Problem Solving – Strategies for Finding the Hidden Question

STRAND: Computation and Estimation

STRAND CONCEPT: Practical Applications – Rational Numbers and Proportional Reasoning

SOL 4.6b, 5.4, 5.5b, 5.6ab, 6.5bc, 7.3, 8.4

Remediation Plan Summary

This lesson is appropriate for any SOL that asks to students to solve multi-step problems. The plan focuses on the strategy of finding the hidden question in a multi-step problem. You may change the word problems used in the plan to suit whole number or rational number requirements of the SOL.

Common Misconceptions

Students look for key words to solve problems they do not know how to solve. This is a misconception because key words do not always work.

Materials

What Do You Know About Hidden Questions? activity sheet

Introductory Activity

Introduce the lesson with a single step word problem such as: Pedro bought a slice of pizza for $2.50 and a drink for $1.25. How much money did he spend? After students complete it and everyone agrees on the operation of addition and the correct answer, move to the plan.

Plan for Instruction

1. Display the single step word problem from the introductory activity along with the answer.

2. Add an additional question: How much change will Pedro receive if he pays with a $5 bill? Have the students use the information they already obtained in the introductory activity to answer this question. When are they done, discuss how they knew to subtract. Write the answer under the question.

3. Ask the class what happens if you combine the two word problems. After they answer, erase the answers displayed and add the second word problem to the first as if it is now one long word problem. Explain that this is called a multi-step problem because you have to answer two questions. Underline the two questions.

4. Cross out the question," how much did he spend?" and ask the class, "*If this question is missing, can you still figure out the answer to the second question?*" Student answers will vary but most will say no. Name the question you crossed out the "hidden question" and tell the students that often in multi-step word problems a question is hidden and you must answer the hidden question before you can answer the final question.

5. Repeat the previous process with these two problems: On Monday Sarah walked 1.5 miles home from school. Then she went for a long 5-mile walk. How far did Sarah walk on Monday? On Tuesday she walked 3.2 miles less than she did on Monday. How far did Sara walk on Tuesday?

6. If needed, repeat the process with examples of your own as many times as needed for students to understand the concept of a hidden question.
7. Distribute the Hidden Questions practice sheet to pairs of students. As they work, listen in on pairs to see where your help is needed.
8. Extend this lesson by giving students multi-step problems and asking them to find the hidden questions. You may need to have a small group format to provide individual assistance.

Pulling It All Together (Reflection)

Here is a single step word problem:

   In his three games last week, Shaq scored 77 points, 58 points and 38 points. How many points did he score last week?

1. Write a second word problem that needs the answer to this one to solve.
2. Circle what could be a hidden question.
3. Solve your problem.

Note: The following pages are intended for classroom use for students as a visual aid to learning.

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What Do You Know About Hidden Questions?

Here are two short word problems. Put them together to make one problem.

Jose collects marbles. He has 17 green, 22 multi-colored and 45 mixed colors. How many marbles does Jose have?

Jose has 2 bags to hold his marbles. Each holds half of his marbles. How many marbles fit in each bag?

My one problem:

Find the question that could be hidden and write it here. _____

Re-write the two problems as one multi-step problem. Leave out the hidden question.

Solve the problem.