

5<sup>th</sup> - 6<sup>th</sup> Grade Math

“Cool Tools to Solve Challenging Word Problems” using the **K-N-W-S model**

**Objectives:**

**Process Standard 1.1** – Use problem solving approaches

**1.4** – Verify and interpret results with respect to the original problem

**1.5**- Distinguish between necessary and irrelevant information in solving problems

**2.1**- Extend mathematical knowledge by considering the thinking and strategies of others

**Instruction:**

- 1. Introduction:** I will begin this lesson by letting them know that I am confident that each student can be successful at solving word problems. We will review the 5-step process for solving word problems. I will introduce to them that this is another “tool” for them to put in their toolbox for problem solving.
- 2. Instructional Process:** I will pass out the **K-N-W-S worksheets** (enclosed) to each student. I will pass out word problems (enclosed samples) and we will practice as a class with the first problem. I will teach them how to fill out the table. Then I will divide the class up into groups of 2 or 3 for them to work the next problem or two. We will finish with them completing problems by themselves. This whole instructional time we will be talking about reading the problem more than once if needed, discovering what we know and working towards what we don't know, and concentrating on the particulars of the word problem such as the numbers, units, and the question asked. We will also communicate about how we decided what method led us to our solution.
- 3. Closure:** The closure time will be a question and answer time. Questions I will ask will be: 1) How many times did you need to read each problem?, 2) Where did we find what the problem asked me to find?, 3) How did you decide what facts you needed and didn't need?, and 4) Did you learn anything new?

**Assessment:**

I will assign the problem they completed by themselves plus a few more that each student can complete on his/her own. When they return tomorrow with their assignment complete, we will share our answers and discover the differences in how each one communicated their thought processes. I will continue each day to assess their success in solving word problems.

**Modifications/Accommodations:**

One modification could be to have someone else read the problems for someone whose weakness is in reading. After the reading of the selection, I believe the narrowing and concentration of the question and numbers by underlining alleviates some pressures of all the wordiness of a problem. If writing is a struggle, the communication process is so important.

**Reflection**

The K-N-W-S worksheet worked very well with the students in both the 5<sup>th</sup>-6<sup>th</sup> grade math classes. I believe it would work well with 4<sup>th</sup> grade and up, as well. I believe this activity helped them to sort information. It helped me to understand what they were thinking. It gave great opportunity for feedback.

The first problem, in which we did as a class, was a great starter problem. I wish I could take credit for the planning of the outcome that occurred. However, it just happened. The answer to problem #1 is \$147.00. Seventeen out of the eighteen that I taught this lesson to got 147 pounds. I was in “hog heaven” over the communication process that took place afterward. The greatest thing that happened from this experience was the emphasizing of the final step of checking your question to make sure your final answer matches what is being asked for. I always emphasize this. However, I think now it is something they will never forget.

Another thing that happened is that a student drew a picture of a football field in problem #5. If I would have taught or suggested it, they would have done it, but might not have seen the real purpose of it. However, since one of their classmates did it, it’s cool. This was a teaching moment and you better believe I acted upon it and made a big deal about it. Yahoo!

**Due to circumstances (in which I don’t understand), I was not able to download the file that has the worksheet on it from the website. However, you may want to try to download it yourself. Also, you can find a miniature example and how it’s used on p. 113 of the book, Teaching Reading in Mathematics. You should have an enlarged copy in your notebook from the conference that Mrs. Lyle introduced to us. Finally, call me and I’ll send you a copy by snail mail!**

# **Word Problems**

**(to use for the K-N-W-S Model)**

## **Practice Problem:**

1. Mr. Jones wants to send 735 pounds of cookies to his niece in Denver, Colorado. If Beaver Express charges a dollar for every 5 pounds of weight, how much will Mr. Jones have to pay?

## **Group Problems:**

2. Albert was born when the first airmail postal service began in 1918 with flights between New York City and Washington, D.C. This was 124 years after the first letter carriers appeared on the streets of America. In what year was Albert born?

3. Bob's youth group goes on a cave hike (spelunking). When they enter the cave, they tie a rope to a pine tree and let the rope out as they go deep under the hill. The rope has small knots tied in it every 7 feet. If the youth have counted off 169 knots, how deep into the cave are they?

## Arithmetic Homework

Name \_\_\_\_\_

**Directions:** Solve the following word problems on the K-N-W-S models provided. Use a new model for each problem. Use the space below each problem to show your work and complete the answer to the problem. Circle your final answer.

### Homework Problems:

4. Stephanie is the star basketball player for the Lady Cougars high school team. During the season, she made 87 baskets. If she took a total of 153 shots, how many times did she miss?

5. Jay's boat is in Key West, Florida. With two days notice of an impending hurricane, he takes several hours to reach Ft. Jefferson, the old fort located in the Gulf of Mexico, to get out of the way of the storm.. He has read that the courtyard of the old fort is as large as 20 football fields. If a football field is 120 yards long, approximately how long is the old fort's courtyard?

6. Justin and his classmates received special permission to climb up the steps of the Washington Monument in the nation's capital. They climbed 312 feet, rested, then finished the 243 feet to the top. How far did they climb in all?