H.1	Scale It <i>CFP: Number and Operations and Algebra and Geometry</i>	Scale Drawing on a Coordinate Grid
H.2	Free Throws <i>CFP: Number and Operations and Algebra and Geometry</i>	Proportions and Percents
H.3	Commission Sales <i>CFP: Number and Operations and Algebra and Geometry</i>	Commission
H.4	Surface Issues <i>CFP: Measurement and Geometry and Algebra</i>	Area of Circles
H.5	Box Company <i>CFP: Measurement and Geometry and Algebra</i>	Surface Area and Volume
H.6	Picking Up the Garbage <i>CFP: Measurement and Geometry and Algebra</i>	Volume of Cylinders and Prisms
H.7	Twice the Money <i>CFP: Number and Operations and Algebra</i>	Solving Equations
H.8	Holey Sandbags, Robin! <i>CFP: Number and Operations and Algebra</i>	Multiple Representations
H.9	A Pattern Puzzle <i>CFP: Number and Operations and Algebra</i>	Equations for a Pattern
H.10	Who Wins? <i>C: Measurement and Geometry</i>	Rate
H.11	Smart Shopping <i>C: Number and Operations</i>	Fractions, Decimals, & Percents
H.12	To Draw or Not to Draw <i>C: Probability</i>	Area Models
H.13	Grab Box <i>C: Probability</i>	With and Without Replacement
H.14	Roll the Cube <i>C: Probability</i>	Sample Space
H.15	Making Sense of Data <i>C: Data Analysis</i>	Histogram



Making Sense of Problem Solving: Targeting NCTM Curriculum Focal Points

Level I/Grade 8

Introduction

How this Resource Supports NCTM Curriculum Focal Points
Research Findings: Results of Using this Program

Section I: Developing a Problem Solving Environment

Chapter A: Fostering Critical Thinking (3 lessons)
Chapter B: Developing Problem Solving (4 lessons)
Chapter C: Promoting Confidence

Section II: Targeting NCTM Curriculum Focal Points (CFP) and Connections (C)

I.1	What's Your Angle? <i>CFP: Geometry and Measurement</i>	Missing Angle Measures in Triangles
I.2	This Is Similar <i>CFP: Geometry and Measurement</i>	Similar Triangles
I.3	Tunnel Vision <i>CFP: Geometry and Measurement; C: Number and Operations</i>	Pythagorean Theorem
I.4	How Many Have to Show Up? <i>CFP: Algebra</i>	Linear Tables and Graphs
I.5	How Steep is Steep? <i>CFP: Algebra; C: Geometry</i>	Discovering Slope
I.6	Meltdown <i>CFP: Algebra</i>	Analyzing Linear Situations
I.7	Faster, Faster <i>CFP: Algebra; C: Algebra</i>	Solving Linear Equations
I.8	Ol' Ball Game <i>CFP: Data Analysis, Number & Operations and Algebra</i>	Mean and Median
I.9	Text Messages <i>C: Data Analysis</i>	Box-and-Whisker Plots
I.10	Sizing Things Up <i>CFP: Data Analysis, Number & Operations and Algebra</i>	Data Displays & Measure of Center
I.11	Soccer Game <i>CFP: Data Analysis, Number & Operations and Algebra</i>	Effects of Data Changes on Mean and Median
I.12	A Central Difference <i>CFP: Data Analysis, Number & Operations and Algebra</i>	Effects of Data Changes on Mean and Median
I.13	Where Shall We Meet? <i>CFP: Algebra; C: Algebra</i>	Rates
I.14	Which Would You Rather Have? <i>CFP: Algebra; C: Algebra</i>	Non-linear Functions
I.15	Predictions <i>C: Data Analysis</i>	Estimating Best Fit Lines