

<b>Title: Problem Solving Strategies</b>
<b>Objective:</b> Students will be able to use SOLVE method to solve word problems
<b>Materials:</b> Teacher notes and script (3 pages) Student Worksheet (4 pages - 1 copy per student & transparencies) Overhead of the solve method with practice problem (Make transparencies) Video available
<b>Previous Knowledge Needed:</b> If students have been trained in “SOLVE” this year, then they have a “flipbook” that they can refer to throughout the lesson.
<b>Important Concepts/Methods:</b> “SOLVE” method of problem solving.
<b>Script:</b> Today we are going to talk about a strategy you can use to solve word problems. Show the following information on an overhead and go over example problem step by step.
<b><u>Notes on Word Problem Strategy: SOLVE</u></b>  “SOLVE” is a strategy used to solve word problems. Each letter in SOLVE represents one of the 5 steps in solving a word problem: <b>S</b> tudy the problem <b>O</b> rganize the facts <b>L</b> ine up a plan <b>V</b> erify your plan with action <b>E</b> xamine the results <i>Now let's look at each letter individually.</i> “S” stands for <u>Study The Problem</u> . When you study the problem you need to: 1. Highlight or underline the question. 2. Answer the question, “What is the problem asking me to find?” “O” stands for <u>Organize The Facts</u> . When you organized the facts you need to: 1. Identify each fact 2. Eliminate unnecessary facts (By putting a line through it) 3. List all necessary facts “L” stands for <u>Line Up a Plan</u> . When you line up a plan you need to: 1. Choose an operation (Add, Subtract, Multiply or Divide) 2. Tell in words how you are going to solve the problem “V” stands for <u>Verify Your Plan With Action</u> . When you verify your plan with action, you need to: 1. Estimate your answer 2. Carry out your plan “E” stands for <u>Examine The Results</u> . When you examine the results you need to ask yourself: 1. Does your answer make sense? (Check what the problem was asking you to find) 2. Is your answer reasonable? (Check your estimate) 3. Is your answer accurate? (Check your work) <i>We will now go through an example of a word problem using solve:</i>

### **Practice Problem #1:**

David wanted to ride a taxi from his house to the mall. The taxi driver said there was a \$2.00 fee plus \$.75 per mile. David knew the mall was 11 miles from his house. How much would David's taxi ride cost?

**S**tudy the problem:

-Highlight or underline the question: How much would David's taxi ride cost? Let's call the total cost (t)

**O**rganize the facts:

-Draw a line through the unnecessary fact: David wanted to ride a taxi from the library to the mall.

-List necessary facts:

1. There is a \$2.00 fee
2. The ride is \$.75 per mile
3. The mall is 11 miles away from David's house

**L**ine up a plan:

-Choose operations: Multiplication and Addition

-State the plan in words (no numbers): "Multiply the cost per mile by the number of miles and then add the fee"

**V**erify your plan:

-Estimate:  $t = (10)(1) + 2 = 12$

-Find the answer:  $t = .75(1) + 2 = 8.25 + 2 = \$10.25$

**E**xamine the results

- Does \$10.25 make sense? Yes

- Is \$10.25 reasonable? Yes

- Is \$10.25 accurate? (Double check the math) Yes

- Write answer in complete sentence: "The cost of the taxi cab ride was \$10.25"

### **Practice Problem #2**

To purchase feed for his cattle, Nelson took out a 1-year loan at 8% simple interest. If he borrowed \$2,000, how much must he pay back to the bank at the end of the year?

**S**tudy the problem:

-Highlight or underline the question: How much would Nelson pay back to the bank? Let's call the total (t)

**O**rganize the facts:

-Draw a line through the unnecessary fact: To purchase feed for his cattle-List necessary facts:

1. 1-year loan
2. 8% simple interest
3. borrowed \$2000

**L**ine up a plan:

## Problem Solving Strategies

- Choose operations: Multiplication and Addition
- State the plan in words (no numbers): “Multiply the amount borrowed by the interest rate(as a decimal) and then add the amount borrowed”

**V**erify you plan:

- Estimate:  $t = (2000)(.1) + 2000 = 2200$
- Find the answer:  $t = 2000(.08) + 2000 = 160 + 2000 = \mathbf{\$2160}$

**E**xamine the results

- Does \$2160 make sense? Yes
- Is \$2160 reasonable? Yes
- Is \$2160 accurate? (Double check the math) Yes
- Write answer in complete sentence: “Nelson paid the bank back \$2160”

**Answer \$2,160**

**Have students try the next two problems on their own.**

3. Each week, Bob gets paid \$20 per hour for his first 40 hours of work, plus \$30 per hour for every hour worked over 40 hours. How much will Bob earn for working 65 hours in 1 week?

**S  
O  
L  
V  
E**

**Answer: \$1250**

4. Kim took 30 **minutes** to ride her bike up a 4-mile hill. What was her average rate of speed, **in miles per hour**, up the hill?

**S  
O  
L  
V  
E**

**Answer: 8 miles per hour**

## **Notes on Word Problem Strategy: SOLVE**

“SOLVE” is a strategy used to solve word problems. Each letter in SOLVE represents one of the 5 steps in solving a word problem:

**S**tudy the problem

**O**rganize the facts

**L**ine up a plan

**V**erify your plan with action

**E**xamine the results

“S” stands for Study The Problem. When you study the problem you need to:

1. Highlight or underline the question.
2. Answer the question, “What is the problem asking me to find?”

“O” stands for Organize The Facts. When you organized the facts you need to:

1. Identify each fact
2. Eliminate unnecessary facts (By putting a line through it)
3. List all necessary facts

“L” stands for Line Up a Plan. When you line up a plan you need to:

1. Choose an operation (Add, Subtract, Multiply or Divide)
2. Tell in words how you are going to solve the problem

“V” stands for Verify Your Plan With Action. When you verify your plan with action, you need to:

1. Estimate your answer
2. Carry out your plan

“E” stands for Examine The Results. When you examine the results you need to ask yourself:

1. Does your answer make sense? (Check what the problem was asking you to find)
2. Is your answer reasonable? (Check your estimate)
3. Is your answer accurate? (Check your work)

## **Example #1:**

David wanted to ride a taxi from his house to the mall. The taxi driver said there was a \$2.00 fee plus \$.75 per mile. David knew the mall was 11 miles from his house. How much would David's taxi ride cost?

**S**tudy the problem:

-Highlight or underline the question:

**O**rganize the facts:

-Draw a line through the unnecessary facts

-List necessary facts:

**L**ine up a plan:

-Choose operations:

-State the plan in words (no numbers):

**V**erify your plan:

-Estimate: t

-Find the answer:

**E**xamine the results

- Does \$\_\_\_\_\_ make sense?

- Is \$\_\_\_\_\_ reasonable?

- Is \$\_\_\_\_\_ accurate? (Double check the math)

- Write answer in complete sentence:

## **Example #2:**

To purchase feed for his cattle, Nelson took out a 1-year loan at 8% simple interest. If he borrowed \$2,000, how much must he pay back to the bank at the end of the year?

**S**tudy the problem:

-Highlight or underline the question:

**O**rganize the facts:

-Draw a line through the unnecessary facts

-List necessary facts:

**L**ine up a plan:

-Choose operations:

-State the plan in words (no numbers):

**V**erify you plan:

-Estimate: t

-Find the answer:

**E**xamine the results

- Does \$ \_\_\_\_\_ make sense?

- Is \$ \_\_\_\_\_ reasonable?

- Is \$ \_\_\_\_\_ accurate? (Double check the math)

- Write answer in complete sentence:

**Try these on your own**

3. Each week, Bob gets paid \$20 per hour for his first 40 hours of work, plus \$30 per hour for every hour worked over 40 hours. How much will Bob earn for working 65 hours in 1 week?

**S**tudy the problem:

-Highlight or underline the question:

**O**rganize the facts:

-Draw a line through the unnecessary facts

-List necessary facts:

**L**ine up a plan:

-Choose operations:

-State the plan in words (no numbers):

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-Find the answer:

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- Does \$\_\_\_\_\_ make sense?

- Is \$\_\_\_\_\_ reasonable?

- Is \$\_\_\_\_\_ accurate? (Double check the math)

- Write answer in complete sentence:

4. Kim took 30 **minutes** to ride her bike up a 4-mile hill. What was her average rate of speed, **in miles per hour**, up the hill?

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-Highlight or underline the question:

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-List necessary facts:

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-Choose operations:

-State the plan in words (no numbers):

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-Estimate: t

-Find the answer:

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- Write answer in complete sentence: