Process Standards Rubric

Algebra

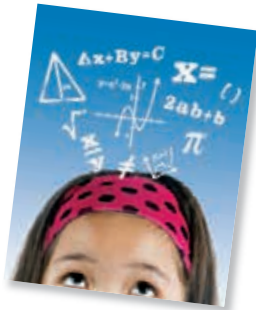| Expectations — Instructional programs from pre-kindergarten through grade 12 should enable all students to:		Exercise 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Drill Sheet 1	Drill Sheet 2	Review A	Review B	Review C
GOAL 1: Problem Solving	• build new mathematical knowledge through problem solving;	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	• 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	• 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	• 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	• 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	• 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.	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Algebra CC3101

Teacher Guide

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

Introduction

T his resource offers ready-to-use worksheet activities for students in grades PK to two. *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 opportunities for problem-solving, sorting, patterning, algebraic graphing, solving equations and examining quantitative change. 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** (*page 4*) is a useful tool for evaluating work in many of the activities in our resource. The **Reviews** (*pages 24-26*) 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!
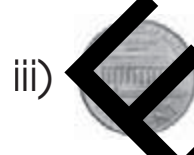
Every question matches up with its answer!
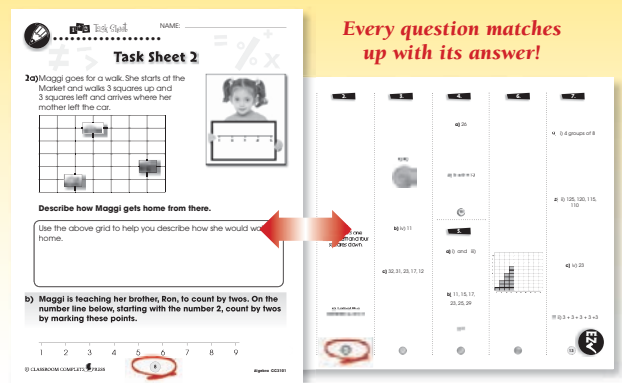
Task Sheet 3

3a) Look at the following pattern.

What coin comes next in this pattern?

i)

ii)

iii)

b) **From the choices below, place the correct number in the box to make this number sentence true.**

$12 +$ ☐ $= 23$

i) 12   ii) 13   iii) 10   iv) 11

c) **Place the following numbers in the correct order by size – from largest to smallest.**

23   31   12   32   17

1st ☐   2nd ☐   3rd ☐   4th ☐   5th ☐

Explore With Technology

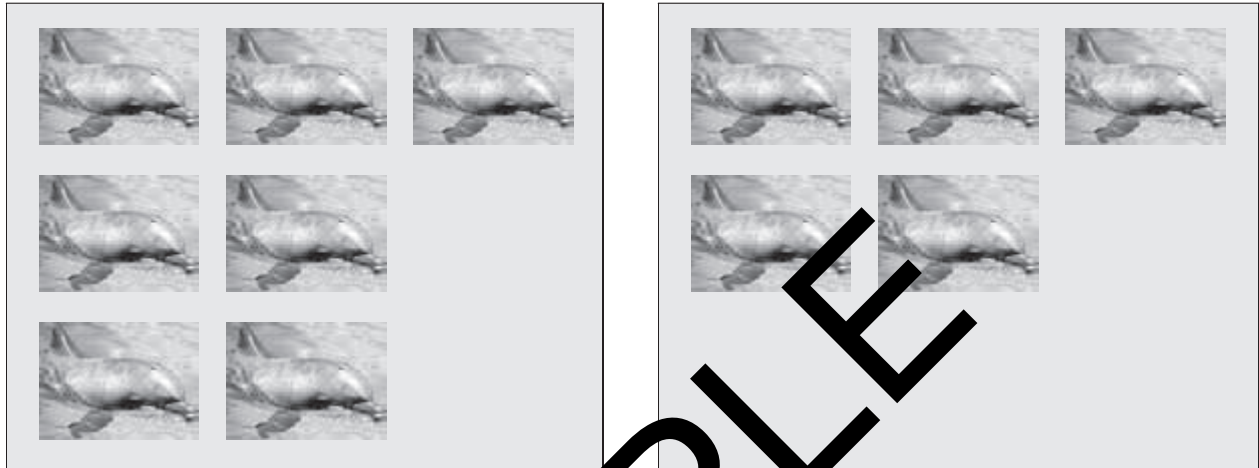**Use a calculator** to compare your answers for the following 2 questions.

$6 \times 3 =$
$3 + 3 + 3 + 3 + 3 + 3 =$

How did they compare?

SAMPLE

Task Sheet 13

13a) Compare the number of dolphins in the two boxes below.

SAMPLE

Which would be true?

i)   One box has 2 more dolphins than the other.

ii)   Both boxes have the same number of dolphins.

iii) One box has one less dolphin than the other.

iv) One box has 3 more dolphins than the other.

b)   Which equation below is correct?

i) $7 + 15 = 7 + 9 + 5$

ii) $7 + 15 = 7 + 10 + 4$

iii) $7 + 15 = 7 + 10 + 5$

iv) $7 + 15 = 7 + 8 + 8$

c)   What number goes in the box to make the sentence true?

22 − ☐ = 16

i) 10   ii) 8   iii) 6   iv) 12