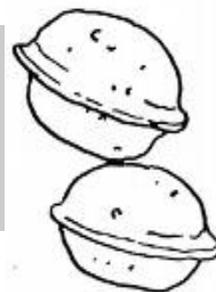




Math In a Nutshell

Quick Tips For the Hurried Teacher



A Content Elementary Math Newsletter from the Southern Nevada Regional Professional Development Program

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Special points of interest:

- The GAP Resource is now available!

The "Guide for Aligning Mathematics Programs," or GAP Resource as it is commonly referred, is now available on www.rpd.net. Additional copies/discs have been sent to all elementary schools.

Estimation-More Than Just Rounding

When most of us think back to when last used math in our personal life, we come to recognize that it often includes a form of estimation. It may be true in everyday life that we use estimation more frequently than we perform exact computations. Yet, we as teachers often get stuck on teaching for the exact answer.

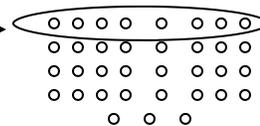
When it comes to teaching estimation, it often comes as a unit in the program that we are using as opposed to incorporating it daily in all of our lessons. This creates the feeling that estimation skills are just to be utilized during a "set" period of time, instead of imbedded in all of our math activities. For example, when teaching adding or subtracting fractions, we can estimate the solution prior to working out the problem. Or, when teaching multiplication, estimation may help students recognize if their answer they came up with is close or way-off-base. Using estimation prior to working out problems will also help our students on their end-of-the-year tests. Students can quickly identify which solutions are incorrect from their estimation, and therefore limit the options to choose from. This saves on time and effort for the student.

So, how do we teach estimation? There are many estimation strategies that are appropriate during different times. Most students only use a few strategies that were taught to them in the classroom to estimate answers, such as rounding numbers off. When **rounding**, we often look at the nearest power of ten to decide if the number needs to be greater, or "rounded up", or less, "rounded down".

For example: $524 + 285$, think $500 + 300 = 800$

However, this strategy will not always work. For example, when dealing with money. Imagine the confusion if your paycheck was rounded by the bank upon deposit! Someone will be losing money (either you or your employer) and not too happy. Therefore, there are other strategies that may be more effective in different situations. For example, a very common strategy is **use of benchmarks** (also known as landmark numbers). This strategy uses a known amount when estimating. For example, if you are trying to estimate how many pennies are in a pile, a child can count out eight pennies to see what ten looks like. Then, s/he can use that knowledge to multiply the eight by how many groups of eight there looks to be.

For example: We know that the circled part includes eight circles. →



We can use this information to multiply it by how many groups of eight

we might have all together.

Use of benchmark numbers allows the student to decompose the group of numbers into small, recognizable collections. The child then can use this smaller collection to estimate the larger quantity.

Another common estimation strategy that is taught in the classroom is the **front-end** estimation. This strategy involves using only the highest place value digit and replaces all the other digits with zeros.

For example: $524 + 285$, think $500 + 200 = 700$

This strategy is frequently utilized when all that is wanted is a rough range of numbers. For example, if we wanted a "ballpark" idea of the total cost of a vacation trip that cost \$235 for the room, \$187 for food, and \$94 for souvenirs, we could use front-end estimation to get a rough estimate of $\$200 + \$100 + \$90 = \390 for our trip's expenses.

Although there are many other estimation strategies, the best estimators are those that form their own strategies from their understanding of the concept. Therefore, a teaching method that presents a wide variety of estimation strategies, most of them student-driven based on the understanding of number sense and problem solving strategies, will be much more effective.

Math In a Nutshell

www.rpd.net

Continued...



Estimation in Children's Literature

Counting on Frank by: Rod Clement

*Frank, a young man, uses estimation for everything in his world.

How Much is a Million by: David

Schwartz

*Large quantity amounts are relatable through real-life estimations.

Great Estimations by: Bruce Golstone

*Teaches children how to "train" their eyes to estimate using benchmark numbers.

Estimating How Many Gollywomples?

by: John Burstein

*The Math Monsters estimate the number of



Upcoming RPDP Elementary Math Classes in November:

11/1: Fraction Development 3-6

11/14: Integrating Children's Literature and Math

11/15: Data Analysis

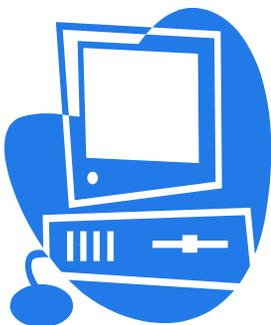
11/26: Problem Solving K-5

11/28: Problem Solving K-5 (two different classes)

To attend any of these classes, please register on Pathlore at www.ccsd.net

Www.rpd.net Spotlight of the Month:

How do I search for a class on the website?



1. Go to the *www.rpd.net* website
2. Click on the "Course Schedules, Printable Flyers, Registration Info." tab
3. Select the criteria that you need are interested in and hit the "Go" button
4. Scroll through the classes offered until you find your desired class.

CRT Constructed Response (4th Grade)

Kenny is playing a game with a special number cube. The faces of the cube are numbered 1, 2, 2, 3, 3, and 3. Kenny rolls the cube and looks at the number on the top face.

- A. Which number is **least likely** to be on the top face of the cube on Kenny's roll? Explain your thinking.
- B. Which word (unlikely, likely, impossible, certain) **best** describes the chance that Kenny's roll shows a number less than 4 on the top face? Explain your thinking.
- C. Describe a roll of the cube that is **impossible** for Kenny to roll. Explain your thinking.

Score Description

3 Student scores 3 points.

2 Student scores 2 – 2.5 points.

1 Student scores 0.5 – 1.5 points.

0 Student's response provides insufficient evidence of appropriate skills or knowledge to successfully accomplish the task.

Blank No student response.

Description of Score Points

Student will score 1.0 point correct answer with complete explanation

OR

score 0.5 point correct answer with incomplete or no explanation
OR some correct procedure.