

1. POPCORN TO SHARE

Objective: Solve problems in which numeration and number recognition is used when following an sequence of number patterns (counting by a given number).

Requirements: The child must have prior knowledge of some number patterns simple addition techniques and some vocabulary related to the subject.

Suggested Age: Children from 5 to 6 years of age.

Materials: Small shapes, clay, paper, pencil, colors, crayons, counters, or manipulatives (measuring spoons) which may be of any type. Flash cards containing the problem's information may be used, or a number line.

Preparation: Have the small shapes, number line, or paper and pencil close by. Then read the word problem and together identify strategies to solve it.

Procedure: Have the children joined the teacher, they may be organized in small groups. They may be gathered around, on their desks or sitting in a small group on the floor.

Problem: I really love to eat popcorn and share with my friends. Today I will be making some popcorn and having some friends over. I can hardly wait for them to get here. When I make popcorn I use one spoonful of kernels so three friends can eat. And when I use two spoonfuls of kernels six friends can eat. How many friends will eat if I use three spoonfuls?

Problem Solving Process:

- 1. Explore:** Begin by asking the children to share about popcorn experiences. Ask if they know what the word kernel means and what happens to it when it gets very hot. Ask if they have ever made some popcorn at home or helped to make it. Ask them if they have ever shared popcorn with their parents, friends, or family members. Ask if they can identify some things around the room which may be counted in patterns or sequences. You may also do some informal counting by any given number around the

room. Tell them: “You’ll be listening to a story with number patterns in it”. Do you know what patterns are? Can you tell me if you see anything we can call a pattern or a number pattern around the room? ? Apply the Word Problem solving steps.

2. Reading: Read the problem in an attractive way for the children. This way they will have fun listening to it. Mention to them to keep track of the sequence of the story.

3. Comprehension: Ask one of the children to retell the story in their own words. This will tell you whether or not they understood what you just read to them. Complement their comprehension with the following questions:

- What does the boy love to do? *This boy loves to make popcorn.*
- What does he enjoy doing with the popcorn? *He enjoys sharing it with his friends.*

- **Identifying Data:** Ask the children to tell you what information the problem is providing for them. If they do not respond, intervene by saying: *The boy knows that every spoonful of kernels makes enough popcorn for three friends to eat. And that two spoonfuls of kernels will allow six friends to eat popcorn.*

- **Problem Identification:** Ask another child to tell in his own words what the children need to know in order to be able to tell how many friend can eat with three spoonfuls. This will tell you whether or not they understood what the problem is asking for. If they have not successfully identified the problem. Intervene by saying: *How could we tell how many people can eat popcorn, if the boy uses three spoonfuls of kernels? We need to think about what the boy knows and how that will help to figure out how many people can eat popcorn.*

4. Analyze: At this point ask the children to identify the information the word problem is providing for them. They must think about how they could reformulate the problem. Tell them: *Let’s think now how we could restate the problem. How do you think we can do it? How can we organize it?* By doing this, you can tell what kind of effort the student is doing to examine the elements the problem has provided through the following strategies:

- Dividing the problem into parts, selecting perspectives or simplifying it. For example:
 - *Lets organize the problem. We can divide it into parts. What do you think we can do? How can we do it? If they are not able to answer, say: Let's divide the problem into parts so we can understand it better. Like this: What does the boy know about making popcorn? What does he want to know about the measurements of kernels? How can we tell how many people will eat from three spoonfuls of kernels?*
 - Simplifying or reforming the question. For example:
 - *Lets simplify the question. How do you think we can do this? If they are not able to answer, say: Let's take out some words to make it simpler. Let's only leave the most significant words. If no answer is provided by the children, you may say: How many people will eat from three spoonfuls of kernels?*
 - Selecting perspectives(What mathematical operation will be used) For example:
 - *What could we do to be able to solve this problem? If no answer is given, you may say: Did you realize that we can observe a pattern that can help us solve the problem. We can order the information by counting the spoonfuls of kernels and counting up one by one to see how many people can eat in all.*
- 5. Planning:** Ask the children to give suggestions about the different strategies they may use to solve the problem. The purpose of this is not to solve the problem for them, but to allow them to think of the several strategies they may use to solve it. Some of the suggestions may be to use a drawing, a clay model, or to roll play the word problem using similar shapes. If the children do not find a reasonable strategy, the teacher may model out loud at least two strategies like this: *I think we can solve this problem by counting up using the information given by the problem. We can start by placing the information and lining it up using a number line then counting up one by one in representation of the information given. This way we can begin looking at each number pattern being formed. We could also use some counters or a chart, and on a piece of*

paper record the right information given by the word problem, so we can see how many people can eat with three spoonfuls. You may also give them a chance to write out a diagram of what is happening, or retell the story so they can identify the different sizes. This modeling will help them to see the various examples they may use to solve the same problem.

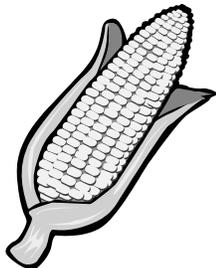
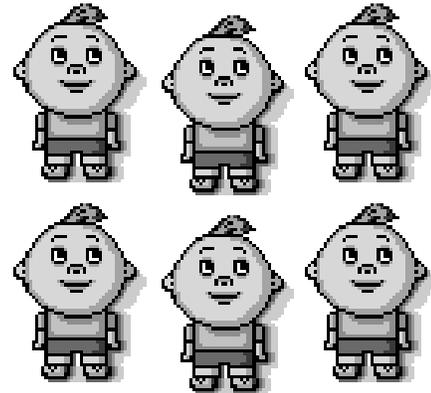
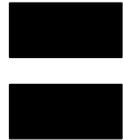
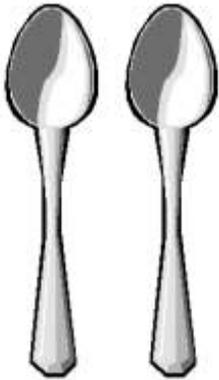
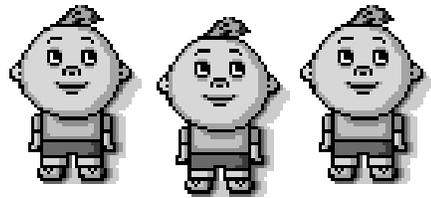
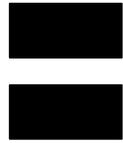
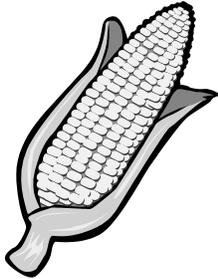
- 6. Solution:** Ask the children to solve the problem. If they are not able to do so, model for them any of the strategies planned before and give the answer: *If we want to know how many people can eat popcorn out of three spoonfuls of kernels, we must count up using the pattern with the information provided. We can follow this by saying orally the smaller number first and then counting up to the highest number. We can also point out each number and follow the pattern on a chart or number line. Include local monitoring: As the children solve the problem, stop and encourage them to verify their work by speaking out loud.*
- 7. Communication:** Always ask the children to answer and monitor their work by speaking out loud and in complete sentences. Tell them to include the unit of what is being asked for, in the problem. If children do not feel comfortable, model by saying: *The boy wants to know how many people can eat from the three spoonfuls of kernels he will use. You may tell them to look at the question also, because this will help them identify the unit. The unit is: people*
- 8. Evaluation and Proof:** Revise the word problem with the children. Verify and make sure that the correct answer is given. If necessary model for them the correct way to do so: *I revise my answer by thinking back about the information given by the problem. This helped because it told me that with one spoonful three friends could eat, then with two spoonfuls six friends could eat. This way I could see the pattern being formed. Which helped me figure out how many children would eat with three spoonfuls. Include global monitoring: As the children proof their work, ask them to tell you how they would do so. If they are having a difficult time doing so, you may model by saying: *I can proof my work by following the counting of the spoonfuls of kernels one by one and looking to see how many people would eat with three spoonfuls.**

9. Representation: At this point, we need for each child to represent what is being asked of in the word problem by using drawings, rhymes, songs, dramatizations or manipulatives. You may tell them: *Now we will choose the way that you feel most comfortable with, to represent how many people eat with three spoonful of kernels.*

10. Real Life Connection: In order for the children to connect this activity to a real life experience they may follow a similar procedure involving measurement. They may observe things from inside or outside the classroom and look for size, weight, or time. This way they will realize how measurement is all around us. You may also have them go on an outing , observe the different patterns in size , shapes, time and weather (temperature), or any other mathematical concept which they may find interesting, in their surroundings.



POPCORN



2. SAMMY THE SEAL

Objective: Solve problems in which number identification and correspondence is used when adding small quantities.

Requirements: The child must have prior knowledge of some number recognition, adding techniques and some vocabulary related to the subject.

Suggested Age: Children from 5 to 6 years of age.

Materials: Small shapes, clay, paper, pencil, colors, crayons, counters, or manipulatives which may be of any type. Flash cards containing the problem's information may be used, or a number line.

Preparation: Have the small shapes, number line, or paper and pencil close by. Then read the word problem and together identify strategies to solve it.

Procedure: Have the children join the teacher, they may be organized in small groups. They may be gathered around, on their desks or sitting in a small group on the floor.

Problem: Sammy the Seal lives in a zoo. He is trained to do tricks for all the visitors. If he swims the pool where he lives and comes back to where he started using the same amount of strokes, then he gets a treat from the zoo keeper. He swims the pool using 10 strokes one way. How many strokes will it take for him to come back and get his treat?

Problem Solving Process:

- 1. Explore:** Begin by asking the children to share if they have ever been to a zoo. Ask them about the different animals that can live there. Mention to them if they have ever seen a seal whether it has been a live one close up, or if they have had the opportunity to see one on TV, or in books. Ask if they can identify some things seals can do. Have them do some informal counting. You may also do choral counting with the group in an informal way. Tell them: "You'll be listening to a story with numbers in it". Do you know what this means? Can you tell me if you see anything

we can count around the room? Apply the Word Problem solving steps.

2. Reading: Read the problem in an attractive way for the children. This way they will have fun listening to it. Mention to them to keep track of the sequence of the story.

3. Comprehension: Ask one of the children to retell the story in their own words. This will tell you whether or not they understood what you just read to them. Complement their comprehension with the following questions:

- Who is Sammy? *Sammy is a seal.*
- Where does Sammy live? *Sammy lives in a zoo.*
- What does Sammy like to do? *He likes to do tricks and swim in the pool where he lives.*

- **Identifying Data:** Ask the children to tell you what information the problem is providing for them. If they do not respond, intervene by saying: *Sammy swims the pool and every time he does it using the correct amount of strokes both ways he receives a treat from the zookeeper.*

- **Problem Identification:** Ask another child to tell in his own words what the children need to know in order to be able to solve the word problem. This will tell you whether or not they understood what the problem is asking for. If they have not successfully identified the problem. Intervene by saying: *How could we figure out the amount of strokes Sammy needs to swim both ways in order to get his treat from the zookeeper? In order to do so we must know how many strokes he swam one way to figure out how many it will take him to come back.*

4. Analyze: At this point ask the children to identify what they need to do to be able to solve the word problem. They must think about how they could reformulate the problem. Tell them: *Let's think now how we could restate the problem. How do you think we can do it? How can we organize the information?* By doing this, you can tell what kind of effort the student is doing to examine the elements the problem has provided through the following strategies:

- Dividing the problem into parts, selecting perspectives or simplifying it. For example:
 - *Lets organize the problem. We can divide it into parts. What do you think we can do? How can we do it? If they are not able to answer, say: Let's divide the problem into parts so we can understand it better. Like this: How many strokes does it take Sammy to swim one way of the pool? How many strokes will it take him to come back? What does Sammy have to do so he can receive his treat?*
 - Simplifying or reforming the question. For example:
 - *Lets simplify the question. How do you think we can do this? If they are not able to answer, say: Let's take out some words to make it simpler. Let's only leave the most significant words. If no answer is provided by the children, you may say: How many strokes will it take him to come back?*
 - Selecting perspectives(What mathematical operation will be used) For example:
 - *What could we do to be able to solve this problem? If no answer is given, you may say: Did you realize that we can observe and think about the amount of strokes Sammy needs to swim back. We can visualize it or say it out loud by counting the amount of strokes Sammy will take to come back for his treat. We can compare the amounts of strokes it took him to swim one way.*
- 5. Planning:** Ask the children to give suggestions about the different strategies they may use to solve the problem. The purpose of this is not to solve the problem for them, but to allow them to think of the several strategies they may use to solve it. Some of the suggestions may be to use a drawing, a model, counters or to roll play the word problem. If the children do not find a reasonable strategy, the teacher may model out loud at least two strategies like this: *I think we can solve this problem by drawing a picture of the number of strokes Sammy takes to swim the pool. This way I can see how to count up the strokes Sammy will take to swim back, and figure out the total. We can also place some numbers (or counters), on a number line and line*

them up one by one representing the strokes, and on a piece of paper record the right amounts. You may also give them a chance to write out a diagram of what is happening, or retell the story so they can identify the total amount. This modeling will help them to see the various examples they may use to solve the same problem.

6. **Solution:** Ask the children to solve the problem. If they are not able to do so, model for them any of the strategies planned before and give the answer: *If we want to see how many strokes Sammy takes to swim the pool both ways, we must think of how many strokes it took him to swim one way and count up to see how many it took him to swim the other way. We can compare both, or count the strokes one by one. This way we can see how many strokes it took him to get his treat.* Include local monitoring: As the children solve the problem, stop and encourage them to verify their work by speaking out loud.

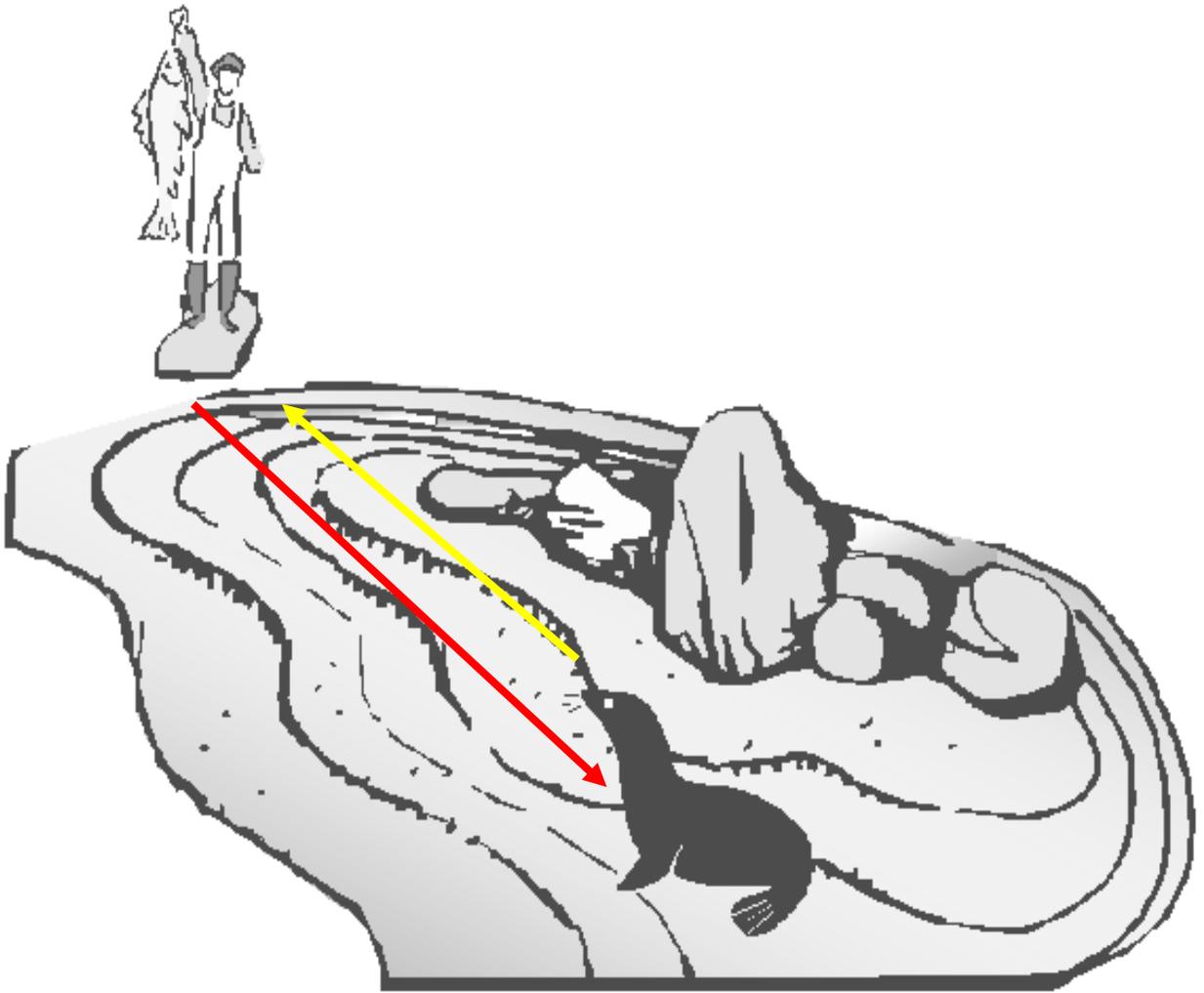
7. **Communication:** Always ask the children to answer and monitor their work by speaking out loud and in complete sentences. Tell them to include the unit of what is being asked for, in the problem. If children do not feel comfortable, model by saying: *The seal was swimming strokes in the pool. You may tell them to look at the question also, because this will help them identify the unit.* The unit is: *strokes*

8. **Evaluation and Proof:** Revise the word problem with the children. Verify and make sure that the correct answer is given. If necessary model for them the correct way to do so: *I revise my answer by thinking and counting the amount of strokes it took Sammy to swim one side of the pool, and then swimming back. This way I could observe how many strokes it took him to do it the right way. I can also use counters to verify my work.* Include global monitoring: As the children proof their work, ask them to tell you how they would do so. If they are having a difficult time doing so, you may model by saying: *I can proof my work by following the counting of the strokes one by one and looking to see how many strokes it took him to do it both ways.*

9. **Representation:** At this point, we need for the each child to represent what is being asked of in the word problem by using drawings, rhymes, songs, dramatizations or manipulatives. You may tell them: *Now we will choose the*

way that you feel most comfortable with, to represent what the word problem is asking for.

- 10. Real Life Connection:** In order for the children to connect this activity to a real life experience they may follow a similar procedure involving measurement. They may observe things from inside or outside the classroom and look for size, weight, or time. This way they will realize how measurement is all around us. You may also have them go on an outing , observe the different patterns in size , shapes, time and weather (temperature), or any other mathematical concept which they may find interesting, in their surroundings.



3. SWEET TREATS

- Objective:** Solve problems with counting and adding money (cents).
- Requirements:** The child must have prior knowledge of some number recognition, adding techniques and some vocabulary related to the subject.
- Suggested Age:** Children from 5 to 6 years of age.
- Materials:** Small shapes, clay, paper, pencil, colors, crayons, counters, or manipulatives (play money), which may be of any type. Flash cards containing the problem's information may be used, or a number line.
- Preparation:** Have the small shapes, number line, or paper and pencil close by. Then read the word problem and together identify strategies to solve it.
- Procedure:** Have the children join the teacher, they may be organized in small groups. They may be gathered around, on their desks or sitting in a small group on the floor.
- Problem:** Karen just got some money from her big brother. She wants to spend it on some sweet treats to eat, but before she buys her sweets at the candy store, she wants to make sure she has enough money. She wants the big candy bar that costs 9 cents and a gum ball that costs 5 cents. How much money will Karen spend on the sweets?

Problem Solving Process:

- 1. Explore:** Begin by asking the children to share if they have ever received money from parents, friends, or family to spend it as they wish. Ask if they can identify some things around the room which may be added up. You may also do informal counting around the room. Tell them: "You'll be listening to a story with money". Do you know how to count money? Can you tell me if you see anything we can count around the room? Apply the Word Problem solving steps.

2. Reading: Read the problem in an attractive way for the children. This way they will have fun listening to it. Mention to them to keep track of the sequence of the story.

3. Comprehension: Ask one of the children to retell the story in their own words. This will tell you whether or not they understood what you just read to them. Complement their comprehension with the following questions:

- Who did Karen get the money from? *Karen got the money from her brother.*
- How does she want to spend it? *She wants to spend it on sweet treats.*
- Where will she get the treats? *She will get the treats from the candy store.*

- **Identifying Data:** Ask the children to tell you what information the problem is providing for them. If they do not respond, intervene by saying: *Karen wants to buy candy from the store and she knows how much each of what she wants to buy, costs.*

- **Problem Identification:** Ask another child to tell in his own words what the children need to know in order to be able to tell whether or not she will have enough money to spend. This will tell you whether or not they understood what the problem is asking for. If they have not successfully identified the problem. Intervene by saying: *How could we help Karen find out whether or not she will have enough money to buy what she wants? We need to think about what the cost of each item is and see if the money she has will be enough.*

4. Analyze: At this point ask the children to identify what they need to do to be able to solve the word problem. They must think about how they could reformulate the problem. Tell them: *Let's think now how we could restate the problem. How do you think we can do it? How can we organize the information?* By doing this, you can tell what kind of effort the student is doing to examine the elements the problem has provided through the following strategies:

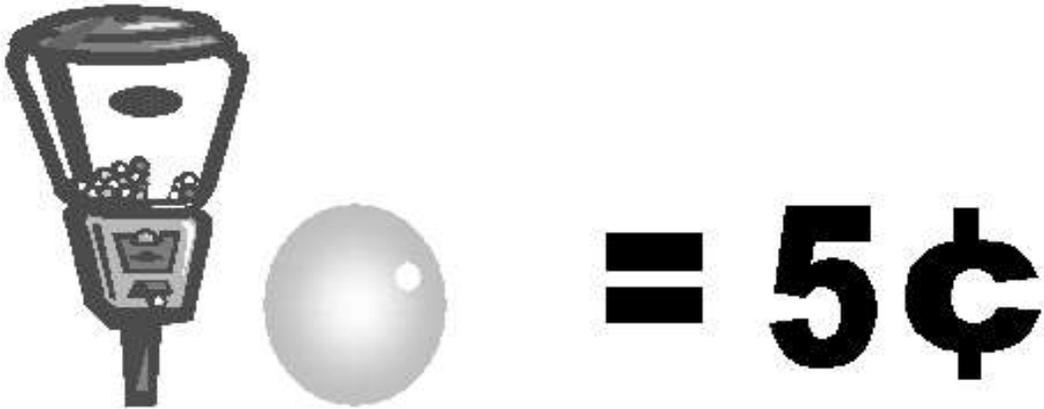
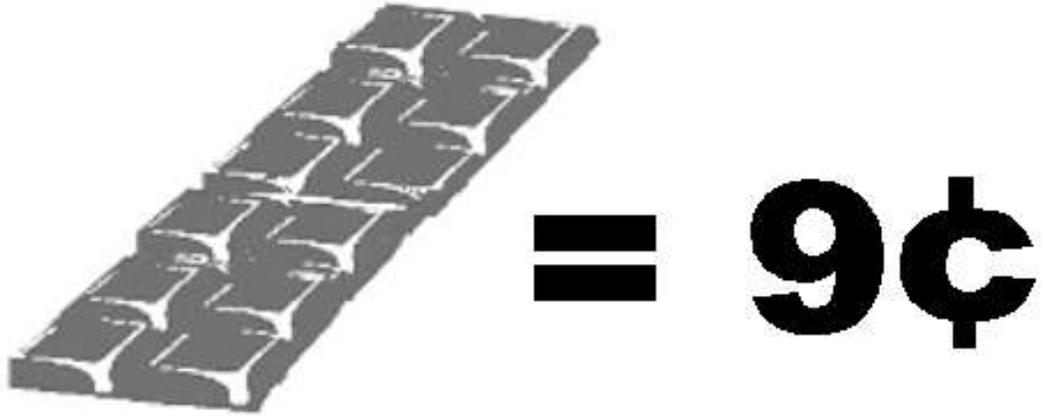
- Dividing the problem into parts, selecting perspectives or simplifying it. For example:

- *Lets organize the problem. We can divide it into parts. What do you think we can do? How can we do it? If they are not able to answer, say: Let's divide the problem into parts so we can understand it better. Like this: What does Karen want to do with the money she has? How can we tell what she will have to pay for her sweet treats and see if she will have enough to buy what she wants?*
 - Simplifying or reforming the question. For example:
 - *Lets simplify the question. How do you think we can do this? If they are not able to answer, say: Let's take out some words to make it simpler. Let's only leave the most significant words. If no answer is provided by the children, you may say: How much money will she spend?*
 - Selecting perspectives(What mathematical operation will be used) For example:
 - *What could we do to be able to solve this problem? If no answer is given, you may say: Did you realize that we can add up the amounts of what she wants to buy at the candy store?*
- 5. Planning:** Ask the children to give suggestions about the different strategies they may use to solve the problem. The purpose of this is not to solve the problem for them, but to allow them to think of the several strategies they may use to solve it. Some of the suggestions may be to use a drawing, a model, or to roll play the word problem using similar shapes. If the children do not find a reasonable strategy, the teacher may model out loud at least two strategies like this: *I think we can solve this problem by representing the amount she will spend on the different candy. You can also break the amounts to be counted up so it is easier, in order to be able to tell how much everything will cost. You may also give them a chance to write out a diagram of what is happening, or retell the story so they can recall the different prices. This modeling will help them to see the various examples they may use to solve the same problem.*

- 6. Solution:** Ask the children to solve the problem. If they are not able to do so, model for them any of the different strategies planned before and give the answer: *If we want to see how much money Karen will spend on her sweet treats we must take into account the amount she spent on each candy, and count those up. We can count one by one the items she bought and this way we can see how much she spent in all.* Include local monitoring: As the children solve the problem, stop and encourage them to verify their work by speaking out loud.
- 7. Communication:** Always ask the children to answer and monitor their work by speaking out loud and in complete sentences. Tell them to include the unit of what is being asked for, in the problem. If children do not feel comfortable, model by saying: *Karen wanted to buy some candy and she wanted to know how much she would spend. You may tell them to look at the question also, because this will help them identify the unit.* The unit is: *money*
- 8. Evaluation and Proof:** Revise the word problem with the children. Verify and make sure that the correct answer is given. If necessary model for them the correct way to do so: *I revise my answer by thinking about the amounts of money Karen would spend on the sweet treats. This way I could see how much she was really spending. I named labeled and counted up the amount with the prices given in the problem which helped me to see how much she would spend.* Include global monitoring: As the children proof their work, ask them to tell you how they would do so. If they are having a difficult time doing so, you may model by saying: *I can proof my work by following the counting of the money out loud one by one and looking to see the total Karen spent.*
- 9. Representation:** At this point, we need for each child to represent what is being asked of in the word problem by using drawings, rhymes, songs, dramatizations or manipulatives. You may tell them: *Now we will choose the way that you feel most comfortable with, to represent the information given in the word problem.*
- 10. Real Life Connection:** In order for the children to connect this activity to a real life experience they may follow a similar procedure involving money. They may observe

1 2 3 4 5 Number

things from inside or outside the classroom and look for size, weight, or time. This way they will realize how counting is all around us. You may also have them go on an outing, observe the different patterns in size, shapes, time and weather (temperature), or any other mathematical concept which they may find interesting, in their surroundings.



4. ALLOWANCE MONEY

- Objective:** Solve problems with counting and adding money (bills).
- Requirements:** The child must have prior knowledge of some number recognition, adding techniques and some vocabulary related to the subject.
- Suggested Age:** Children from 5 to 6 years of age.
- Materials:** Small shapes, clay, paper, pencil, colors, crayons, counters, or manipulatives (play money) which may be of any type. Flash cards containing the problem's information may be used, or a number line.
- Preparation:** Have the small shapes, number line, or paper and pencil close by. Then read the word problem and together identify strategies to solve it.
- Procedure:** Have the children join the teacher, they may be organized in small groups. They may be gathered around, on their desks or sitting in a small group on the floor.
- Problem:** Kenny just got his allowance for the week. He's been saving some of it, to buy a toy car. He's really wanted this toy for a while, and now is his chance to get it. If he buys the toy car that costs \$3 dollars, and pays with a \$5 dollar bill, how much change will Kenny get?

Problem Solving Process:

- 1. Explore:** Begin by asking the children to share if they have ever received an allowance from parents, friends, or family to spend it as they wish. Ask if they can identify some things around the room which may be added up. You may also do informal counting around the room. Tell them: "You'll be listening to a story with money". Do you know how to count money? Can you tell me if you see anything we can count around the room? Apply the Word Problem solving steps.

2. Reading: Read the problem in an attractive way for the children. This way they will have fun listening to it. Mention to them to keep track of the sequence of the story.

3. Comprehension: Ask one of the children to retell the story in their own words. This will tell you whether or not they understood what you just read to them. Complement their comprehension with the following questions:

- What does Kenny receive? *Kenny receives an allowance.*
- What does he usually do with this allowance? *He usually saves up his allowance.*
- What is he planning on doing with what he has saved up? *He is planning on buying a toy car he really wants.*

- **Identifying Data:** Ask the children to tell you what information the problem is providing for them. If they do not respond, intervene by saying: *The boy has saved \$5 dollars to buy a toy car that he really wants.*

- **Problem Identification:** Ask another child to tell in his own words what the children need to know in order to be able to solve the problem. This will tell you whether or not they understood what the problem is asking for. If they have not successfully identified the problem. Intervene by saying: *How can we help Kenny buy his toy car, and make sure he receives the right change back? How do we know what change Kenny will receive if he buys a toy car that costs \$3 dollars and he pays with a \$5 dollar bill?*

4. Analyze: At this point ask the children to identify what they need to do to be able to solve the word problem. They must think about how they could reformulate the problem. Tell them: *Let's think now how we could restate the problem. How do you think we can do it? How can we organize the information?* By doing this, you can tell what kind of effort the student is doing to examine the elements the problem has provided through the following strategies:

- Dividing the problem into parts, selecting perspectives or simplifying it. For example:

- Lets organize the problem. We can divide it into parts. What do you think we can do? How can we do it? If they are not able to answer, say: *Let's divide the problem into parts so we can understand it better.* Like this: *How much money does Kenny have saved up? What will he buy, what is the cost of it? How much change will he get after he buys the toy car?*

- Simplifying or reforming the question. For example:

- *Lets simplify the question. How do you think we can do this?* If they are not able to answer, say: *Let's take out some words to make it simpler. Let's only leave the most significant words.* If no answer is provided by the children, you may say: *How much change will Kenny receive?*

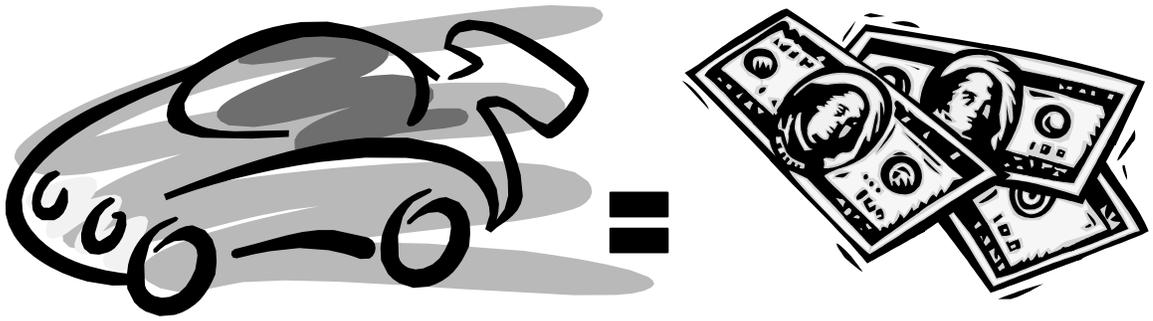
- Selecting perspectives(What mathematical operation will be used) For example:

- *What could we do to be able to solve this problem?* If no answer is given, you may say: *Did you realize that we can subtract the amount of what Kenny will buy at the store?*

5. Planning: Ask the children to give suggestions about the different strategies they may use to solve the problem. The purpose of this is not to solve the problem for them, but to allow them to think of the several strategies they may use to solve it. Some of the suggestions may be to use a drawing, a clay model, or to roll play the word problem using similar shapes. If the children do not find a reasonable strategy, the teacher may model out loud at least two strategies like this: *I think we can solve this problem by recording the amount Kenny will spend on the toy car and counting up from the smaller amount. You can also break the amounts to be counted down or count with your fingers, so it is easier to tell how much change he will receive.* You may also give them a chance to write out a diagram of what is happening, or retell the story so they can identify the different sizes. This modeling will help them to see the various examples they may use to solve the same problem.

- 6. Solution:** Ask the children to solve the problem. If they are not able to do so, model for them model any of the different strategies planned before and give the answer: *If we want to see how much money Kenny will receive as change after he buys his toy car, we must take into account the amount he spent on it, and count up (or down). We can count one by one the money he paid for what he bought and this way we can see how much change he will get.* Include local monitoring: As the children solve the problem, stop and encourage them to verify their work by speaking out loud.
- 7. Communication:** Always ask the children to answer and monitor their work by speaking out loud and in complete sentences. Tell them to include the unit of what is being asked for, in the problem. If children do not feel comfortable, model by saying: *Kenny wants to know how much money he will get back in change after he buys the toy car. You may tell them to look at the question also, because this will help them identify the unit.* The unit is: *money*
- 8. Evaluation and Proof:** Revise the word problem with the children. Verify and make sure that the correct answer is given. If necessary model for them the correct way to do so: *I revise my answer by thinking about the amount of money Kenny paid for the toy car, and revising that my counting was done accurately . This way I could see how much he was really receiving. I named labeled and counted down (or up,) the from the amount the car cost to what he paid with.* Include global monitoring: As the children proof their work, ask them to tell you how they would do so. If they are having a difficult time doing so, you may model by saying: *I can proof my work by following the counting of the change one by one using my fingers and looking to see how much change Kenny received.*
- 9. Representation:** At this point, we need for each child to represent what is being asked of in the word problem by using drawings, rhymes, songs, dramatizations or manipulatives. You may tell them: *Now we will choose the way that you feel most comfortable with, to represent how much Kenny received in change.*

10. Real Life Connection: In order for the children to connect this activity to a real life experience they may follow a similar procedure involving money. They may observe things from inside or outside the classroom and look for size, weight, or time. This way they will realize how counting is all around us. You may also have them go on an outing, observe the different patterns in size, shapes, time and weather (temperature), or any other mathematical concept which they may find interesting, in their surroundings.



5. MONEY- MONEY- MONEY

Objective: Solve problems in which counting money is used by following a sequence.

Requirements: The child must have prior knowledge of counting by fives, adding techniques and some vocabulary related to the subject.

Suggested Age: Children from 5 to 6 years of age.

Materials: Small shapes, clay, paper, pencil, colors, crayons, counters, or manipulatives (play money) which may be of any type. Flash cards containing the problem's information may be used, or a number line.

Preparation: Have the small shapes, number line, or paper and pencil close by. Then read the word problem and together identify strategies to solve it.

Procedure: Have the children join the teacher, they may be organized in small groups. They may be gathered around, on their desks or sitting in a small group on the floor.

Problem: For his birthday Nick received some really nice gifts. Among those gifts, were some envelopes with gift certificates in them. They were from his favorite toy store. Nick needs to count how much he received in gifts so that later he can go and pick up what he wants from the toy store. In the first envelope there was a \$5 dollar gift certificate. In the second envelope there was another \$5 dollar gift certificate. And in the last envelope he received another \$5 dollar gift certificate. How much money does he have altogether?

Problem Solving Process:

- 1. Explore:** Begin by asking the children to share what kinds of gifts they receive on their birthdays or special occasions from parents, friends, or family members. Ask them how they like to spend it, or if they can do so as they wish. Ask if they can identify some things around the room which may

be added up. You may also do informal counting around the room. Tell them: "You'll be listening to a story with money". Do you know how to count money? Can you tell me if you see anything we can count around the room? Apply the Word Problem solving steps.

2. Reading: Read the problem in an attractive way for the children. This way they will have fun listening to it. Mention to them to keep track of the sequence of the story.

3. Comprehension: Ask one of the children to retell the story in their own words. This will tell you whether or not they understood what you just read to them. Complement their comprehension with the following questions:

- What was Nick celebrating? *Nick was celebrating his birthday.*
- What did he receive? *He received some presents and among those were some gift certificates.*
- Where were the gift certificates from? *They were from his favorite toy store.*

- **Identifying Data:** Ask the children to tell you what information the problem is providing for them. If they do not respond, intervene by saying: *The boy received three gift certificates of \$5 dollars each.*

- **Problem Identification:** Ask another child to tell in his own words what the children need to know in order to be able to tell how much money Nick received in gift certificates. This will tell you whether or not they understood what the problem is asking for. If they have not successfully identified the problem. Intervene by saying: *How could we help Nick figure out how much he received in gift certificates? We need to think about what the amount is for each gift certificate and see how much there is altogether.*

4. Analyze: At this point ask the children to identify what they need to do to be able to solve the word problem. They must think about how they could reformulate the problem. Tell them: *Let's think now how we could restate the problem. How do you think we can do it? How can we organize the information?* By doing this, you can tell what kind of effort

the student is doing to examine the elements the problem has provided through the following strategies:

- Dividing the problem into parts, selecting perspectives or simplifying it. For example:
 - *Lets organize the problem. We can divide it into parts. What do you think we can do? How can we do it? If they are not able to answer, say: Let's divide the problem into parts so we can understand it better. Like this: What did Nick receive? How many gift certificate, and what was the amount for each? What does Nick want to know?*
 - Simplifying or reforming the question. For example:
 - *Lets simplify the question. How do you think we can do this? If they are not able to answer, say: Let's take out some words to make it simpler. Let's only leave the most significant words. If no answer is provided by the children, you may say: How much money does Nick have altogether?*
 - Selecting perspectives(What mathematical operation will be used) For example:
 - *What could we do to be able to solve this problem? If no answer is given, you may say: Did you realize that we can add all the gift certificates in order to find out how much money Nick received in all.*
- 5. Planning:** Ask the children to give suggestions about the different strategies they may use to solve the problem. The purpose of this is not to solve the problem for them, but to allow them to think of the several strategies they may use to solve it. Some of the suggestions may be to use a drawing, use a model, or roll play the word problem. If the children do not find a reasonable strategy, the teacher may model out loud at least two strategies like this: *I think we can solve this problem by representing the amount Nick received from all the gift certificates. You can also break the amounts to be counted up so it is easier, in order to be able to tell how much he received altogether. Counters may also be used to make it easier to count the total amount. You may also give them a chance to write out a diagram of what is happening, or retell the story so they can recall the*

different prices. This modeling will help them to see the various examples they may use to solve the same problem.

6. **Solution:** Ask the children to solve the problem. If they are not able to do so, model for them any of the strategies planned before and give the answer: *If we want to help Nick figure out how much money he received in gift certificates for his birthday, we must count up the amounts of each of the gift certificates one by one. We can also follow the counting using a number line or using our fingers to find the total amount. This way we can see how much money Nick received in all.* Include local monitoring: As the children solve the problem, stop and encourage them to verify their work by speaking out loud.
7. **Communication:** Always ask the children to answer and monitor their work by speaking out loud and in complete sentences. Tell them to include the unit of what is being asked for, in the problem. If children do not feel comfortable, model by saying: *Nick received some money in gift certificates and he wants to know how much he received in all. You may tell them to look at the question also, because this will help them identify the unit.* The unit is: *money*
8. **Evaluation and Proof:** Revise the word problem with the children. Verify and make sure that the correct answer is given. If necessary model for them the correct way to do so: *I revise my answer by thinking about the amount of money Nick received in all his gift certificates. Then counting up one by one as he received them. This way I could see how the amounts were changing. I named and labeled each gift certificate with its corresponding amount which helped me to see the total amount of what Nick received.* Include global monitoring: As the children proof their work, ask them to tell you how they would do so. If they are having a difficult time doing so, you may model by saying: *I can proof my work by following the counting of the gift certificates one by one and looking to see which was the total amount.*
9. **Representation:** At this point, we need for each child to represent what is being asked of in the word problem by using drawings, rhymes, songs, dramatizations or manipulatives. You may tell them: *Now we will choose the*

way that you feel most comfortable with, to represent what the word problem is asking for.

- 10. Real Life Connection:** In order for the children to connect this activity to a real life experience they may follow a similar procedure involving money. They may observe things from inside or outside the classroom and look for size, weight, or time. This way they will realize how counting is all around us. You may also have them go on an outing, observe the different patterns in size, shapes, time and weather (temperature), or any other mathematical concept which they may find interesting, in their surroundings.

Gift Certificate

\$ 5

Gift Certificate

\$ 5

Gift Certificate

\$ 5

6. PIGGY BANK COINS

Objective: Solve problems in which counting money is used when recognizing small amounts of coins.

Requirements: The child must have prior knowledge of some coin recognition, adding techniques and some vocabulary related to the subject.

Suggested Age: Children from 5 to 6 years of age.

Materials: Small shapes, clay, paper, pencil, colors, crayons, counters, or manipulatives (play money) which may be of any type. Flash cards containing the problem's information may be used, or a number line.

Preparation: Have the small shapes, number line, or paper and pencil close by. Then read the word problem and together identify strategies to solve it.

Procedure: Have the children join the teacher, they may be organized in small groups. They may be gathered around, on their desks or sitting in a small group on the floor.

Problem: Sandy's piggy bank broke, while she was cleaning her room. She was really sad about it, but her mom promised to get her a new one to replace the broken one. Her mom told her, all she had to do was figure out how much she had in the old piggy bank before they went to go get the new one. This is what Sandy had: three nickels, and ten pennies. How much does she have in all?

Problem Solving Process:

- 1. Explore:** Begin by asking the children to share if they have ever saved money in a special place. Discuss the different places where money can be kept safe. If they say yes, ask them where the money came from. Ask if it is from receiving an allowance or gifts from parents, friends, or family members. Ask if they can identify some things around the room which may be added up. You may also do

informal counting around the room. Tell them: “You’ll be listening to a story with money”. Do you know how to count money? Can you tell me if you see anything we can count around the room? Apply the Word Problem solving steps.

2. Reading: Read the problem in an attractive way for the children. This way they will have fun listening to it. Mention to them to keep track of the sequence of the story.

3. Comprehension: Ask one of the children to retell the story in their own words. This will tell you whether or not they understood what you just read to them. Complement their comprehension with the following questions:

- What happened to Sandy’s piggy bank? *Sandy’s piggy bank broke.*
- How did it happen? *It happened while she was cleaning her room.*
- What did her mom promise her? *Her mom promised her to get her a new piggy bank.*

- **Identifying Data:** Ask the children to tell you what information the problem is providing for them. If they do not respond, intervene by saying: *In order for Sandy to get a new piggy bank she must count all the coins she had in the old one.*

- **Problem Identification:** Ask another child to tell in his own words what the children need to know in order to be able to tell who’s wall is the tallest. This will tell you whether or not they understood what the problem is asking for. If they have not successfully identified the problem. Intervene by saying: *How could we help Sandy figure out how much money she had in her old piggy bank so her mom can buy her a new one? We need to think about which are the coins that Sandy has add them up and then she’ll be able to tell her mom.*

4. Analyze: At this point ask the children to identify what they need to do to be able to solve the word problem. They must think about how they could reformulate the problem. Tell them: *Let’s think now how we could restate the problem. How do you think we can do it? How can we organize the information?* By doing this, you can tell what kind of effort the student is doing to examine the elements the problem has provided through the following strategies:

- Dividing the problem into parts, selecting perspectives or simplifying it. For example:
 - *Lets organize the problem. We can divide it into parts. What do you think we can do? How can we do it? If they are not able to answer, say: Let's divide the problem into parts so we can understand it better. Like this: What does Sandy have to figure out? How much money does she have in all? How can we help her figure it out.*

- Simplifying or reforming the question. For example:
 - *Lets simplify the question. How do you think we can do this? If they are not able to answer, say: Let's take out some words to make it simpler. Let's only leave the most significant words. If no answer is provided by the children, you may say: How much money does Sandy have?*

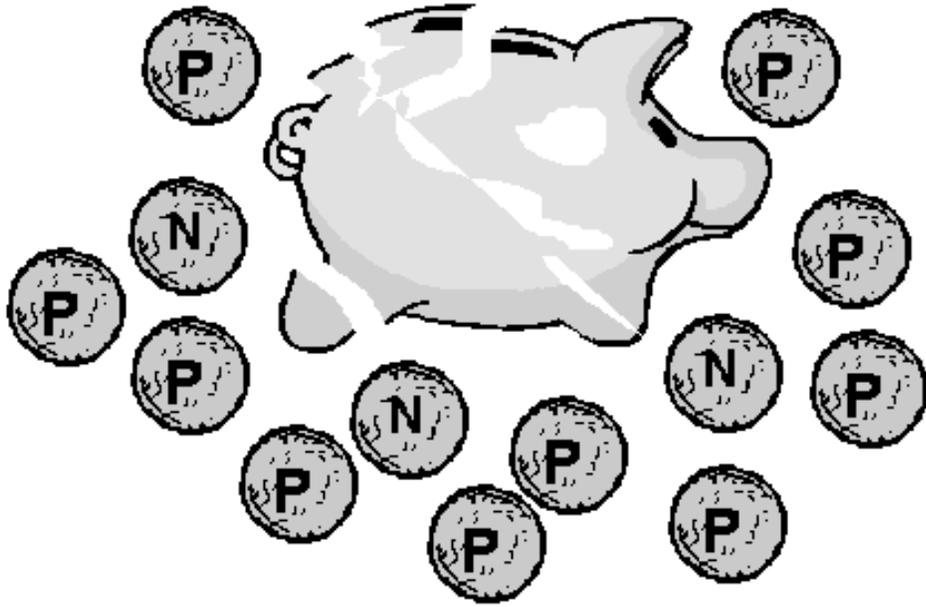
- Selecting perspectives(What mathematical operation will be used) For example:
 - *What could we do to be able to solve this problem? If no answer is given, you may say: Did you realize that we can count up the total amount of coins Sandy had in her piggy bank? We can recognize each coin and see how much she has altogether.*

- 5. Planning:** Ask the children to give suggestions about the different strategies they may use to solve the problem. The purpose of this is not to solve the problem for them, but to allow them to think of the several strategies they may use to solve it. Some of the suggestions may be to use a drawing, play money, counters a number line or chart. They may also roll play the word problem. If the children do not find a reasonable strategy, the teacher may model out loud at least two strategies like this: *I think we can solve this problem by representing the amount of money she had in her piggy bank using some play money, and counting up one by one. You can also break the amounts to be counted up starting from the biggest coin, to make it is easier to be able to count how much she has in all. You may also give them a chance to write out a diagram of what is happening, or retell the story so they can recall the different amount of*

coins. This modeling will help them to see the various examples they may use to solve the same problem.

- 6. Solution:** Ask the children to solve the problem. If they are not able to do so, model for them using any of the strategies planned before and give the answer: *Sandy has 25 cents in all.* Include local monitoring: As the children solve the problem, stop and encourage them to verify their work by speaking out loud.
- 7. Communication:** Always ask the children to answer and monitor their work by speaking out loud and in complete sentences. Tell them to include the unit of what is being asked for, in the problem. If children do not feel comfortable, model by saying: *Sandy needs to find out how much money she has in coins, after her piggy bank broke. You may tell them to look at the question also, because this will help them identify the unit.* The unit is: *money*
- 8. Evaluation and Proof:** Revise the word problem with the children. Verify and make sure that the correct answer is given. If necessary model for them the correct way to do so: *I revise my answer by thinking about the amount of coins Sandy had in her old piggy bank and counting up from the biggest coin to the smallest, making it easier to keep track of the total amount. I can also proof my work by counting out loud the total amount Sandy had, using play money. This way I could see how much money she had in all. Naming and labeling each coin also helped because it helped me to see the total amount.* Include global monitoring: As the children proof their work, ask them to tell you how they would do so. If they are having a difficult time doing so, you may model by saying: *I can proof my work by following the counting of the coins one by one and looking to see the amount of coins Sandy had in her piggy bank.*
- 9. Representation:** At this point, we need for each child to represent what is being asked of in the word problem by using drawings, rhymes, songs, dramatizations or manipulatives. You may tell them: *Now we will choose the way that you feel most comfortable with, to represent the coins Sandy had in her old piggy bank.*

10. Real Life Connection: In order for the children to connect this activity to a real life experience they may follow a similar procedure involving money. They may observe things from inside or outside the classroom and look for size, weight, or time. This way they will realize how counting is all around us. You may also have them go on an outing, observe the different patterns in size, shapes, time and weather (temperature), or any other mathematical concept which they may find interesting, in their surroundings.



7. TWO BY TWO'S

Objective: Solve problems in which number identification and the ability to follow a sequence is applied .

Requirements: The child must have prior knowledge of number recognition, some adding techniques and some vocabulary related to counting by two's the subject.

Suggested Age: Children from 5 to 6 years of age.

Materials: Small shapes, clay, paper, pencil, colors, crayons, counters, or manipulatives which may be of any type. Flash cards containing the problem's information may be used, a chart, or a number line.

Preparation: Have the small shapes, number line, or paper and pencil close by. Then read the word problem and together identify strategies to solve it.

Procedure: Have the children join the teacher, they may be organized in small groups. They may be gathered around, on their desks or sitting in a small group on the floor.

Problem: Counting by two's is fun to do. This is what the first grade class is learning to do. Pat, one of the first graders, was having a bit of trouble with her counting by two's. She asked the teacher to check her work, but the teacher was with another child. Let's help Pat check her counting by two's, and finish what she started. This is what she had recorded on her notebook: 0-2-4-6-8-10 What comes next?

Problem Solving Process:

- 1. Explore:** Begin by asking the children to share what they know about counting. Ask if they can do some oral counting for you from any given number. This conversation will help to them to activate background knowledge about numbers. This will aid them to make connections about what they already know about numbers, and help them to

relate the information and make a more significant learning experience. You may also do some more informal counting patterns around the room. Tell them: "You'll be listening to a story with numbers in it, you will counting the information". Do you know what to count means? Can you tell me if you see anything we can count around the room? Apply the Word Problem solving steps.

2. Reading: Read the problem in an attractive way for the children. This way they will have fun listening to it. Mention to them to keep track of the sequence of the story.

3. Comprehension: Ask one of the children to retell the story in their own words. This will tell you whether or not they understood what you just read to them. Complement their comprehension with the following questions:

- What is the first grade class learning to do? *The class is learning to count by twos.*
- What happened to Pat? *She is having a bit of trouble with her counting bys.*

- **Identifying Data:** Ask the children to tell you what information the problem is providing for them. If they do not respond, intervene by saying: *Pat wants to know if what she learned about counting by two's is correct. How could we help her figure out who she counted? We need to think about what she knows about how to count and then figure out if she did it well.*

- **Problem Identification:** Ask another child to tell in his own words what the children need to know in order to be able to tell whether or not Pat counted well. This will tell you whether or not they understood what the problem is asking for. If they have not successfully identified the problem. Intervene by saying: *How could we tell whether or not Pat counted well? We need to think about what she did and how she did it.*

4. Analyze: At this point ask the children to identify what they need to do to be able to solve the word problem. They must think about how they could reformulate the problem. Tell them: *Let's think now how we could restate the problem. How do you think we can do it? How can we organize the information?* By doing this, you can tell what kind of effort

the student is doing to examine the elements the problem has provided through the following strategies:

- Dividing the problem into parts, selecting perspectives or simplifying it. For example:
 - *Lets organize the problem. We can divide it into parts. What do you think we can do? How can we do it? If they are not able to answer, say: Let's divide the problem into parts so we can understand it better. Like this: What did Pat learn to do? How is she doing it? How can we tell she is doing it right? How can we help her continue?*
 - Simplifying or reforming the question. For example:
 - *Lets simplify the question. How do you think we can do this? If they are not able to answer, say: Let's take out some words to make it simpler. Let's only leave the most significant words. If no answer is provided by the children, you may say: What number comes next?*
 - Selecting perspectives(What mathematical operation will be used) For example:
 - *What could we do to be able to solve this problem? If no answer is given, you may say: : Did you realize that we can observe and think about the order of the numbers Pat is learning about? . We can visualize them and listen to the counting up one by one to see the pattern.*
- 5. Planning:** Ask the children to give suggestions about the different strategies they may use to solve the problem. The purpose of this is not to solve the problem for them, but to allow them to think of the several strategies they may use to solve it. Some of the suggestions may be to use a drawing, a model, or to roll play the word problem. If the children do not find a reasonable strategy, the teacher may model out loud at least two strategies like this: *I think we can solve this problem by drawing a picture of the numbers Pat counted. We can start by drawing the sequence of how she counted and count up to see how accurate she was doing it, and how to help her check and continue the pattern. The child can read out the sequence and continue*

it by following the last number and counting up the numbers to make it easier for doing so. We can also make a model of the numbers with the information given by the problem. You may also give them a chance to write out a diagram of what is happening, or retell the story so they can identify the pattern. This modeling will help them to see the various examples they may use to solve the same problem.

6. **Solution:** Ask the children to solve the problem. If they are not able to do so, model for them any of the strategies planned before and give the answer: *If we want to how to check Pat's pattern and be able to continue it, we must think of she counted up from, and how we could follow the same pattern. We can count by twos using the same sequence she used in class. This way we can see the pattern that is being established.* Include local monitoring: As the children solve the problem, stop and encourage them to verify their work by speaking out loud.

7. **Communication:** Always ask the children to answer and monitor their work by speaking out loud and in complete sentences. Tell them to include the unit of what is being asked for, in the problem. If children do not feel comfortable, model by saying: *Pat just learned a new pattern of counting by two's and she wants to be able to check if and help her to continue it correctly. You may tell them to look at the question also, because this will help them identify the unit.* The unit is: *counting by two's*

8. **Evaluation and Proof:** Revise the word problem with the children. Verify and make sure that the correct answer is given. If necessary model for them the correct way to do so: *I revise my answer by thinking about the numbers Pat counted up, and how I could follow it . We can check this problem by counting up the numbers from the pattern Pat started and count up to continue it. We can start by writing the numbers and verifying the sequence using a chart of a number line by counting up to see how the pattern was established. We could also use some counters to figure out the pattern established by Pat and count up.* Include global monitoring: *I revise my answer by thinking about the numbers of used in the pattern and how they were following a sequence. This way I could see how the pattern was being established. I named and labeled each number in the sequence which helped me to see how the pattern took form. This way I was able to tell whether or not it was correct and if I could follow it properly.* Include global

monitoring: As the children proof their work, ask them to tell you how they would do so. If they are having a difficult time doing so, you may model by saying: *I can proof my work by following the counting begun by Pat one by one and looking to see whether or not it was correct and if I could help her to follow it.*

9. Representation: At this point, we need for each child to represent what is being asked of in the word problem by using drawings, rhymes, songs, dramatizations or manipulatives. You may tell them: *Now we will choose the way that you feel most comfortable with, to represent how Pat should verify her work and how we can help her to continue it.*

10. Real Life Connection: In order for the children to connect this activity to a real life experience they may follow a similar procedure which may involve number sequences such as counting up. They may observe things from inside or outside the classroom and look for size, weight, or time. This way they will realize how numbers are all around us. You may also have them go on an outing, observe the different patterns in numbers that they may encounter such as: size , shapes, time and weather (temperature), or any other mathematical concept which they may find interesting, in their surroundings.

What comes next ?



0 - 2 - 4 - 6 - 8 - 10 -



8. HIDE AND SEEK

Objective: Solve problems in which number recognition and the ability to follow a sequence is applied when counting by tens.

Requirements: The child must have prior knowledge of number recognition, some adding techniques and some vocabulary related to the subject.

Suggested Age: Children from 5 to 6 years of age.

Materials: Small shapes, clay, paper, pencil, colors, crayons, counters, or manipulatives which may be of any type. Flash cards containing the problem's information may be used, charts, or a number line.

Preparation: Have the small shapes, number line, or paper and pencil close by. Then read the word problem and together identify strategies to solve it.

Procedure: Have the children join the teacher, they may be organized in small groups. They may be gathered around, on their desks or sitting in a small group on the floor.

Problem: Jim, Tim, and Fin were all playing hide-and-seeK. It was Jim's third time up seeking. He was taking too long when he counted up to fifty, and the other boys were beating him at the game all the time. The other boys told him to count by ten's so he could finish faster, and start looking sooner. Jim said OK, and began to count. This is what he started to say: 0-10 and he got stuck! How can we help Jim finish counting to fifty, so he can find his friends quickly?

Problem Solving Process:

- 1. Explore:** Begin by asking the children to share what they know about counting. Ask if they can do some oral counting for you from any given number. This conversation will help to them to activate background knowledge about numbers. This will aid them to make connections about what they already know about numbers, and help them to

relate the information and make a more significant learning experience. You may also do some more informal counting patterns around the room. Tell them: "You'll be listening to a story with numbers in it, you will counting the information". Do you know what to count means? Can you tell me if you see anything we can count around the room? Apply the Word Problem solving steps.

2. Reading: Read the problem in an attractive way for the children. This way they will have fun listening to it. Mention to them to keep track of the sequence of the story.

3. Comprehension: Ask one of the children to retell the story in their own words. This will tell you whether or not they understood what you just read to them. Complement their comprehension with the following questions:

- What are the boys playing? *These boys are playing hide and seek.*
- Why is Jim counting now? *Jim is counting now because it is his turn to do so.*
- Why is Jim counting for the third time? *He is taking too long counting and his friends are beating him at the game.*

- **Identifying Data:** Ask the children to tell you what information the problem is providing for them. If they do not respond, intervene by saying: *The boys are playing hide and seek they are not moving forward in the game because Jim is having a difficult time with his counting. So the other boys suggested to him to count a different way so he could finish faster. How could we help Jim continue the pattern so he can find his friends faster? We need to think about what the boy knows about how to count and then help him figure out how continue following the sequence each number at a time.*

- **Problem Identification:** Ask another child to tell in his own words what the children need to know in order to be able to tell how Jim can count faster. This will tell you whether or not they understood what the problem is asking for. If they have not successfully identified the problem. Intervene by saying: *How could we tell what Jim needs to do so he is not stuck while following the sequence? Why does he need to count a different way?*

We need to think about how Jim has started, and what he needs to do to be able to continue his pattern.

- 4. Analyze:** At this point ask the children to identify what they need to do to be able to solve the word problem. They must think about how they could reformulate the problem. Tell them: *Let's think now how we could restate the problem. How do you think we can do it? How can we organize the information?* By doing this, you can tell what kind of effort the student is doing to examine the elements the problem has provided through the following strategies:
- Dividing the question into parts, selecting perspectives or simplifying it. For example:
 - *Lets organize the problem. We can divide it into parts. What do you think we can do? How can we do it? If they are not able to answer, say: Let's divide the problem into parts so we can understand it better. Like this: What has happened to Jim? How did the other boys help? What does he need to do in order to follow the pattern? What can we do to help him follow the pattern smoothly?*
 - Simplifying or reforming the question. For example:
 - *Lets simplify the question. How do you think we can do this? If they are not able to answer, say: Let's take out some words to make it simpler. Let's only leave the most significant words. If no answer is provided by the children, you may say: How can we help Jim follow his pattern?*
 - Selecting perspectives(What mathematical operation will be used) For example:
 - *What could we do to be able to solve this problem? If no answer is given, you may say: : Did you realize that we can observe and think about the numbers Jim started to use and help him follow along using the same pattern. We can visualize this pattern by counting up one by one following the sequence to see how we can help him not be stuck.*
- 5. Planning:** Ask the children to give suggestions about the different strategies they may use to solve the problem.

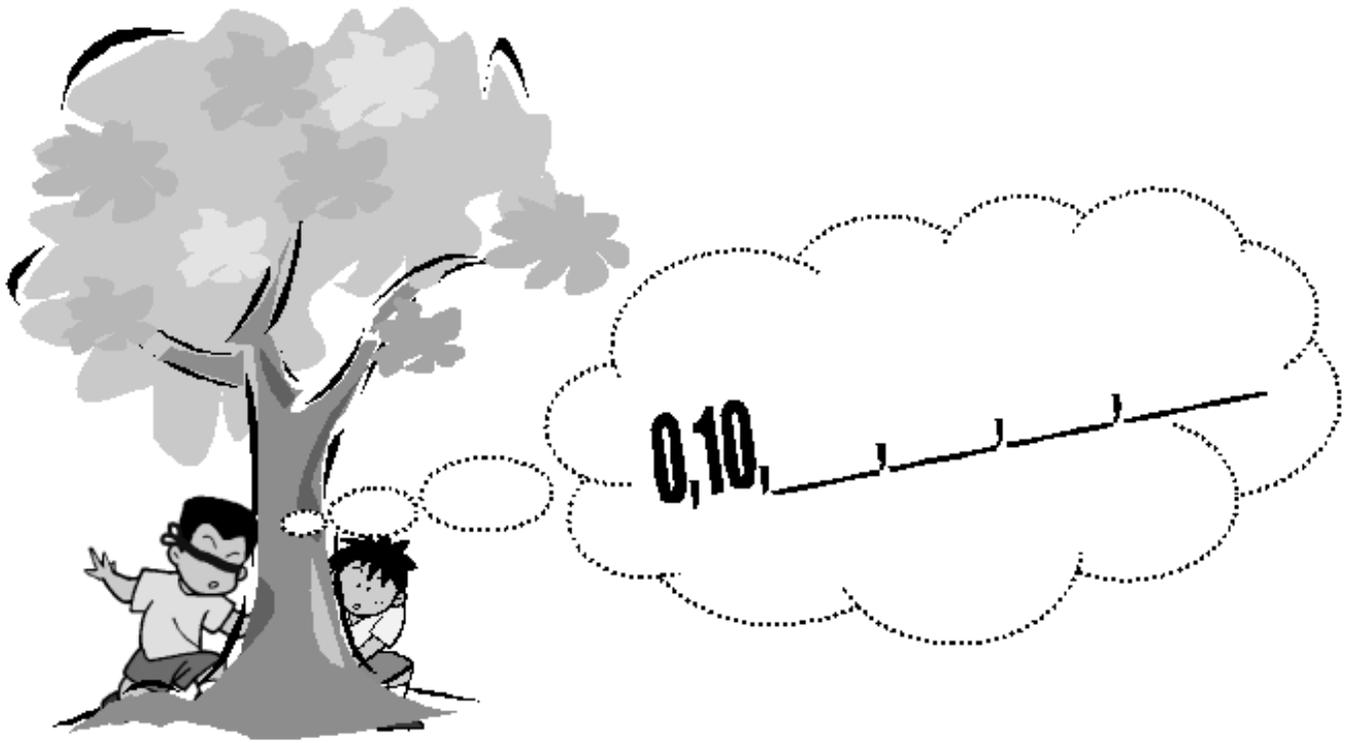
The purpose of this is not to solve the problem for them, but to allow them to think of the several strategies they may use to solve it. Some of the suggestions may be to use a drawing, a model, or to roll play the word problem. If the children do not find a reasonable strategy, the teacher may model out loud at least two strategies like this: *I think we can solve this problem by drawing a picture of the numbers Jim must follow, and count up using a chart. We can start by placing the numbers on the chart and count up to see the pattern established. The child can do the counting like by adding up the numbers to make it easier to follow the counting from the smallest number and increase to the biggest amount, like this: $10+10+10\dots$ And so on. We can also make a model of the sequence of numbers with the information given by the problem.* You may also give them a chance to write out a diagram of what is happening, or retell the story so they can identify the pattern. This modeling will help them to see the various examples they may use to solve the same problem.

6. **Solution:** Ask the children to solve the problem. If they are not able to do so, model for them any of the strategies planned before and give the answer: *If we want to know how to help Jim follow his counting pattern and be able to continue it, we must think of how he counted up from the given amount, and how we could follow the same pattern. We can count by tens using the same sequence he used while playing. This way we can see the pattern that is being established.* Include local monitoring: As the children solve the problem, stop and encourage them to verify their work by speaking out loud.
7. **Communication:** Always ask the children to answer and monitor their work by speaking out loud and in complete sentences. Tell them to include the unit of what is being asked for, in the problem. If children do not feel comfortable, model by saying: *Jim needs a bit of help with counting by tens and he wants to be able to check if can continue it correctly. You may tell them to look at the question also, because this will help them identify the unit.* The unit is: *counting by tens*
8. **Evaluation and Proof:** Revise the word problem with the children. Verify and make sure that the correct answer is given. If necessary model for them the correct way to do so: *I revise my answer by thinking about the numbers Jim needs to count up, and how I could help him follow it . We*

can check this problem by counting up the numbers from the pattern Jim started and count up to continue it. We can start by writing the numbers and verifying the sequence using a chart or a number line and count up to see how the pattern was being established. We could also use some counters to figure out the pattern started by Jim and count up. Include global monitoring: As the children proof their work, ask them to tell you how they would do so. If they are having a difficult time doing so, you may model by saying: *I can proof my work by following the counting begun by Jim one by one and looking to see whether or not I could help him to continue it.*

9. Representation: At this point, we need for each child to represent what is being asked of in the word problem by using drawings, rhymes, songs, dramatizations or manipulatives. You may tell them: *Now we will choose the way that you feel most comfortable with, to represent how Jim will follow his counting.*

10. Real Life Connection: In order for the children to connect this activity to a real life experience they may follow a similar procedure which may involve number sequences such as counting up. They may observe things from inside or outside the classroom and look for size, weight, or time. This way they will realize how numbers are all around us. You may also have them go on an outing, observe the different patterns in numbers that they may encounter such as: size , shapes, time and weather (temperature), or any other mathematical concept which they may find interesting, in their surroundings.



9. DOG YEARS

Objective: Solve problems in which number identification and the ability to follow a pattern is applied.

Requirements: The child must have prior knowledge of number recognition, some adding techniques and some vocabulary related to the subject.

Suggested Age: Children from 5 to 6 years of age.

Materials: Small shapes, clay, paper, pencil, colors, crayons, counters, or manipulatives which may be of any type. Flash cards containing the problem's information may be used, or a number line or chart.

Preparation: Have the small shapes, number line, or paper and pencil close by. Then read the word problem and together identify strategies to solve it.

Procedure: Have the children join the teacher, they may be organized in small groups. They may be gathered around, on their desks or sitting in a small group on the floor.

Problem: Bob got a new puppy for his birthday, he was delighted with the gift. He found out that dogs age differently than humans. This worried Bob, because he figured his puppy would change and would not want to play with him anymore. This is what he found out. Every year for dogs is seven human years. This meant that his puppy next year would really be seven human years old. How old in human years would the puppy be the year after?

Problem Solving Process:

- 1. Explore:** Begin by asking the children to share if they know which animals would make good pets. This conversation will lead them to activating background knowledge about pets. Ask if they have any pets at home. This will lead them to making connections to what they already know, and help them to relate the information and make a more significant learning experience.

You may also do some informal counting patterns around the room. Tell them: "You'll be listening to a story with numbers in it, you will counting the information". Do you know what to count means? Can you tell me if you see anything we can count around the room? Apply the Word Problem solving steps.

2. Reading: Read the problem in an attractive way for the children. This way they will have fun listening to it. Mention to them to keep track of the sequence of the story.

3. Comprehension: Ask one of the children to retell the story in their own words. This will tell you whether or not they understood what you just read to them. Complement their comprehension with the following questions:

- Who is the boy in the story? *The boy in the story is Bob.*
- What is he celebrating? *He is celebrating his birthday.*
- What did he receive for his birthday? *He received a puppy for his birthday.*

- **Identifying Data:** Ask the children to tell you what information the problem is providing for them. If they do not respond, intervene by saying: *The boy found out that dog's age differently. He knows that every dog year is seven human years.*

- **Problem Identification:** Ask another child to tell in his own words what the children need to know in order to be able to solve this problem. This will tell you whether or not they understood what the problem is asking for. If they have not successfully identified the problem. Intervene by saying: *How could we help figure out who old the puppy will be the year after? We need to think about what the boy knows about how dog's age and then figure out how much older he will be.*

4. Analyze: At this point ask the children to identify what they need to do to be able to solve the word problem. They must think about how they could reformulate the problem. Tell them: *Let's think now how we could restate the problem. How do you think we can do it? How can we organize the information?* By doing this, you can tell what

kind of effort the student is doing to examine the elements the problem has provided through the following strategies:

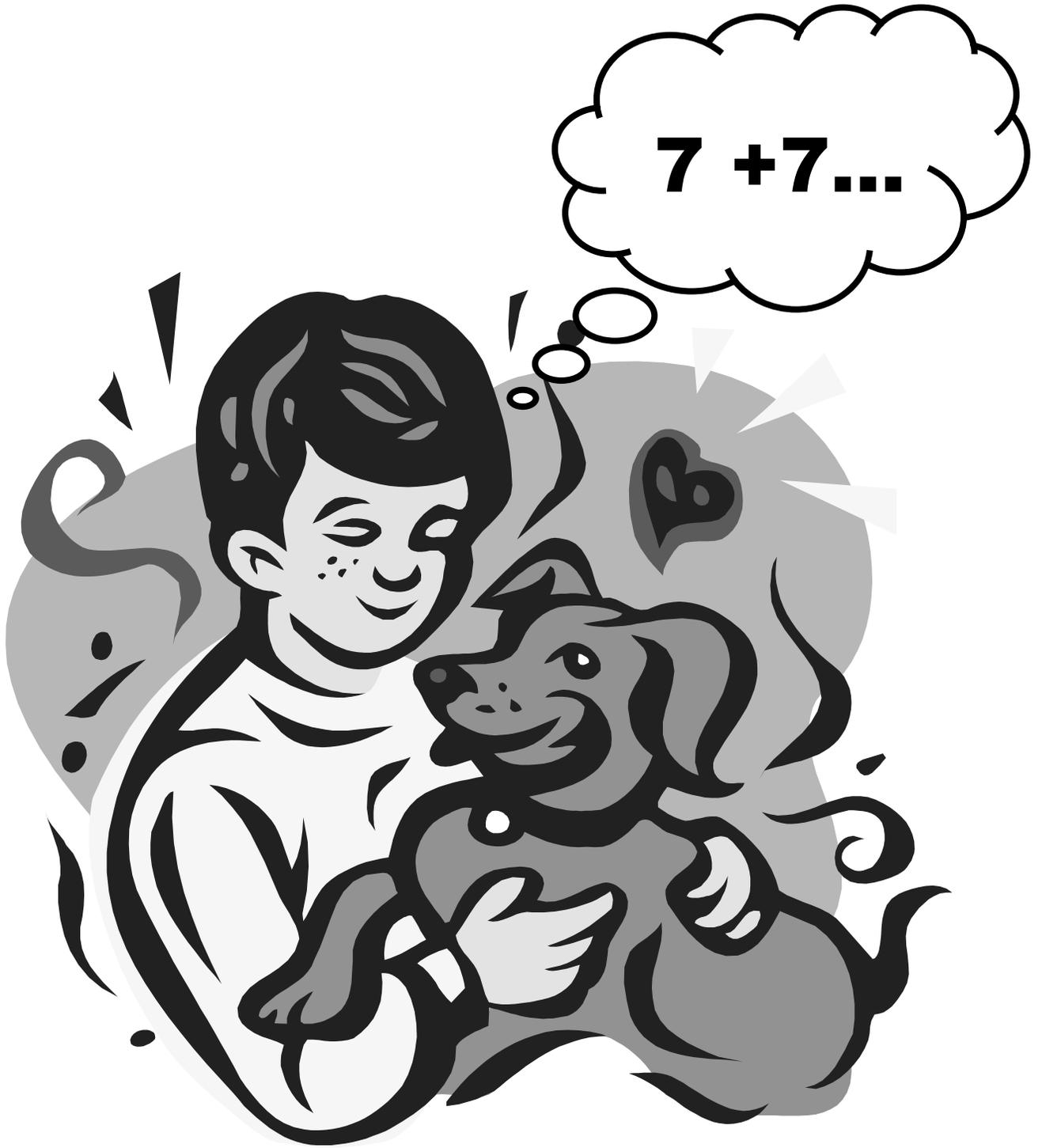
- Dividing the problem into parts, selecting perspectives or simplifying it. For example:
 - *Lets organize the problem. We can divide it into parts. What do you think we can do? How can we do it? If they are not able to answer, say: Let's divide the problem into parts so we can understand it better. Like this: What has Bob found out about the way dog's age? How much older will the puppy be the year after? How can we help Bob figure this out?*
 - Simplifying or reforming the question. For example:
 - *Lets simplify the question. How do you think we can do this? If they are not able to answer, say: Let's take out some words to make it simpler. Let's only leave the most significant words. If no answer is provided by the children, you may say: How old will the puppy be?*
 - Selecting perspectives(What mathematical operation will be used) For example:
 - *What could we do to be able to solve this problem? If no answer is given, you may say: Did you realize that we can observe and think about the age the puppy will be the year after. We can visualize it by counting the age up one by one to see how old the puppy will be.*
- 5. Planning:** Ask the children to give suggestions about the different strategies they may use to solve the problem. The purpose of this is not to solve the problem for them, but to allow them to think of the several strategies they may use to solve it. Some of the suggestions may be to use a drawing, a clay model, a number line or chart. They may also roll play the word problem. If the children do not find a reasonable strategy, the teacher may model out loud at least two strategies like this: *I think we can solve this problem by drawing a picture of the number of years. We can start by drawing the years of how old the dog is now and count up to see how old it will be next year. The child can do the counting like by breaking up the numbers to*

make it easier for him from the biggest number to the smaller amount, like this: $7+(4+3)$. We can also make a model of the years with the information given by the problem. You may also give them a chance to write out a diagram of what is happening, or retell the story so they can identify the different sizes. This modeling will help them to see the various examples they may use to solve the same problem.

- 6. Solution:** Ask the children to solve the problem. If they are not able to do so, model for them any of the strategies planned before and give the answer: *Next year the puppy will be seven and the year after it will be 14, and the year after that it will be 21. This way we can see the pattern that is being established when counting by sevens.* Include local monitoring: As the children solve the problem, stop and encourage them to verify their work by speaking out loud.
- 7. Communication:** Always ask the children to answer and monitor their work by speaking out loud and in complete sentences. Tell them to include the unit of what is being asked for, in the problem. If children do not feel comfortable, model by saying: *Bob wants to know how old the puppy will be the year after. You may tell them to look at the question also, because this will help them identify the unit.* The unit is: *years*
- 8. Evaluation and Proof:** Revise the word problem with the children. Verify and make sure that the correct answer is given. If necessary model for them the correct way to do so: *I revise my answer by thinking about the years the puppy is. We can check this problem by counting up the number of years the puppy will be. We can start by writing the years of how old the dog is now and count up to see how old it will be the year after. We could also use some counters to figure out the puppy's age and count up..* Include global monitoring: As the children proof their work, ask them to tell you how they would do so. If they are having a difficult time doing so, you may model by saying: *I can proof my work by following the counting of the puppy's years one by one and looking to see how old it will be the year after.*
- 9. Representation:** At this point, we need for each child to represent what is being asked of in the word problem by

using drawings, rhymes, songs, dramatizations or manipulatives. You may tell them: *Now we will choose the way that you feel most comfortable with, to represent the puppy's years*

10. Real Life Connection: In order for the children to connect this activity to a real life experience they may follow a similar procedure which may involve number sequences such as counting up. They may observe things from inside or outside the classroom and look for size, weight, or time. This way they will realize how numbers are all around us. You may also have them go on an outing, observe the different patterns in numbers that they may encounter such as: size , shapes, time and weather (temperature), or any other mathematical concept which they may find interesting, in their surroundings.



10. THE CIRCUS IS IN TOWN

Objective: Solve problems in which number identification and number correspondence is applied to find a total amount.

Requirements: The child must have prior knowledge of number recognition, some adding techniques and some vocabulary related to the subject.

Suggested Age: Children from 5 to 6 years of age.

Materials: Small shapes, clay, paper, pencil, colors, crayons, counters, or manipulatives which may be of any type. Flash cards containing the problem's information may be used, or a number line or chart.

Preparation: Have the small shapes, number line, or paper and pencil close by. Then read the word problem and together identify strategies to solve it.

Procedure: Have the children join the teacher, they may be organized in small groups. They may be gathered around, on their desks or sitting in a small group on the floor.

Problem: The circus is in town and Cindy really wants to go. She asked her mom and dad if they would take her but they said: "maybe next week". Cindy is not sure the circus will still be here next week. So she asked her big brother if he would take her. He said he would, but only if she answered his question correctly. She said she would try her hardest, because she really wanted to go. This is what her brother asked: If 200 people fit in every circus show, and they have two shows every day. How many people see the show every day?

Problem Solving Process:

- 1. Explore:** Begin by asking the children to share if they know what the circus is. Ask if they have ever been to one. This conversation will lead them to activating background knowledge about a circus and what kind of things are in it. This will lead them to making connections to what they

already know, and help them to relate the information and make a more significant learning experience.

You may also do some informal counting patterns around the room. Tell them: "You'll be listening to a story with numbers in it, you will counting some of the information in it". Do you know what to count means? Can you tell me if you see anything we can count around the room? Apply the Word Problem solving steps.

2. **Reading:** Read the problem in an attractive way for the children. This way they will have fun listening to it. Mention to them to keep track of the sequence of the story.
3. **Comprehension:** Ask one of the children to retell the story in their own words. This will tell you whether or not they understood what you just read to them. Complement their comprehension with the following questions:

- Who is in town? *The circus is in town.*
- What is does Cindy want to do? *She wants to go to see a circus show.*
- What did she ask her mom and dad? *She asked them to take her.*
- What did her parents say? *They said they might take her next week.*
- Whom did Cindy ask for help? *She asked her brother for help.*

- **Identifying Data:** Ask the children to tell you what information the problem is providing for them. If they do not respond, intervene by saying: *Cindy knows that 200 people fit in the circus show, and that there are two shows every day.*
- **Problem Identification:** Ask another child to tell in his own words what the children need to know in order to be able to solve this problem. This will tell you whether or not they understood what the problem is asking for. If they have not successfully identified the problem. Intervene by saying: *How could we help Cindy figure out how many people fit in a day's show? We need to think about what the Cindy knows about how many people fit in each show and then help her figure out how many people fit in the two shows the circus has each day.*

4. Analyze: At this point ask the children to identify what they need to do to be able to solve the word problem. They must think about how they could reformulate the problem. Tell them: *Let's think now how we could restate the problem. How do you think we can do it? How can we organize the information?* By doing this, you can tell what kind of effort the student is doing to examine the elements the problem has provided through the following strategies:

- Dividing the problem into parts, selecting perspectives or simplifying it. For example:

- *Lets organize the problem. We can divide it into parts. What do you think we can do? How can we do it?* If they are not able to answer, say: *Let's divide the problem into parts so we can understand it better.* Like this: *How many people see the show each day? How many shows a there in a day? How can we help Cindy figure this out?*

- Simplifying or reforming the question. For example:

- *Lets simplify the question. How do you think we can do this?* If they are not able to answer, say: *Let's take out some words to make it simpler. Let's only leave the most significant words.* If no answer is provided by the children, you may say: *How many people see the show each day?*

- Selecting perspectives(What mathematical operation will be used) For example:

- *What could we do to be able to solve this problem?* If no answer is given, you may say: *Did you realize that we can observe and think about the amount of people that can see each show. We can visualize it, or say it orally, by counting the amount of people one by one to see how many people see the show each day.*

5. Planning: Ask the children to give suggestions about the different strategies they may use to solve the problem. The purpose of this is not to solve the problem for them, but to allow them to think of the several strategies they may use to solve it. Some of the suggestions may be to use a drawing, a clay model, a number line or chart. They may

also roll play the word problem. If the children do not find a reasonable strategy, the teacher may model out loud at least two strategies like this: *I think we can solve this problem by drawing a picture of the number of people that can see the show. We can start by drawing the people that see the show in the first showing and then in the second showing and count up to see how many people there are altogether. The child can do the counting by breaking up the numbers to make it easier for him from the biggest number the smaller amount, like this: $200+(100+100)$. We can also make a model of the people with the information given by the problem. You may give them the opportunity to write out a diagram of what is happening, or retell the story so they can identify the total amount. This modeling will help them to see the various examples they may use to solve the same problem.*

6. **Solution:** Ask the children to solve the problem. If they are not able to do so, model for them any of the strategies planned before and give the answer: *200 people fit every day in both shows.* Include local monitoring: As the children solve the problem, stop and encourage them to verify their work by speaking out loud.
7. **Communication:** Always ask the children to answer and monitor their work by speaking out loud and in complete sentences. Tell them to include the unit of what is being asked for, in the problem. If children do not feel comfortable, model by saying: *Cindy wants to know how many people see the show altogether.* You may tell them to look at the question also, because this will help them identify the unit. The unit is: *people*
8. **Evaluation and Proof:** Revise the word problem with the children. Verify and make sure that the correct answer is given. If necessary model for them the correct way to do so: *I revise my answer by thinking about the amount of people that see the show each time. We can check this problem by counting up the number of people. We can start by writing the amount of people that see the show in the first showing and then in the second showing and count up to see how many people see it altogether. We could also use some counters to figure out the amount of people and count up.* Include global monitoring: As the children proof their work, ask them to tell you how they would do so.

If they are having a difficult time doing so, you may model by saying: *I can proof my work by following the counting of the amount of people one by one and looking to see how many people see the show altogether .*

- 9. Representation:** At this point, we need for each child to represent what is being asked of in the word problem by using drawings, rhymes, songs, dramatizations or manipulatives. You may tell them: *Now we will choose the way that you feel most comfortable with, to represent the amount of people that see the show.*
- 10. Real Life Connection:** In order for the children to connect this activity to a real life experience they may follow a similar procedure which may involve number sequences such as counting up. They may observe things from inside or outside the classroom and look for size, weight, or time. This way they will realize how numbers are all around us. You may also have them go on an outing, observe the different patterns in numbers that they may encounter such as: size , shapes, time and weather (temperature), or any other mathematical concept which they may find interesting, in their surroundings.

