

## Numeracy

### GRADE 2

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# Numeracy in Grade 2

**I**n Grade 2, many mathematical activities involve numeracy. Students are expected to apply mathematical concepts and skills to realistic and engaging problems or tasks provided by their teachers.

Often, all or part of the numeracy activity is completed collaboratively. When students do work independently, they have had many previous opportunities to observe and complete similar tasks with the support of the teacher and peers. The following briefly describes typical Grade 2 numeracy tasks. For quick reference, these have been grouped according to purpose. In fact, a single numeracy task or problem may address several purposes.

## MONEY TASKS

- ◆ After reading a story about caps for sale, choose two caps from a list and use paper coins to show how much each would cost.
- ◆ Use paper coins to buy real animal crackers of various prices—first one, then two, then three—showing their change each time.
- ◆ Identify and use coin cut-outs to record money needed for own drink order in two ways. Compare number of coins used in each way, choose one combination, and explain choice.

## CHANCE TASKS

- ◆ Use spinners, dice, or coins to make predictions and play simple games.

## DATA ANALYSIS

- ◆ Graph the daily weather, then draw conclusions and make predictions.
- ◆ Collect, tally, and interpret data; draw conclusions; and make predictions from real classroom activities such as drink orders.
- ◆ Ask a question, collect data, create a graph, and draw conclusions.
- ◆ After collaborating to create a graph or pictograph showing height or hand size of girls and boys in the class, individually record conclusions and predictions.

## MEASUREMENT AND OTHER APPLICATIONS OF SHAPE AND SPACE

- ◆ Choose, estimate, measure, and record linear measurement of classroom objects using three measuring tools—a ruler, a metre stick, and a measuring tape.

- ◆ Use non-standard measures to determine how much pop or milk to order for a classroom party.
- ◆ Choose an activity and estimate time for completion. Use an analogue clock to record starting time. Conduct activities and record time elapsed, then compare actual time taken to estimates.

Whenever possible, numeracy tasks should arise naturally from classroom activities and interests. Often, students can help to discover and create numeracy problems for themselves and their classmates. In most cases, these tasks involve a series of steps or stages and will require an extended amount of time. Relatively short questions with a single correct procedure and answer are not appropriate for performance assessment.

## Quick Scale: Grade 2 Numeracy

This Quick Scale is a summary of the criteria described in detail in the Rating Scale that follows. These criteria may apply at any time of the year, depending when specific skills or concepts are introduced.

| Aspect   | Not Yet Within Expectations  | Meets Expectations<br>(Minimal Level)  | Fully Meets Expectations   | Exceeds Expectations   |
|--|--|--|--|--|
| <b>SNAPSHOT</b>  | <i>The student may be unable to complete the task in a reasonable amount of time without one-to-one help.</i>  | <i>Most parts of the basic task are correct; some errors or omissions. The student may have difficulty explaining the result. May need some assistance.</i>  | <i>In familiar situations, the student completes all parts of the basic task accurately and can explain the result. May need occasional consultation.</i>  | <i>The student completes all parts of the task accurately and efficiently and explains the result. May develop an extension or alternative method.</i>   |
| <b>CONCEPTS AND APPLICATIONS*</b> <ul style="list-style-type: none"> <li>recognizing mathematics</li> <li>grade-specific concepts, skills</li> <li>estimates, predictions</li> </ul> | <ul style="list-style-type: none"> <li>has difficulty seeing the relevance or application of mathematics to everyday problems</li> <li>needs one-to-one support to select and apply appropriate processes</li> <li>estimates and predictions are often guesses or wishes; may be very illogical</li> </ul> | <ul style="list-style-type: none"> <li>if prompted, identifies ways to use mathematics in problems similar to those previously encountered</li> <li>in simple, familiar situations, can select and apply most appropriate processes; some errors</li> <li>in familiar situations, most estimates and predictions are within the bounds of logic</li> </ul> | <ul style="list-style-type: none"> <li>with some support, identifies ways to apply mathematics to everyday problems</li> <li>in familiar situations, selects and applies appropriate processes to solve simple problems; minor errors</li> <li>in familiar, relatively simple situations, estimates and predictions are logical</li> </ul> | <ul style="list-style-type: none"> <li>may independently find ways to apply mathematics to everyday problems</li> <li>selects and applies appropriate processes to solve simple problems; efficient</li> <li>makes logical estimates and predictions in both familiar and unfamiliar situations</li> </ul> |
| <b>STRATEGIES AND APPROACHES</b> <ul style="list-style-type: none"> <li>procedures</li> <li>estimates to verify solutions</li> </ul>   | <ul style="list-style-type: none"> <li>requires extensive support to follow modelled procedures and complete tasks</li> <li>unable to verify answers</li> </ul>  | <ul style="list-style-type: none"> <li>attempts to follow modelled procedures; may confuse order</li> <li>needs help to verify answers; estimates may be illogical</li> </ul>  | <ul style="list-style-type: none"> <li>follows modelled procedures</li> <li>with prompting, verifies answers or results with estimation or a calculator</li> </ul>   | <ul style="list-style-type: none"> <li>follows modelled procedures; may find an alternative or shortcut</li> <li>may independently verify answers or results</li> </ul>  |
| <b>ACCURACY</b> <ul style="list-style-type: none"> <li>recording, calculations</li> </ul>  | <ul style="list-style-type: none"> <li>often includes major errors in recording or calculations</li> </ul>   | <ul style="list-style-type: none"> <li>some recording or calculation errors</li> </ul>   | <ul style="list-style-type: none"> <li>recording and calculations are generally accurate; may be minor errors</li> </ul>   | <ul style="list-style-type: none"> <li>recording and calculations are generally accurate; may use mental math</li> </ul>   |
| <b>REPRESENTATION AND COMMUNICATION</b> <ul style="list-style-type: none"> <li>representing numbers</li> <li>explaining procedures, results</li> </ul>                               | <ul style="list-style-type: none"> <li>work may be unclear, confusing, or presented in an inconsistent format</li> <li>unable to explain or demonstrate how to complete the task</li> </ul>  | <ul style="list-style-type: none"> <li>work is generally clear; may be confusing to follow in some places</li> <li>with prompting, repeats some basic explanations given by the teacher</li> </ul>   | <ul style="list-style-type: none"> <li>work is generally clear, easy to follow; may be messy in places</li> <li>repeats explanations or demonstrations given by the teacher</li> </ul>   | <ul style="list-style-type: none"> <li>work is clear, easy to follow</li> <li>explains processes and results in own words; demonstrates strategies and processes used</li> </ul>   |

\* You may want to list key curriculum concepts or skills for a particular task.

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## Rating Scale: Grade 2 Numeracy

These criteria may apply at any time of the year, depending when specific skills or concepts are introduced. \*

| Aspect  | Not Yet Within Expectations  | Meets Expectations (Minimal Level)   |
|---|--|--|
| <b>SNAPSHOT</b>   | <i>The student may be unable to complete the task in a reasonable amount of time without one-to-one help.</i>  | <i>The student completes most parts of the basic task correctly, if the task resembles one recently completed in class. However, work is flawed or incomplete in some way, and the student may have difficulty explaining the result. May need some assistance.</i>  |
| <b>CONCEPTS AND APPLICATIONS**</b> <ul style="list-style-type: none"> <li>recognizing mathematics</li> <li>grade-specific concepts, skills</li> <li>estimates, predictions</li> </ul> | <ul style="list-style-type: none"> <li>has difficulty seeing the relevance or application of mathematics to everyday problems</li> <li>needs one-to-one support to select and apply appropriate rules, operations, tools, or methods to solve simple problems (e.g., may be unable to choose appropriate measuring tool and use it correctly; may not know when to add or subtract)</li> <li>estimates and predictions are often guesses or wishes; may be very illogical</li> </ul> | <ul style="list-style-type: none"> <li>with prompting, identifies ways to apply mathematical skills to everyday problems that are similar to those previously encountered in class (e.g., money, measurement, chance)</li> <li>in simple, familiar situations (i.e., those recently modelled in class), selects and applies most appropriate rules, operations, tools, or methods to solve simple problems (e.g., choose appropriate measuring tool and use it correctly; decide when to add or subtract); some errors</li> <li>in familiar situations, most estimates and predictions are within the bounds of logic; may need prompting to use number and spatial sense and to recognize patterns</li> </ul> |
| <b>STRATEGIES AND APPROACHES</b> <ul style="list-style-type: none"> <li>procedures</li> <li>estimates to verify solutions</li> </ul>  | <ul style="list-style-type: none"> <li>requires extensive support to follow modelled procedures and complete all parts of the task</li> <li>unable to verify the answer by using estimations or calculators</li> </ul>   | <ul style="list-style-type: none"> <li>attempts to follow modelled procedures, but may confuse order or make an inappropriate choice</li> <li>needs help to use estimation or a calculator to verify the answer; independent estimations may be illogical</li> </ul>   |
| <b>ACCURACY</b> <ul style="list-style-type: none"> <li>recording, calculations</li> </ul>   | <ul style="list-style-type: none"> <li>often includes major errors in recording or calculations</li> </ul>   | <ul style="list-style-type: none"> <li>some recording or calculation errors</li> </ul>   |
| <b>REPRESENTATION AND COMMUNICATION</b> <ul style="list-style-type: none"> <li>representing numbers</li> <li>explaining procedures, results</li> </ul>                                | <ul style="list-style-type: none"> <li>work may be unclear, confusing, or presented in an inconsistent format</li> <li>unable to explain or demonstrate how to complete most or all parts of the task</li> </ul>   | <ul style="list-style-type: none"> <li>work is generally clear; may be confusing to follow in some places</li> <li>with prompting, repeats some explanations or demonstrations the teacher has given about parts of the task</li> </ul>  |

\* Student performance that falls within the wide range of expectations for Grade 2 generally matches the Level 2 descriptions in the reference set Evaluating Mathematical Development Across Curriculum.

\*\*Some of the curriculum concepts and skills students are expected to apply in completing numeracy tasks are specific to the type of task. The shaded charts below the Rating Scale show some of the concepts and skills most likely to apply in Grade 2.

### MONEY TASKS

Typical money tasks at this level involve manipulatives (stampers, paper cut-outs, or real coins).

- skip count
- use coins and bills to solve simple money problems
- use dollars and cents signs

### CHANCE TASKS

- with support, describe the likeliness of an outcome and make predictions when observing or replicating simple probability experiments
- use terms such as *likely, unlikely, fair chance, probably*

|  | Fully Meets Expectations  | Exceeds Expectations   |
|--|---|--|
|  | <i>In familiar situations, the student completes all parts of the basic task accurately and can explain the result. May need occasional consultation.</i>   | <i>The student completes all parts of the task accurately and efficiently and explains the result. May develop an extension or alternative method.</i>   |
|  | <ul style="list-style-type: none"> <li>• with some support, identifies ways that mathematical concepts and skills can be used to solve everyday problems (e.g., money, measurement, chance, data questions)</li> <li>• in familiar situations, selects and applies appropriate rules, operations, tools, or methods to solve simple problems (e.g., chooses appropriate measuring tool and uses it correctly; knows whether to add or subtract); minor errors</li> <li>• in familiar, relatively simple situations, makes logical estimates and predictions using number and spatial sense and recognition of patterns</li> </ul> | <ul style="list-style-type: none"> <li>• may independently find ways to apply mathematics to everyday problems</li> <li>• selects and applies appropriate rules, operations, tools, or methods to solve simple problems (e.g., chooses appropriate measuring tool and uses it correctly; knows whether to add or subtract); efficient</li> <li>• in both familiar and unfamiliar situations, makes logical estimates and predictions using number and spatial sense and recognition of patterns</li> </ul> |
|  | <ul style="list-style-type: none"> <li>• follows modelled procedures</li> <li>• with prompting, verifies answers or results by using estimation or a calculator</li> </ul>  | <ul style="list-style-type: none"> <li>• follows modelled procedures; may find an alternative procedure or shortcut</li> <li>• may independently verify answers or results by using inverse operations, estimation, or a calculator</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>• recording and calculations are generally accurate, but may include minor errors</li> </ul>   | <ul style="list-style-type: none"> <li>• recording and calculations are generally accurate; may use mental math to arrive at a correct answer quickly</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>• work is generally clear and easy to follow; may be messy in places</li> <li>• with minimal prompting, repeats explanations or demonstrations the teacher has given for all or part of the task</li> </ul>  | <ul style="list-style-type: none"> <li>• work is clear and easy to follow</li> <li>• explains processes and results in own words; demonstrates strategies and processes used</li> </ul>  |

#### DATA ANALYSIS

- contribute questions modelled on those suggested by the teacher or previously investigated by class
- suggest attributes or categories for collecting or sorting data
- collect and record first-hand data using a recording format provided by the teacher
- sort data
- construct bar graphs and pictographs using a template provided

#### MEASUREMENT

- estimate, measure, compare, and order shapes, objects, and containers, using standard and non-standard units
- length, mass, volume
- time
- temperature
- use basic measurement and comparison terms (e.g., *more than*, *less than*, *equal*, *length*, *width*)

#### OTHER APPLICATIONS OF SHAPE AND SPACE

- describe, compare, and sort shapes and objects
- construct designs





## Sample 1: Drink Day Data (Data Analysis)

### CONTEXT

This school periodically has a drink-order day when students are able to choose, order, and pay for healthy drinks. This provided the teacher with an opportunity to have students collect first-hand data. Students had previous classroom experience with tallying, creating a bar graph from a tally, and predicting outcomes based on results.

### MATHEMATICAL CONCEPTS

- ◆ actively collect first-hand data
- ◆ record data using tallies
- ◆ display data on a bar graph
- ◆ discuss data, communicate conclusions, and make predictions

### PROCESS

The teacher had students collect first-hand data from their drink orders, tally the results, interpret the data, and make predictions based on gender.

Students filled out their individual drink order forms and then worked in groups of four or five girls or boys to make a group tally sheet of drink orders. All the boys in the class met in the carpeted meeting area, and the teacher made a master tally sheet. Then she met with all the girls and made a master tally sheet for them. Students worked individually to use the information from the master tally sheets to make bar graphs.

The teacher discussed the results with the class as a whole and then had students write individual responses in their math journals. Students were also asked to make predictions based on the results.

NOT YET WITHIN EXPECTATIONS

Teacher's Observations

This student was unable to complete all parts of the task, even with one-to-one support throughout. She was unable to tally correctly and required assistance to construct the bar graph. With prompting, she was able to make some simple correct interpretations from the accurate data on another student's graph.

|                | Not Yet | Meets | Fully | Exceeds |
|----------------|---------|-------|-------|---------|
| SNAPSHOT       |         |       |       |         |
| CONCEPTS       |         |       |       |         |
| STRATEGIES     |         |       |       |         |
| ACCURACY       |         |       |       |         |
| REPRESENTATION |         |       |       |         |

- ◆ needs one-to-one support to select and apply appropriate methods to solve simple problems
- ◆ requires extensive support to follow modelled procedures and complete all parts of the task
- ◆ includes major errors in recording
- ◆ work is unclear, confusing

DONUT AND DRINK DAY  
THURSDAY, JANUARY 28

ORDERS IN BY: Tuesday, January 18

STUDENT: \_\_\_\_\_

DIV. \_\_\_\_\_

|                |   |   |     |      |
|----------------|---|---|-----|------|
| Glazed Donuts  | / | x | .50 | 50   |
| Chocolate Milk | / | x | .60 | 60   |
| White Milk     | — | x | .60 | —    |
| Apple Juice    | — | x | .60 | —    |
| Orange Juice   | — | x | .60 | —    |
| Total          |   |   |     | 1.10 |

Note: Please enclose exact change.  
One form per child.  
Please use plastic bag provided to avoid lost money.  
If you can help count money on Wednesday, January 20, we would like to see you at 8:00 a.m. in Room 8.

Tally of Drinks

|                |           |
|----------------|-----------|
| Chocolate Milk | / / / / / |
| White Milk     | —         |
| Apple Juice    | —         |
| Orange Juice   | —         |

DRINK DAY

| Drink          | Count |
|----------------|-------|
| chocolate milk | 10    |
| white milk     | 0     |
| apple juice    | 0     |
| orange juice   | 0     |

### DRINK TALLY ACTIVITY

1. WHAT DID YOU LEARN FROM THE GRAPHS?

more girls like  
Chocolate milk  
more Boys like  
Chocolate milk

2. WHO NEEDS TO KNOW THIS INFORMATION?

The principal  
BUT for th

3. PREDICT WHAT MRS. MORRISON S GRADE TWO CLASS  
WOULD PICK?

A BOY IN HER CLASS \_\_\_\_\_

A GIRL IN HER CLASS \_\_\_\_\_

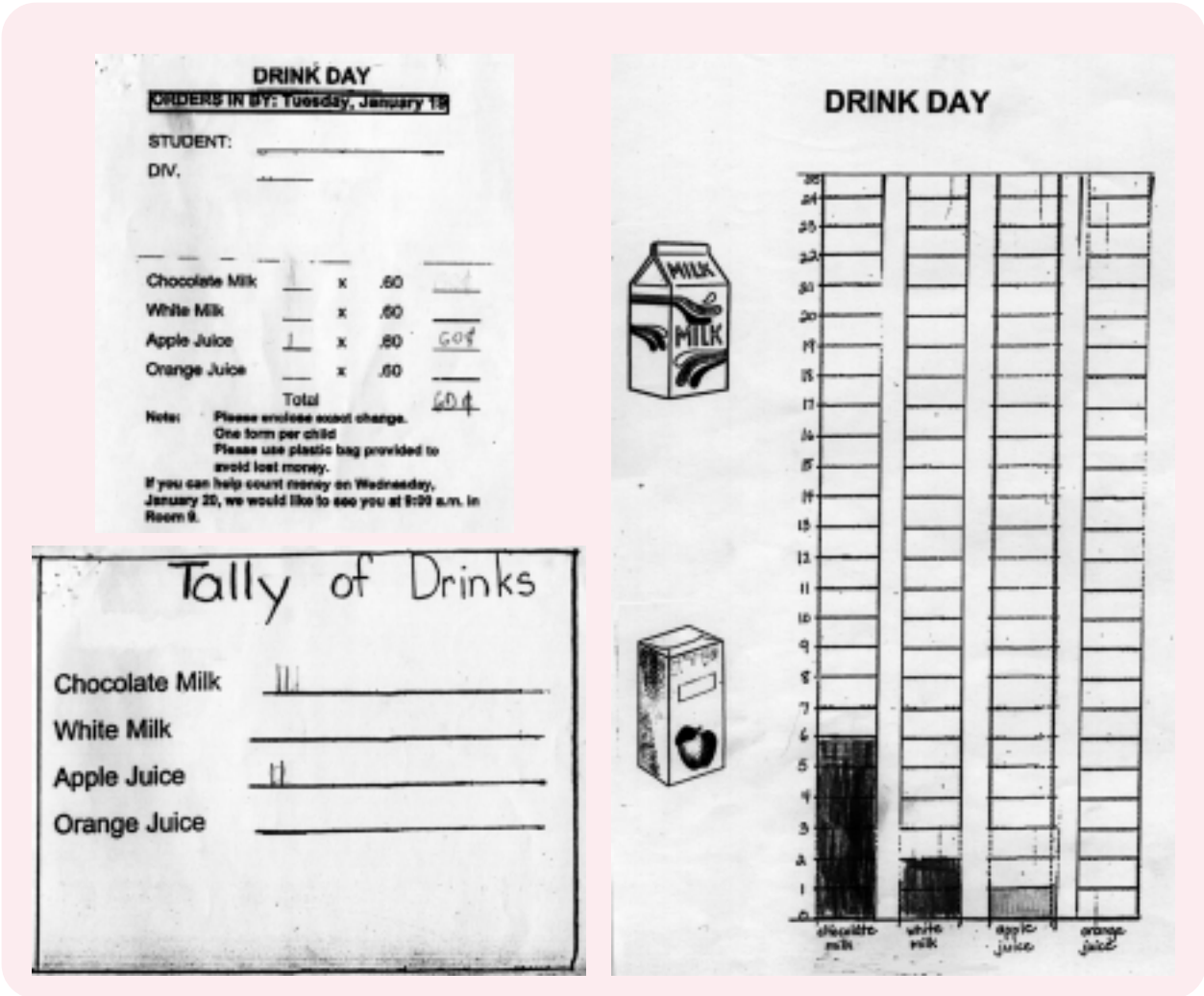
MEETS EXPECTATIONS (MINIMAL LEVEL)

Teacher's Observations

This student required some assistance at various points in the task. He made several errors in constructing the bar graph. However, he was able to make simple but accurate interpretations and his prediction was logical and based on the data.

|                | Not Yet | Meets | Fully | Exceeds |
|----------------|---------|-------|-------|---------|
| SNAPSHOT       |         |       |       |         |
| CONCEPTS       |         |       |       |         |
| STRATEGIES     |         |       |       |         |
| ACCURACY       |         |       |       |         |
| REPRESENTATION |         |       |       |         |

- ◆ in simple, familiar situations, selects and applies most appropriate methods to solve simple problems; some errors
- ◆ in familiar, relatively simple situations, makes logical estimates using recognition of patterns
- ◆ attempts to follow modelled procedures, but confuses order and makes an inappropriate choice
- ◆ some recording errors
- ◆ work is generally clear; confusing in some places



- ① There are more girls than boys.
- ② Your mom and dad need to know this.
- ③ They will have chocolate milk.
- ④ more people like chocolate milk better.
- ⑤ some people like white milk a little.

FULLY MEETS EXPECTATIONS

Teacher's Observations

This student worked independently. Her bar graph is somewhat untidy, but the information is accurate. Her interpretation and predictions are logically based on the data.

- ◆ in familiar situations, selects and applies appropriate methods to solve simple problems
- ◆ in familiar, relatively simple situations, makes logical estimates and predictions using recognition of patterns
- ◆ follows modelled procedures
- ◆ recording is generally accurate
- ◆ work is generally clear and easy to follow; messy in places

|                | Not Yet | Meets | Fully | Exceeds |
|----------------|---------|-------|-------|---------|
| SNAPSHOT       |         |       |       |         |
| CONCEPTS       |         |       |       |         |
| STRATEGIES     |         |       |       |         |
| ACCURACY       |         |       |       |         |
| REPRESENTATION |         |       |       |         |

DRINK DAY

ORDERS IN BY: Tuesday, January 19

STUDENT: \_\_\_\_\_

DRV. \_\_\_\_\_

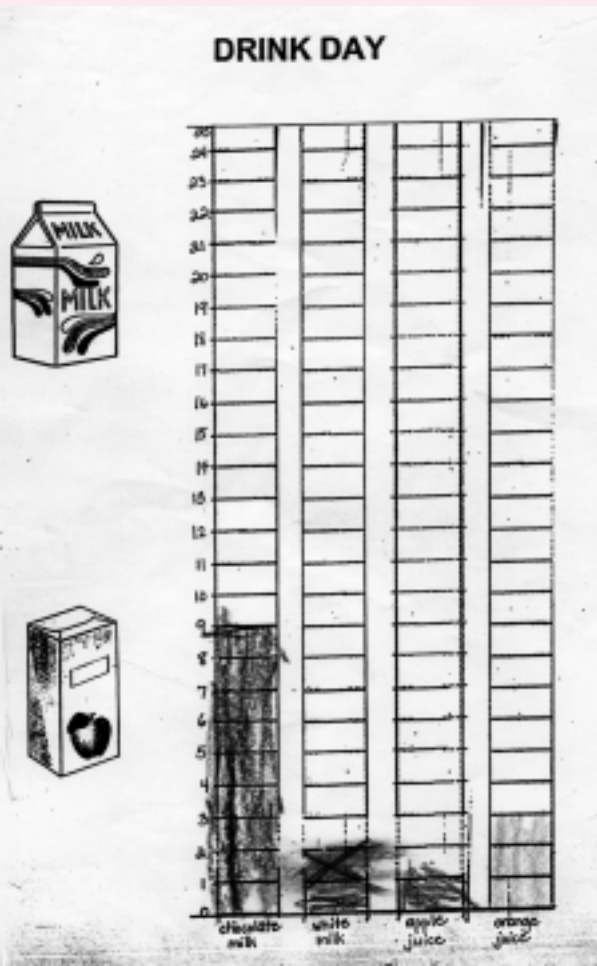
|                |   |   |     |      |
|----------------|---|---|-----|------|
| Chocolate Milk | 1 | x | .60 | .60  |
| White Milk     | — | x | .60 | —    |
| Apple Juice    | — | x | .60 | —    |
| Orange Juice   | — | x | .60 | —    |
| Total          |   |   |     | 2.40 |

Note: Please enclose exact change.  
One form per drink.  
Please use plastic bag provided to avoid lost money.

If you can help count money on Wednesday, January 20, we would like to see you at 8:00 a.m. in Room 8.

Tally of Drinks

|                |   |
|----------------|---|
| Chocolate Milk |   |
| White Milk     | 0 |
| Apple Juice    | 0 |
| Orange Juice   | 1 |





| girls<br>Drink  | boys<br>Day   |
|---|---|
| <p>① To tell people how much others who likes who girls like chocolate milk the most.</p> | <p>① to tell others now what you like. So if you like to have a drink</p>                               |
| <p>② Your mom and Dad need to no this. A party needs to no.</p>                           | <p>its on the table waiting for you.</p>  |
| <p>③ If a girl came in I predict she would pick chocolate milk</p>                        | <p>③ Your Parints need to no this. ④ If we brang a boy into the class he would pick chocolate milk.</p> |

EXCEEDS EXPECTATIONS

Teacher's Observations

This student worked confidently and efficiently to construct his bar graph and answer the questions. His explanation of results and his prediction are logically based on the data and show insight.

|                | Not Yet | Meets | Fully | Exceeds |
|----------------|---------|-------|-------|---------|
| SNAPSHOT       |         |       |       |         |
| CONCEPTS       |         |       |       |         |
| STRATEGIES     |         |       |       |         |
| ACCURACY       |         |       |       |         |
| REPRESENTATION |         |       |       |         |

- ◆ selects and applies appropriate methods to solve simple problems; efficient
- ◆ makes logical predictions, using number sense and recognition of patterns
- ◆ follows modelled procedures
- ◆ recording is accurate
- ◆ work is clear and easy to follow
- ◆ explains processes and results in own words

**DRINK DAY**  
**ORDERS IN BY: Tuesday, January 19**

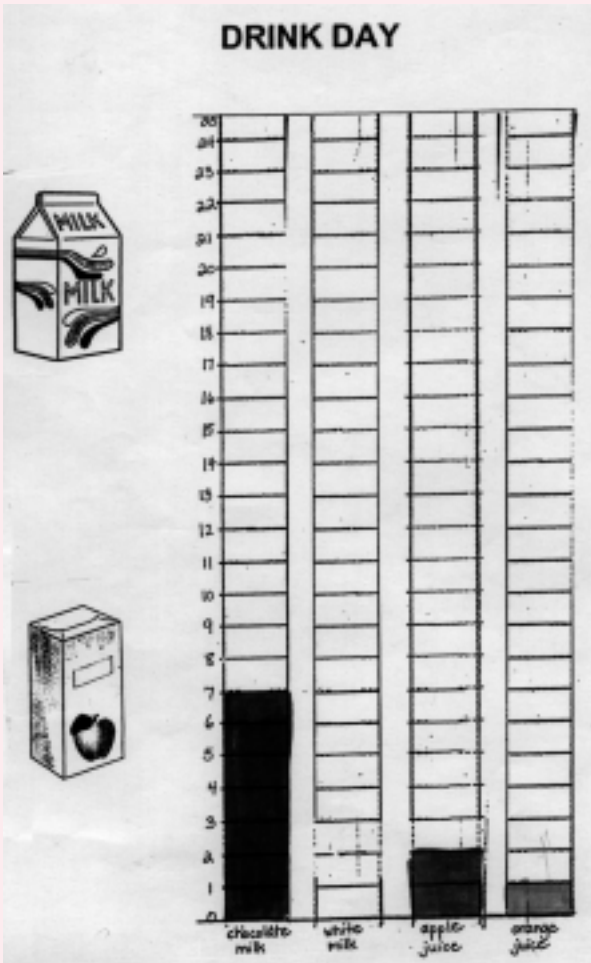
STUDENT: \_\_\_\_\_  
DIV. \_\_\_\_\_

|                |   |   |     |     |
|----------------|---|---|-----|-----|
| Chocolate Milk | 1 | x | .60 | 60¢ |
| White Milk     | — | x | .60 | —   |
| Apple Juice    | — | x | .60 | —   |
| Orange Juice   | — | x | .60 | —   |
| Total          |   |   |     | 60¢ |

Note: Please enclose exact change.  
One form per child.  
Please use plastic bag provided to avoid lost money.  
If you can help count money on Wednesday, January 20, we would like to see you at 8:00 a.m. in Room 9.

**Tally of Drinks**

|                |   |
|----------------|---|
| Chocolate Milk |   |
| White Milk     | — |
| Apple Juice    |   |
| Orange Juice   | — |





1. What did you learn from these graphs? I learned that most people in our class like chocolate milk.

2. Only one person in our class likes white milk. The girls like chocolate milk more than the boys.

2. Your Mom and Dad need to know this to sign you up.

3. I bet Mrs. Millens class would pick chocolate milk.

## Sample 2: Drink Orders (Money)

### CONTEXT

Note: In the class, this activity immediately followed Sample 1 (Drink Day Data).

This school periodically has a drink day when students are able to choose, order, and pay for healthy drinks. Students had previous classroom practice identifying and using coins in mixed amount to \$1.00.

### MATHEMATICAL CONCEPTS

- ◆ identify and use coins to count and create equivalent sets
- ◆ read and write both forms of money notation—89¢ and \$0.89

### PROCESS

Students were asked to fill out their drink order forms and record the total owing. They were given coin cut-outs and asked to show two different ways they could pay for their drink orders. They pasted their answers on the template provided by the teacher. (Note: Students could use coin stampers instead of paper cut-outs.) The students were then asked to consider the number of coins used, choose the combination of coins they would prefer to use, and explain their choices.

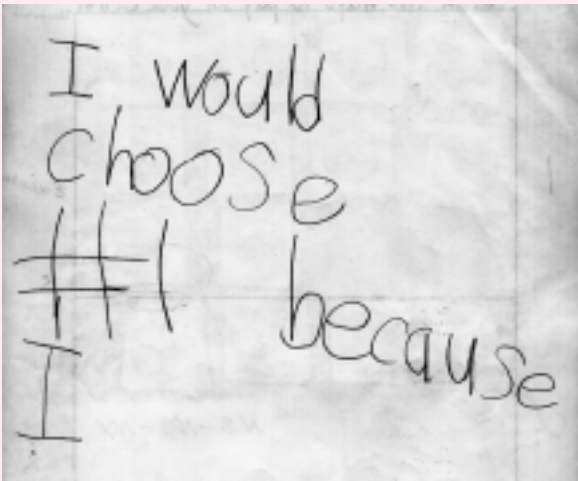
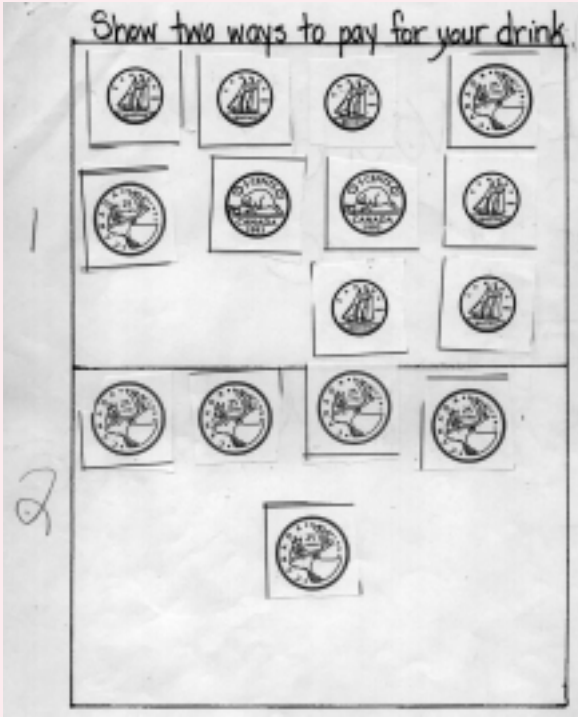
NOT YET WITHIN EXPECTATIONS

Teacher’s Observations

Although this student had one-to-one assistance, she was unable to arrive at correct totals. She did not complete the second part of the task.

- ◆ needs one-to-one support to select and apply appropriate methods to solve simple problems
- ◆ requires extensive support to follow modelled procedures and complete all parts of the task
- ◆ includes major errors in recording or calculation

|                | Not Yet | Meets | Fully | Exceeds |
|----------------|---------|-------|-------|---------|
| SNAPSHOT       |         |       |       |         |
| CONCEPTS       |         |       |       |         |
| STRATEGIES     |         |       |       |         |
| ACCURACY       |         |       |       |         |
| REPRESENTATION |         |       |       |         |



MEETS EXPECTATIONS (MINIMAL LEVEL)


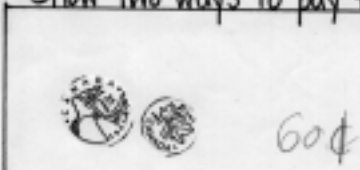
Teacher's Observations

This student worked independently. Although both her answers are incorrect, she was able to tell the teacher that she meant to use two quarters and a dime in the first case and six dimes in the second case. Her explanation is reasonable.

|                | Not Yet | Meets | Fully | Exceeds |
|----------------|---------|-------|-------|---------|
| SNAPSHOT       |         |       |       |         |
| CONCEPTS       |         |       |       |         |
| STRATEGIES     |         |       |       |         |
| ACCURACY       |         |       |       |         |
| REPRESENTATION |         |       |       |         |

- ◆ in simple, familiar situations, selects and applies most appropriate operations or methods to solve simple problems; some errors
- ◆ attempts to follow modelled procedures
- ◆ needs help to use estimation or a calculator to verify the answer
- ◆ work is generally clear

Show two ways to pay for your drink.



Number two has the most coins.

Number one has the least coins.

I would use one because it would be easy to find.

FULLY MEETS EXPECTATIONS

Teacher’s Observations

This student provided two correct answers and gave a logical explanation.

- ◆ in familiar situations, selects and applies appropriate operations or methods to solve simple problems
- ◆ follows modelled procedures
- ◆ recording and calculations are accurate
- ◆ work is generally clear and easy to follow

|                | Not Yet | Meets | Fully | Exceeds |
|----------------|---------|-------|-------|---------|
| SNAPSHOT       |         |       |       |         |
| CONCEPTS       |         |       |       |         |
| STRATEGIES     |         |       |       |         |
| ACCURACY       |         |       |       |         |
| REPRESENTATION |         |       |       |         |



Which has the most coins and the least? Number one has the most coins and number two has the least. Which way would you use? I would pick number two? Why? So it would be easy to count.

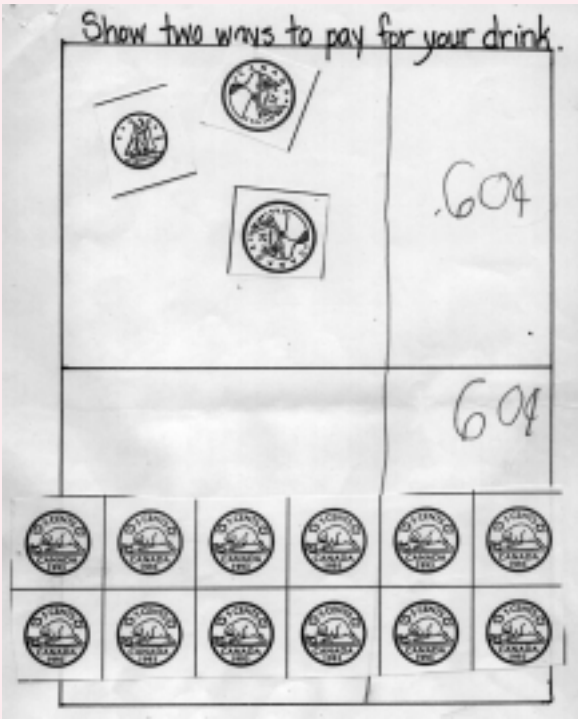
EXCEEDS EXPECTATIONS

Teacher's Observations

This student found the task too easy and deliberately set out to make her samples illustrate the least-and most-possible coins, although she subsequently decided against pasting 60 pennies. She worked confidently and efficiently. Both answers are accurate, and the explanation is logical.

|                | Not Yet | Meets | Fully | Exceeds |
|----------------|---------|-------|-------|---------|
| SNAPSHOT       |         |       |       |         |
| CONCEPTS       |         |       |       |         |
| STRATEGIES     |         |       |       |         |
| ACCURACY       |         |       |       |         |
| REPRESENTATION |         |       |       |         |

- ◆ may independently find ways to apply mathematics to everyday problems
- ◆ selects and applies appropriate operations or methods to solve simple problems; efficient
- ◆ follows modelled procedures; finds alternative procedures
- ◆ recording and calculations are accurate
- ◆ work is clear and easy to follow



Number two has the most coins.  
Number one has the least coins.  
① Number one is the one I would  
use. Because it has three coins. So  
it is easier to count out.

## **Sample 3: Measuring Objects in the Classroom (Measurement)**

### **CONTEXT**

Students had previously practised strategies for estimating length and strategies for using rulers, meter sticks, and measuring tapes correctly. They had also talked about which tool would be the best choice to measure various kinds of objects.

### **MATHEMATICAL CONCEPTS**

- ◆ estimate, measure, record, compare, and order objects, using standard units
- ◆ select the most appropriate standard unit for measuring length
- ◆ relate the size of units to the number of units needed when measuring
- ◆ read and write numerals

### **PROCESS**

Students were asked to estimate the length of five items in the classroom, choose an appropriate measuring tool (ruler, metre stick, or measuring tape), and measure the objects. Students were given a chart on which to record the following information: their estimates, the tools they used, and their actual measurements. Then they were asked to use their actual measurements to list the objects from shortest to longest. They were also asked to explain how they got their answers and what they found out from the activity.




NOT YET WITHIN EXPECTATIONS

Teacher's Observations

This student required one-to-one help throughout the task. Several estimates are illogical, and some measurements are inaccurate. He was unable to accurately order the objects by size.

|                | Not Yet | Meets | Fully | Exceeds |
|----------------|---------|-------|-------|---------|
| SNAPSHOT       |         |       |       |         |
| CONCEPTS       |         |       |       |         |
| STRATEGIES     |         |       |       |         |
| ACCURACY       |         |       |       |         |
| REPRESENTATION |         |       |       |         |

- ◆ needs one-to-one support to select and apply appropriate tools and methods
- ◆ estimates are often guesses
- ◆ requires extensive support to follow modelled procedures and complete all parts of the task
- ◆ major errors in recording
- ◆ unable to explain or demonstrate how to complete the task



### Measurement



| what I measured | What tool I used | My estimate | My measurement |
|-----------------|------------------|-------------|----------------|
| name            | ruler            | 5cm         | 8cm            |
| train           | tape measure     | 18cm        | 38cm           |
| chain           | tape measure     | 18cm        | 58cm           |
| Story           | tape measure     | 13cm        | 48cm           |
| computer        | metre sticks     | 20cm        | 48cm           |

List from smallest to biggest.

story

train

chair

name

computer

I got my answer bys  
counting in cm.

I found out that:  
The tape was good for the story  
pickcher.




## MEETS EXPECTATIONS (MINIMAL LEVEL)

### Teacher's Observations

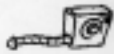
This student had difficulty making logical estimates, but was able to choose appropriate measurement tools and accurately measure and order objects by size. The explanation simply restated the task.

- ◆ with prompting, identifies ways to apply mathematical skills to everyday problems that are similar to those previously encountered in class
- ◆ in simple, familiar situations, selects and applies most appropriate methods
- ◆ estimates are often guesses
- ◆ attempts to follow modelled procedures
- ◆ work is generally clear
- ◆ with prompting, repeats some explanations the teacher has given about parts of the task

|                | Not Yet | Meets | Fully | Exceeds |
|----------------|---------|-------|-------|---------|
| SNAPSHOT       |         |       |       |         |
| CONCEPTS       |         |       |       |         |
| STRATEGIES     |         |       |       |         |
| ACCURACY       |         |       |       |         |
| REPRESENTATION |         |       |       |         |



## Measurement



| What I measured  | What tool I used | My estimate | My measurement |
|------------------|------------------|-------------|----------------|
| Mrs. G. ...      | Tape             | 50 cm       | 165 cm         |
| Our magnet chart | tape measure     | 99 cm       | 125 cm         |
| My chair         | tape measure     | 49 cm       | 85 cm          |
| My hair          | ruler            | 20 cm       | 66 cm          |
| My eraser        | ruler            | 2 cm        | 2 cm           |

List from smallest to biggest.

My eraser      My hair      My chair  
Our magnet chart      Mrs. G. ...

I got my answer by: measuring stuff around  
the class.

I found out that:  
Mrs. G. ... was the biggest and my eraser  
the smallest


## FULLY MEETS EXPECTATIONS

### Teacher's Observations


This student's estimates are reasonably logical, except for the largest object. He was able to choose appropriate measurement tools and measure accurately. He made one error in recording units (m instead of cm for the door). He accurately ordered objects by size and was able to explain his work in simple terms.

|                | Not Yet | Meets | Fully | Exceeds |
|----------------|---------|-------|-------|---------|
| SNAPSHOT       |         |       |       |         |
| CONCEPTS       |         |       |       |         |
| STRATEGIES     |         |       |       |         |
| ACCURACY       |         |       |       |         |
| REPRESENTATION |         |       |       |         |

- ◆ with some support, identifies ways that mathematical concepts and skills can be used to solve everyday problems
- ◆ in familiar situations, selects and applies appropriate methods to solve simple problems
- ◆ in familiar, relatively simple situations, makes logical estimates using number and spatial sense
- ◆ follows modelled procedures
- ◆ recording is generally accurate, but includes minor errors
- ◆ work is generally clear and easy to follow
- ◆ with minimal prompting, repeats explanations the teacher has given for the task



## Measurement



| What I measured | What tool I used | My estimate | My measurement |
|-----------------|------------------|-------------|----------------|
| My felt         | a ruler          | 10 cm       | 17 cm          |
| door            | a meterstick     | 100 cm      | 200 m          |
| My hand         | a tape           | 5 cm        | 14 cm          |
| a book          | a ruler          | 15          | 23 cm          |
| My leg          | a tape           | 10          | 25 cm          |

List from smallest to biggest.

hand      felt      book  
my leg      door

I got my answer by:

measuring by smallest to biggest

I found out that:

My hand was the smallest and  
that the door was the biggest


## EXCEEDS EXPECTATIONS

### Teacher's Observations


This student's estimates are logical. She initially estimated the diameter of the soccer ball, but measured the circumference when she had difficulty finding a method to measure the diameter accurately. She chose appropriate measurement tools, measured accurately (to a fraction in one case), and recorded her results accurately and with the correct units throughout. She was able to explain her work in her own words, including her choice of tools.

- ◆ selects and applies appropriate methods to solve simple problems
- ◆ makes logical estimates, using number and spatial sense
- ◆ follows modelled procedures; finds an alternative procedure
- ◆ recording is generally accurate
- ◆ work is clear and easy to follow
- ◆ explains processes and results in own words

|                | Not Yet | Meets | Fully | Exceeds |
|----------------|---------|-------|-------|---------|
| SNAPSHOT       |         |       |       |         |
| CONCEPTS       |         |       |       |         |
| STRATEGIES     |         |       |       |         |
| ACCURACY       |         |       |       |         |
| REPRESENTATION |         |       |       |         |



### Measurement



| What I measured | What tool I used | My estimate | My measurement |
|-----------------|------------------|-------------|----------------|
| desk width      | Meter stick      | 97 cm       | 60 cm          |
| soccer ball     | tape             | 21 cm       | 67 cm          |
| pop can         | tape             | 21 cm       | 22 cm          |
| wrist           | tape             | 19 cm       | 13 cm          |
| chalk brush     | ruler            | 11 cm       | 12 1/2 cm      |

List from smallest to biggest.

chalk brush   wrist   pop can  
desk width   soccer ball

I got my answer by:  
looking at the "My measurements boxes"  
and seeing which one is the biggest and  
smallest.

I found out that:  
that some things you need to use cm ruler  
some you need to use meter stick and  
some things you need to use tape  
measure.

