

Process Standards Rubric

The Five Strands of Math - Big Book

Number and Operations • Algebra • Geometry • Measurement • Data Analysis and Probability
All Five Strands of Math

Exercise	Expectations Instructional programs from pre-kindergarten through grade 12 should enable all students to:	RUBRIC														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
GOAL 1: Problem Solving	<ul style="list-style-type: none"> • build new mathematical knowledge through problem solving; • solve problems that arise in mathematics and in other contexts; • apply and adapt a variety of appropriate strategies to solve problems; • monitor and reflect on the process of mathematical problem solving. 	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GOAL 2: Reasoning & Proof	<ul style="list-style-type: none"> • recognize reasoning and proof as fundamental aspects of mathematics; • make and investigate mathematical conjectures; • develop and evaluate mathematical arguments and proofs; • select and use various types of reasoning and methods of proof. 	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GOAL 3: Communication	<ul style="list-style-type: none"> • organize and consolidate their mathematical thinking through communication; • communicate their mathematical thinking coherently and clearly to peers, teachers, and others; • analyze and evaluate the mathematical thinking and strategies of others; • use the language of mathematics to express mathematical ideas precisely. 	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GOAL 4: Connections	<ul style="list-style-type: none"> • recognize and use connections among mathematical ideas; • understand how mathematical ideas interconnect and build on one another to produce a coherent whole; • recognize and apply mathematics in contexts outside of mathematics. 	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GOAL 5: Representation	<ul style="list-style-type: none"> • create and use representations to organize, record, and communicate mathematical ideas; • select, apply, and translate among mathematical representations to solve problems; • use representations to model and interpret physical, social, and mathematical phenomena. 	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Drill Sheet 1		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Drill Sheet 2		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Review A		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Review B		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Review C		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓



Teacher Guide

Our resource has been created for ease of use by both **TEACHERS** and **STUDENTS** alike.

Introduction

Our resource offers ready-to-use worksheet activities for students in grades three to five. Math concepts outlined by the NCTM are presented in a way that encourages students to learn and review important concepts. Our resource can be used effectively for whole-class, small group and independent work. This book's exercises vary in difficulty and content so as to provide teachers and students with a variety of teaching and learning opportunities. Included are challenging problem-solving tasks which will push the boundaries of critical thought and demonstrate to students the importance of mathematical problem-solving in Number & Operations, Geometry, Measurement, Data Analysis & Probability, and Algebra using real world situations. Visual models are included to assist visual learners. Teachers may also choose to use mathematics manipulatives along with the exercises included in this book to help address the needs of kinesthetic learners.



The **drill sheets** are provided to help students with their procedural proficiency skills, as emphasized by the NCTM's Curriculum Focal Points.

The **NCTM Content Standards Assessment Rubric** (pages 6-10) is a useful tool for evaluating work in many of the activities in our resource. The **Reviews** (pages 30-32, 50-52, 70-72, 90-92, and 110-112) are divided by grade and can be used for a follow-up review or assessment at the completion of the unit.

PICTURE CUES

This resource contains three main types of pages, each with a different purpose and use. A **Picture Cue** at the top of each page shows, at a glance, what the page is for.

Teacher Guide

- Information and tools for the teacher

Student Handout

- Reproducible worksheets and activities

Easy Marking™ Answer Key

- Answers for student activities

How Is Our Resource Organized?

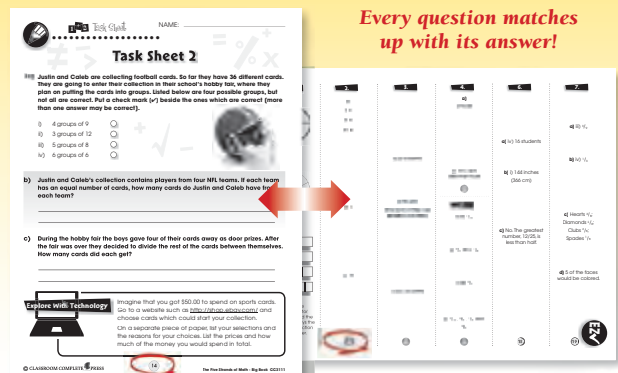
STUDENT HANDOUTS

Reproducible **task sheets** and **drill sheets** make up the majority of our resource.

The **task sheets** contain challenging problem-solving tasks, many centered around 'real-world' ideas or problems, which push the boundaries of critical thought and demonstrate to students why mathematics is important and applicable in the real world. It is not expected that all activities will be used, but are offered for variety and flexibility in teaching and assessment. Many of the task sheet problems offer space for reflection, and opportunity for the appropriate use of technology, as encouraged by the NCTM's Principles & Standards for School Mathematics.

EASY MARKING™ ANSWER KEY

Marking students' worksheets is fast and easy with this **Answer Key**. Answers are listed in columns – just line up the column with its corresponding worksheet, as shown, and see how every question matches up with its answer!





Principles & Standards

Principles & Standards for School Mathematics outlines the essential components of an effective school mathematics program.

The NCTM's Principles & Standards for School Mathematics

The **Principles** are the fundamentals to an effective mathematics education. The **Standards** are descriptions of what mathematics instruction should enable students to learn. Together the **Principles and Standards** offer a comprehensive and coherent set of learning goals, serving as a resource to teachers and a framework for curriculum. Our resource offers exercises written to the NCTM **Process and Content Standards** and is inspired by the **Principles** outlined below.

Six Principles for School Mathematics

Equity

EQUITY: All students can learn mathematics when they have access to high-quality instruction, including reasonable and appropriate accommodation and appropriately challenging content.

Curriculum

CURRICULUM: The curriculum must be coherent, focused, and well articulated across the grades, with ideas linked to and building on one another to deepen students' knowledge and understanding.

Teaching

TEACHING: Effective teaching requires understanding what students know and need to learn and then challenging and supporting them to learn it well.

Learning

LEARNING: By aligning factual knowledge and procedural proficiency with conceptual knowledge, students can become effective learners, reflecting on their thinking and learning from their mistakes.

Assessment

ASSESSMENT: The tasks teachers select for assessment convey a message to students about what kinds of knowledge and performance are valued. Feedback promotes goal-setting, responsibility, and independence.

Technology

TECHNOLOGY: Students can develop a deeper understanding of mathematics with the appropriate use of technology, which can allow them to focus on decision making, reflection, reasoning, and problem solving.

Our resource correlates to the six Principles and provides teachers with supplementary materials which can aid them in fulfilling the expectations of each principle. The exercises provided allow for variety and flexibility in teaching and assessment. The topical division of concepts and processes promotes linkage and the building of conceptual knowledge and understanding throughout the student's grade and elementary school career. Task sheet problems offer space for reflection, and opportunity for the appropriate use of technology. The drill sheets are provided to help students with their procedural proficiency skills.

NAME: _____



Task Sheet 7



7a) What fraction of the balls are footballs? **Circle** the correct answer.

i) $\frac{3}{6}$

ii) $\frac{6}{9}$

iii) $\frac{3}{9}$

iv) $\frac{3}{3}$

b) What is another way of expressing this fraction?

i) $\frac{2}{3}$

ii) $\frac{1}{4}$

iii) $\frac{1}{2}$

iv) $\frac{1}{3}$



c) Write the fraction represented by:

i) Hearts $\frac{\quad}{\quad}$

iii) Clubs $\frac{\quad}{\quad}$

ii) Diamonds $\frac{\quad}{\quad}$

iv) Spades $\frac{\quad}{\quad}$



d) With a colored pencil, shade in the happy faces to show the fraction $\frac{5}{6}$.

Investigate

Choose one particular physical feature (i.e. hair color, wearers of glasses, male/female, etc.). What fraction of the students in your class meet this criteria? Explain your answer.



Task Sheet 6

Quadrilaterals

6) A quadrilateral is any four-sided shape. The angles of a quadrilateral always have a sum of 360 degrees.



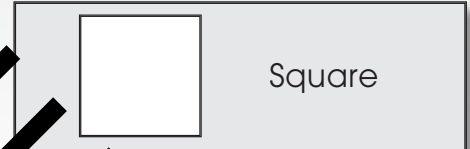
Match each definition to its shape.

a) A four-sided polygon having all right angles.

b) A four-sided polygon with two pairs of parallel sides.

c) A four-sided polygon with one pair of opposite parallel sides.

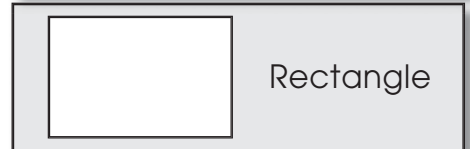
d) A four-sided polygon with all sides of equal length and all angles 90 degrees.



Square



Rhombus

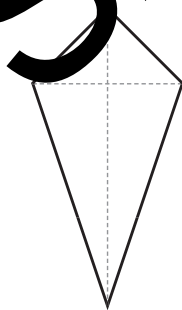


Rectangle



Trapezoid

e) This shape is a kite. Write a definition for this shape.



Explore With Technology



With the help of an adult, use the Internet, find pictures, drawings, and names of other quadrilaterals.

Which quadrilateral is your favorite?