Mathematical Practice #1

Make Sense of Problems and Persevere in Solving Them

When students encounter word problems or problems with multiple parts, they must be able to determine what to do before they can begin to solve. For complex problems, students need skills and strategies to work all the way through the problem to the solution. Mathematical Practice #1 gives students a way to do this. Use each of the questions below to prompt your student during the problem solving process (Example responses are included to give you an idea of what students might say.):

- Can you explain the problem in your own words?
  - *In this word problem, it says to determine how many marbles altogether. I need to add to find out how many altogether.*
  - *In this word problem, it says to determine how many grapes per bunch. I need to divide to figure out how many per bunch.*
  - *The problem says, "Deanna's Cards and Gifts is having a sale on greeting cards. The sale is a buy 2, get a 3rd half off on greeting cards. Julie buys three cards that cost $2.49 each. What is her savings? What is the discounted price of the three cards altogether?" I need to know both the savings and the discounted price of the three cards. I will need to figure out the cost of the two whole price cards and the ½ price of the third. I will have to use addition to get the total and subtraction to get the savings.*

- What is your plan to solve the problem?
  - *I know this problem is an addition problem because it says altogether. Now I need to figure out the key numbers that I will be adding.*
  - *There is a chart, so I need to find the column and row for bears in 2003 and cougars in 2003 in order to find out how many more bears were sighted than cougars that year.*
  - *I know that I need to divide $2.49 by two to find the half price. The savings should be the same as the cost of the third card since it is half off. I also need to multiply $2.49 by 2 to get the cost of the full price cards. In the end, I will have to add the cost of the full price cards to the cost of the half price card to get the discounted price.*

- How do you think the solution will look?
  - *This problem says to answer in a complete sentence. I need to determine how many marbles altogether, which will be a number, and I need to write a sentence that tells how many marbles altogether.*
  - *This problem says to solve for x. I will have to isolate the variable on one side of the equation, so it will be x = something.*
  - *This problem is about cost, so the answer will be a dollar amount. I will need to use money notation in my solution.*

- How will you check to see if your solution is correct?
  - *I can subtract one number from the solution to see if I added correctly.*
  - *When I have determined the solution to this division problem, I should multiply the divisor by the quotient to check my answer.*
  - *I can divide to check multiplication, and I can subtract to check addition and vice versa. I should also estimate what 2½ times $2.50 is to have an idea of what the solution should be. 2 times $2.50 is $5.00 and ½ of $2.50 is $1.25, so my solution should be close to $6.25.*

- Can you explain your solution?
  - *This problem included two sets of marbles, 65 and 78. I added to find out how many. Because 5 + 8 is greater than 9, I had to regroup. I added the 1 that I regrouped to the 6 first, so I had 7 + 7. That's a doubling fact, so I knew it was 14. There are 143 marbles altogether.*
  - *This problem says to estimate how much the meal would cost. All of the prices on the menu ended in .99, so I will simply round to the nearest dollar. I can add the rest in my head, so the meal would cost about $42.00.*
  - *This problem has two parts. First, I needed to determine the savings. If a card costs $2.49, and I needed to find ½ off, I could multiply by .5 or divide by 2. I divided by 2, and I got $1.245. If I round my answer to $1.25 and subtract that from $2.49, I get a savings of $1.24. To find the second part of the problem, I need to multiply 2 ✗ $2.49 to get $4.98 for the first two cards. Then I have to add $1.25 to $4.98. That equals $6.23, which is really close to my original estimate, and I have checked my calculations. The savings is $1.24 and the discounted price is $6.23.*

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