

NCTM Process Standards Rubric



Data Analysis & Probability – Drill Sheets

Expectations	Drills																				
	Warm-up 1	Timed Drill 1	Warm-up 2	Timed Drill 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	
<p>GOAL 1: Problem Solving</p> <p>Instructional programs from pre-kindergarten through grade 12 should enable all students to:</p> <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. 	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<p>GOAL 2: Reasoning & Proof</p> <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. 	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<p>GOAL 3: Communication</p> <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. 	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<p>GOAL 4: Connections</p> <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. 	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<p>GOAL 5: Representation</p> <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. 	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

SAMPLE



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 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 in our resource are activities to help students learn how to collect, organize, analyze, interpret, and predict data probabilities. 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.



Contained in this booklet are 11 Timed Drill Sheets and 6 Warm-Up Drill Sheets, featuring real-life problem-solving opportunities, and 3 review sheets for grades 7-8. Also, there are 3 overheads and 6 additional worksheets which can be accessed on the publisher's website.

How Is Our Resource Organized?

STUDENT HANDOUTS

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

The **drill 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** workbook can be used in correlation with the separate **task sheets** workbook that matches with this particular grade and subject.

The NCTM Content Standards Assessment Rubric (page 4) is a useful tool for evaluating students' 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

Our resource contains three main types of pages, each with a different purpose and layout. 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

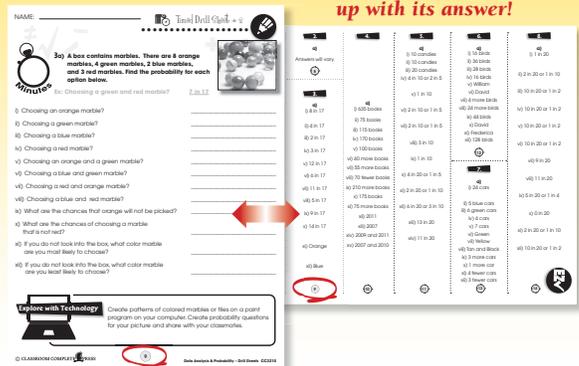
Timed Drill Stopwatch

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

EASY MARKING™ ANSWER KEY

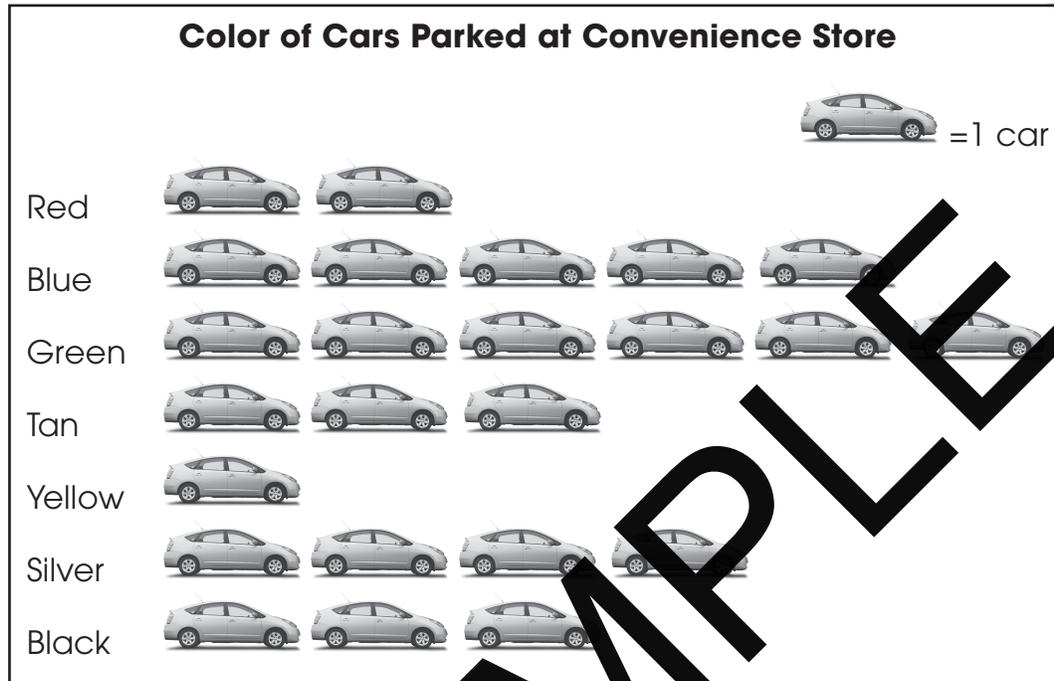
Marking students' worksheets is fast and easy with our **Answer Key**. Answers are listed in columns – just line up the column with its corresponding worksheet, as shown, and see how every question matches up with its answer!

Every question matches up with its answer!





7a) The pictograph below shows the number of colored cars parked at the local convenience store.



- i) How many cars are there in total at the convenience store parking lot? _____
- ii) How many blue cars are in the parking lot? _____
- iii) How many green cars are in the parking lot? _____
- iv) How many tan and yellow cars are in the parking lot? _____
- v) How many silver and blue cars are in the parking lot? _____
- vi) More cars are which color than any other? _____
- vii) The fewest cars are which color than any other? _____
- viii) There are the same number of which color cars in the lot? _____
- ix) How many more cars are green than tan? _____
- x) How many more cars are silver than tan? _____
- xi) How many fewer cars are red than green? _____
- xii) How many fewer cars are tan than green? _____

Reflection

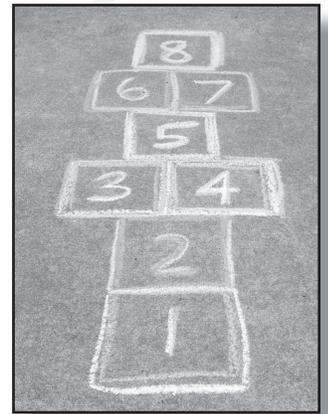
How might the vehicles in the parking lot change if it was a school? Explain your thinking.



12a) The median is the middle number when the data is arranged in order. The range is the difference between the greatest and least numbers in a set of data.

Ex: What is the median and range of the following set of numbers:

4, 6, 17, 3, 9 Median = 6 Range = 14



56, 24, 13, 23, 36, 27, 48

- i) What is the median in this set of numbers? _____
- ii) What is the range in this set of numbers? _____
- iii) What would the median be if 56 was not in the set? _____
- iv) What would the range be if 23 was not in the set? _____

18, 26, 19, 17, 23, 2, 21

- v) What is the median in this set of numbers? _____
- vi) What is the range in this set of numbers? _____
- vii) What number makes the range larger? _____
- viii) What would the range be if 2 was not in the set? _____
- ix) What would the median be if 17 was not in the set? _____

100, 200, 275, 350, 150, 550, 250

- x) What is the median in this set of numbers? _____
- xi) What is the range in this set of numbers? _____
- xii) What number makes the range larger? _____
- xiii) What would be the range is 550 was not in the set? _____
- xiv) What would the median be if 275 was not in the set? _____

SAMPLE