

Process Standards Rubric

Algebra – Task & Drill Sheets

Algebra – Task Sheets

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
GOAL 1: Problem Solving	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GOAL 2: Reasoning & Proof	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GOAL 3: Communication	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GOAL 4: Connections	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GOAL 5: Representation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Review A															
Review B															
Review C															

Process Standards Rubric

Algebra – Task & Drill Sheets

Algebra – Drill Sheets

Expectations Instructional programs from pre-kindergarten through grade 12 should enable all students to:	GOAL 1: Problem Solving	GOAL 2: Reasoning & Proof	GOAL 3: Communication	GOAL 4: Connections	GOAL 5: Representation
Drills	• 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.	• 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.	• 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.	• 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.	• 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.
Warm-up 1	✓	✓	✓	✓	✓
Timed Drill 1	✓	✓	✓	✓	✓
Timed Drill 2	✓	✓	✓	✓	✓
Warm-up 2	✓	✓	✓	✓	✓
Timed Drill 3	✓	✓	✓	✓	✓
Timed Drill 4	✓	✓	✓	✓	✓
Warm-up 3	✓	✓	✓	✓	✓
Timed Drill 5	✓	✓	✓	✓	✓
Timed Drill 6	✓	✓	✓	✓	✓
Warm-up 4	✓	✓	✓	✓	✓
Timed Drill 7	✓	✓	✓	✓	✓
Timed Drill 8	✓	✓	✓	✓	✓
Warm-up 5	✓	✓	✓	✓	✓
Timed Drill 9	✓	✓	✓	✓	✓
Warm-up 6	✓	✓	✓	✓	✓
Timed Drill 10	✓	✓	✓	✓	✓
Timed Drill 11	✓	✓	✓	✓	✓
Review A	✓	✓	✓	✓	✓
Review B	✓	✓	✓	✓	✓
Review C	✓	✓	✓	✓	✓

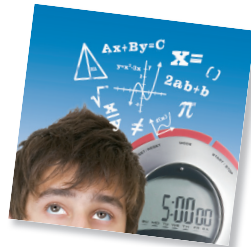


Teacher Guide

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

Introduction

The NCTM content standards have been used in the creation of the assignments in this booklet. This method promotes the idea that it is beneficial to learn through practical, applicable, real-world examples. Many of the task and drill sheets are organized around a central problem taken from real-life experiences of the students. The pages of this booklet contain a variety in terms of levels of difficulty and content so as to provide students with a variety of different opportunities. Included are opportunities for problem-solving, sorting, patterning, algebraic graphing, solving equations using a variable, examining quantitative change, creating, simplifying and graphing an algebraic expression, finding a quotient, and writing a number as a scientific notation. 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 **NCTM Content Standards Assessment Rubric** (page 6) is a useful tool for evaluating students' work in many of the activities in our resource. The **Reviews** (pages 26-28 and 46-48) are divided by grade and can be used for a follow-up review or assessment at the completion of the unit.

PICTURE CUES

Our 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 drill sheets

Easy Marking™ Answer Key

* Answers for student activities

Timed Drill Stopwatch

* Write the amount of time for students to complete the timed drill sheet in the stopwatch. Recommended times are given on the contents page.

How Is Our Resource Organized?

STUDENT HANDOUTS

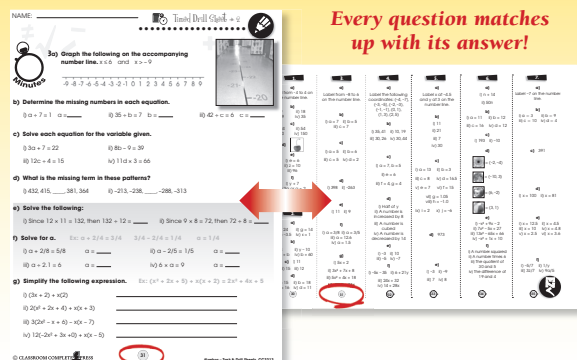
Reproducible **task sheets** and **drill sheets** make up the majority of our resource.

The **task sheets** contain challenging problem-solving tasks in drill form, 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 drill 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*.

The **drill sheets** contain 11 Timed Drill Sheets and 6 Warm-Up Drill Sheets, featuring real-life problem-solving opportunities. The drill sheets are provided to help students with their procedural proficiency skills, as emphasized by the NCTM's *Curriculum Focal Points*.

EASY MARKING™ ANSWER KEY

Marking students' worksheets is fast and easy with our **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 middle school career. Each of the drill sheet problems help students with their procedural proficiency skills, and offers space for reflection and opportunity for the appropriate use of technology.

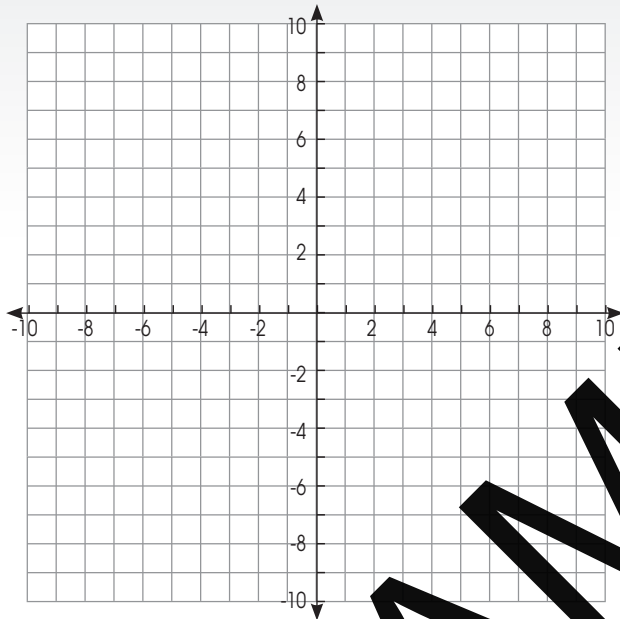
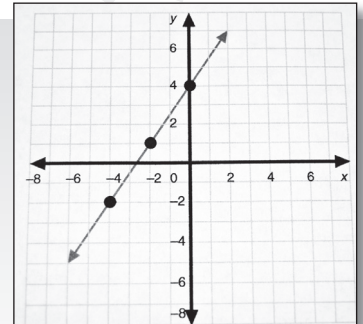
NAME: _____



Task Sheet 15

15a) Complete the chart below using the equation $y = 2x + 2$.

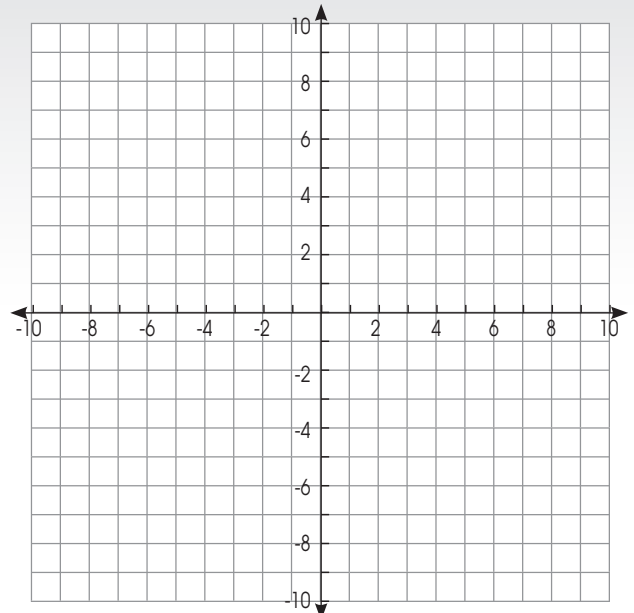
x	-4	-3	-2	-1	0	1	2
y							



Now, plot the coordinates from the chart above on the graph to the left, then draw a straight line through the coordinates.

b) Complete the chart below using the equation $y = 4x - 3$.

x	-1	0	2	3
y				



Now, plot the coordinates from the chart above on the graph to the right, then draw a straight line through the coordinates.



6a) Write an algebraic expression for each phrase:

i) A number increased by fourteen _____

ii) Fifty times a number _____

b) Solve each equation for the variable given.

i) $10a = 110$, $a = \underline{\hspace{2cm}}$

ii) $4b = 48$, $b = \underline{\hspace{2cm}}$

iii) $6c = 96$, $c = \underline{\hspace{2cm}}$

iv) $12d = 144$, $d = \underline{\hspace{2cm}}$

c) What is the missing term in these patterns?

i) 151, 172, _____, 214, 235

ii) 44, 26, 8, _____, -20

d) On the following grid, cite the coordinates for the four objects indicated.



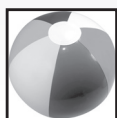
= _____



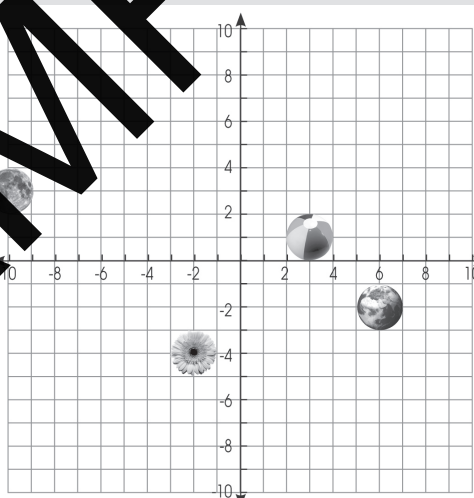
= _____



= _____



= _____



e) Simplify the following expressions.

i) $(x^2 + 2x - 2) + x(7 - 2x)$

ii) $3(2x^2 - x + 9) + x(x - 2)$

iii) $11(x^2 - 5x + 8 - 2) + 2x(x - 5)$

iv) $(-3x^2 + 4x + 10) + x(2x - 3)$

f) Write each as a verbal expression.

i) $t^2 = \underline{\hspace{2cm}}$

ii) $b6 = \underline{\hspace{2cm}}$

iii) $30 \div 5 = \underline{\hspace{2cm}}$

iv) $19 - 4 = \underline{\hspace{2cm}}$