Process Standards Rubric

Algebra – Drill Sheets

Expectations Instructional programs from pre-kindergarten through grade 12 should enable all students to:	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
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.	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

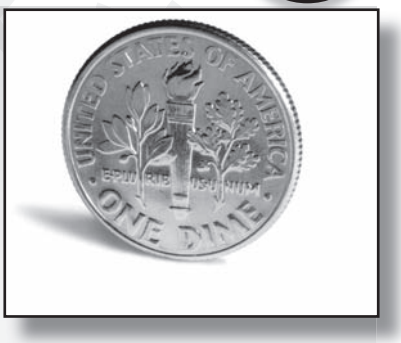
TECHNOLOGY: Students can develop a deeper understanding of mathematics with the appropriate use of technology, which can allow them to focus on decision-making, reflection, reasoning, and problem solving.

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. 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: _____

Timed Drill Sheet # 3

Minutes



5a) Are the following statements true?

Ex: 5 + 5 = 7 + 3 10 = 10

i) 6 + 3 + 2 = 5 + 5 + 1 Yes ☐ No ☐

ii) 9 + 3 + 3 = 6 + 1 + 7 Yes ☐ No ☐

b) Write a plus (+) or a minus (–) sign in the square to make the number sentence true. Ex: 10 ☐ 2 = 8

i) 5 ☐ 8 = 13 ii) 15 ☐ 8 = 7 iii) 25 ☐ 2 = 27

c) Write the missing numbers in the chart.

9			12					

d) An increasing pattern is shown. What are the next four terms in the pattern?

6, 12, 18, 24, 30, ____, ____, ____, ____

Reflection

Jenny collects dimes. Each day this week she saved 2 more dimes than she did the day before. On Monday she saved 3 dimes. How many dimes did she save on Thursday?

i. 8 dimes ii. 9 dimes iii. 10 dimes iv. 11 dimes

NAME: _____

Minutes

12a) Which equation below is correct? _____

i. 8 + 12 = 8 + 6 + 6 ii. 8 + 12 = 8 + 10 + 4

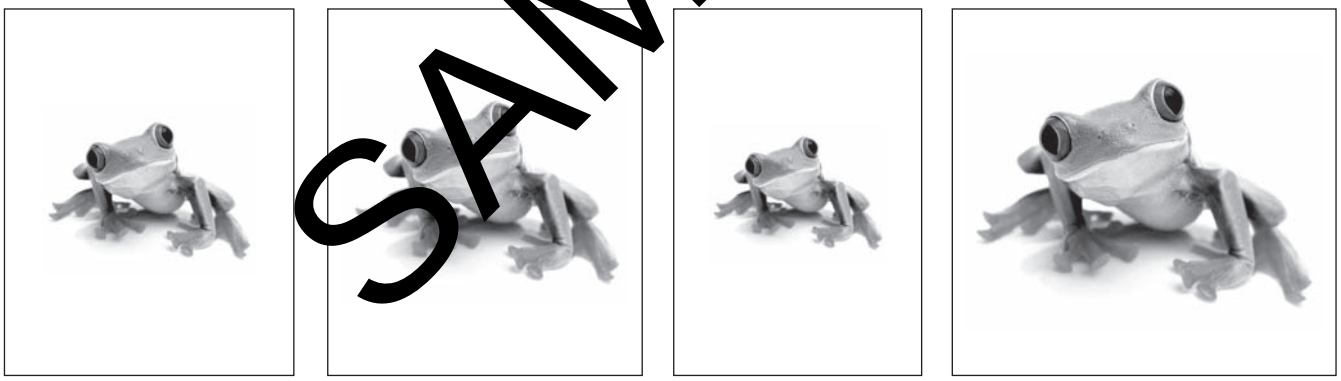
iii. 8 + 12 = 8 + 4 + 10 iv. 8 + 12 = 4 + 4 + 2 + 8

b) Look at this pattern:

How would you show this pattern using letters?

i. ABB ii. ABA iii. AAB iv. BAB

c) Put the following pictures in order from biggest to smallest.



a b c d

d) Write the related addition fact for the following:

Ex: 2 + 5 = 7 5 + 2 = 7

i) 9 + 6 = 15 _____

ii) 8 + 3 = 11 _____