



Math Weekly Tidbits

Maryland Common Core State Curriculum Framework
Maryland School for the Deaf

ISSUE 4

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Dear Teachers,

Are you ready for Leap Day next week? This year has 366 days! This happens every once in 4 years! February, even with the extra day, is still the shortest month of the year! Leap Day babies finally get to celebrate their true birthdays—but how old are they, really? The number of mathematical questions stemming from this not-so-ordinary day is mind-boggling!

This week's issue focuses on using Universal Design for

Learning (UDL) which gives students equal opportunities to learn, no matter what their strengths and needs are. CAST, a non-profit organization, has created a wonderful website for educators to learn more about how to incorporate UDL principles in their classrooms. You may visit their site at: <http://www.cast.org>.

As always, let us know if you have ideas or suggestions for this newsletter. Enjoy your weekend and get ready to leap into March!

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Ideas for this newsletter are always welcome!

Highlight: The Second of 8 Standards for Mathematical Practice

Reason abstractly and quantitatively. *“Can you use numbers to help explain this problem?”* is one question you may want to ask as your student works through a problem.

Mathematical learning is very dependent on abstraction. Yet, students are often rushed through models and manipulatives before working directly with symbols. As a result, they feel less comfortable reasoning abstractly and quantitatively. Universal Design for Learning (UDL) should ideally resolve this dilemma. Mathematical learning, in general, progresses in four stages across a continuum: concrete, semi-concrete, semi-abstract, and abstract.

Through Universal Design for Learning (UDL), it should be possible for a student of any ability to succeed on his or her actual grade-level curriculum. Let's look at how we can take one standard from the second-grade Maryland Common Core State Curriculum Framework and modify activities to meet varying learning needs:

SAMPLE STANDARD

Domain: Measurement and Data

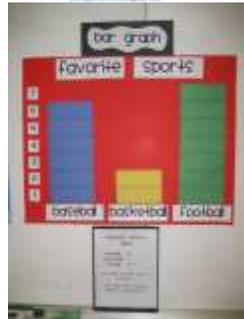
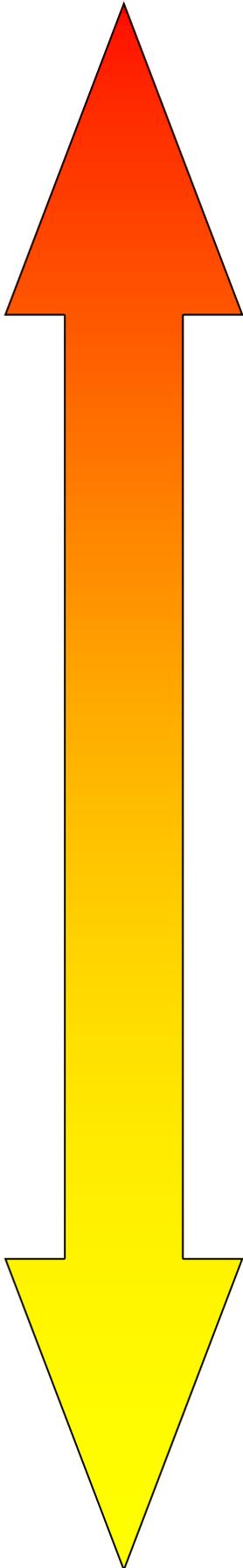
Cluster: Represent and interpret data

Standard: 2.MD.10

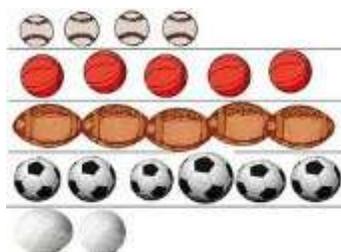
Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

Essential Skills and Knowledge:

- Ability to collect, sort, organize and sort data.
- Knowledge of the elements of picture graphs and bar graphs.
- Ability to analyze graphs, answer questions about the data, and make decisions based on the data.



City	Votes
Orlando	
Sydney	
New York	
Paris	



Highly abstract

Students would need to explain that each unit represents five M&M's. To make this even more challenging for students to interpret, the grids can be removed.

Abstract

Students would need to explain that 7 students selected football as their favorite sport, that football was the most popular sport, and also that a total of 15 classmates voted. Would the results have been different if this survey had been done at a different time of the year?

Semi-abstract

These tally marks help shift students toward abstract thinking. They serve as visual reminders of numeral representation, without showing the actual objects. Students should still be able to sort the data into appropriate rows (or columns) and interpret the information. Thumbtacks can also replace tally marks.

Semi-concrete

Instead of tally marks, pictures can be used to represent objects. One ball could even represent more than two persons, to help practice skip-counting skills.

Concrete

Even a child with limited language abilities could sort actual objects into columns, and determine which item is the most populous.

Anything is possible with UDL!