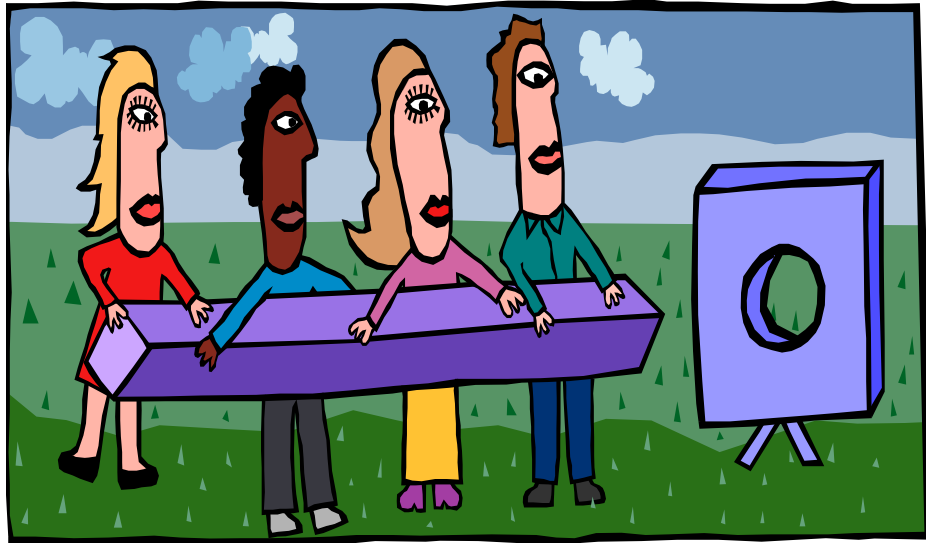


JEFFERSON COUNTY PUBLIC SCHOOLS



September, 2010

Elementary Problem Solving Manual



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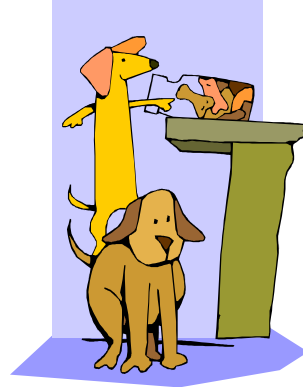
JEFFERSON COUNTY PUBLIC SCHOOLS SCHOOL ACADEMIC COMPETITION

PROBLEM SOLVING

We all have problems to solve, decisions to make. In order to solve these problems and make good decisions, we first have to understand the problem. Who or what is involved in the problem? When and where does the problem occur? Why does it occur? How does it occur? In other words, what is the problem? If we fully understand the scope of the problem, we are more likely to come up with a good solution.

In order to do this, we have to:

- gather information
- analyze the specific situation
- define the problem
- generate many possible solutions
- evaluate the solutions
- select a solution
- communicate that solution to the proper audience



Presentation problem solving is a classroom activity designed to help students study the past, explore the present, and investigate the possibilities of the future. It may be used to solve personal problems and problems of society. It may be used as a study tool in all subject areas and to help students understand and focus on environmental and social issues on local, national and global levels.

Problem Solving may be used in the classroom to teach sound thinking skills and problem solving processes. It may be used to help teach students how to work in groups, how to share information, how to compromise and collaborate, and how to make written and oral presentations.

PROBLEM SOLVING in the CLASSROOM and in COMPETITION

Problem Solving is a team activity that helps students learn to think. It teaches students to examine their own problems and the problems of the world, both critically and creatively. It provides students with strategies for facing everyday problems, individually and collectively. It teaches students how to think about the world in constructive ways; how to analyze situations and focus on and explore potential alternatives to problems.

As members of a problem solving team students learn to work together in an ever-changing environment. This activity gives them practice in compromise, in sharing and in defining and refining ideas. It involves gathering and sharing information; brainstorming ideas; defining a specific problem that, if solved, may lead to the solution of other problems; selecting and improving on a “best” solution; and describing that solution so that others understand.

The problem solving process helps students improve their research skills; improve their thinking skills, both creative and critical; and increase their communication skills, both verbal and written. It helps students learn to function more effectively as a member of a team. It also guides students to become more self-directed and responsible, not only as individuals, but as members of a group, and as members of society.

PREPARING A PROBLEM SOLVING TEAM FOR COMPETITION

The first step for every problem solving coach is to teach the problem solving methods to their students. Those steps are outlined in this booklet. Start with fairly easy scenarios and give them progressively broader and more difficult scenarios as they progress.

A scenario will be given to the students on the competition day. It is up to them to identify the main problem in the scene. The background knowledge they gain through their research will help them to make more sense of the scenario and make better decisions about possible solutions.

THE PROCESS

What is a problem?

A problem is. . . .

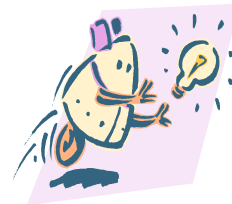
- a broken bike
- getting a bee sting
- a big brother who bosses you
- throwing up
- the dog eating your shoe
- not understanding a math problem
- getting sent to the office
- being alone and being scared
- fighting on the bus
- losing your lunch money
- forgetting to do your homework



What is a solution?

A solution is. . . .

- finding out what is wrong with your bike and fixing it
- putting baking soda on your bee sting
- writing an agreement with your brother
- taking medicine for your sick stomach
- buying the dog a new toy
- getting a tutor or asking the math teacher for help
- saying you're sorry and trying to do better in school
- asking a friend to stay with you when you're alone
- staying away from people who fight on the bus
- telling the teacher and remembering to bring enough money tomorrow
- writing down your homework and remembering the directions



IN THE BEGINNING

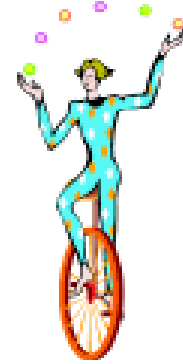
Brainstorming is the first step in problem solving. The purpose of brainstorming is thinking up ideas. Good brainstorming has an opening and a closing with an announced time span of three to five minutes.

Teach the entire class how to brainstorm. Ask them to go in turn around a circle and brainstorm a simple idea. Name as many things as you can that are round. If a student does not give an immediate answer, go on to the next student. Ask students to “piggy back” on other answers.

softball	coin	bottle top
plate	bowl	my head

Take one of those items - a plate. How many ways can you use it?

throw it
eat off of it
roll it
juggle it
use it as a Frisbee
cover a bowl



The SCAMPER checklist (Eberle, 1971) is an adaptation of the work of Alex Osborn (1963) and it is a checklist to elaborate on brainstorming.

Substitute:	What could you substitute?
Combine:	What two ideas can you combine?
Adapt:	Adjust something to better fit your purpose.
Modify:	What would happen if you modified it?
Magnify:	What would happen if you made it larger?
Minify:	What would happen if you made it smaller?
Put to new use:	How could you use it differently?
Eliminate:	What can you take away?
Reverse:	What would happen if you turned it around?

PROCESS

The problem solving process utilizes both divergent thinking (brainstorming) and convergent thinking (narrowing the focus to a manageable amount of information).

Before students can embark on the problem solving process, they must learn to BRAINSTORM - think up ideas. Brainstorming is an exercise in “idea-finding.” The object of brainstorming is to produce a large number of ideas which may suggest a solution to a problem.

IN BRAINSTORMING. . .

- All ideas are acceptable. Criticism is ruled out.
- Every idea is valuable - especially some of the “far-out” ideas. Free-wheeling is welcomed.

The wilder the ideas, the better.

- Offbeat and silly ideas may lead to something better. They may trigger an idea that is really good.
- Combine and elaborate. “Piggybacking” is encouraged - tagging on to others’ ideas. Students should build on others’ ideas.
- Quantity is the key! The more ideas, the better.



THINK CREATIVELY!

BASIC STEPS IN PROBLEM SOLVING

1. CHOOSE A TOPIC.

Curriculum - Use a content topic from one of your teaching units. If you are studying history, choose a topic from the history period you are studying. For example, if you are studying Kentucky history, select “pioneer times” as your topic. For school units, the topics can address the past, the present, or the future. For competition, scenarios will deal only with the present or the future.

School - Identify a problem in your school. Have the students brainstorm what they perceive as problems - noisy cafeteria, fighting on the bus, graffiti in the restrooms, too many students in the halls, etc.

(NOTE: The Mayor’s Cup topic is selected each year at the elementary academic competition planning meeting.)

2. GATHER INFORMATION.

Curriculum - Encourage students on the team to each research a different part of pioneer times. The goal is to learn as much as possible about the topic. Have students share their information with each other.

School - Ask the students to research some or all of the problems they have identified. Have them gather data about the problems they have identified. On what bus does the fighting occur? When does the fighting occur - before or after school? At what time of day is it the noisiest in the cafeteria? Who supervises the cafeteria?

3. NARROW THE SCOPE. Have the students select one problem. Have them define the problem and create solutions in several different directions.

Curriculum - If the broad topic is “pioneer days,” the specific problem might involve a family crossing the mountains to settle in Kentucky. This is really very much like an open-ended question. However, instead of an answer from an individual, you have a group working together and generating lots of different ideas.

School - Fighting on the bus is the problem the students want to work on. NOTE: At this point, if you are doing school problem solving, be sure to inform and/or enlist the permission and assistance of the principal and others involved.

4. **BRAINSTORM THE SUBPROBLEMS.** Have the students analyze the situation and list as many of the sub-problems as possible related to that problem.
5. **IDENTIFY THE MAIN PROBLEM** (the problem to be solved). This may be one of the most difficult steps. What exactly is the problem in this situation? Is there just one problem or is there a combination of several issues? At this point, the students must define the problem and determine their purpose. To determine the purpose, think about what you want the end result to be. A very simple example: if the problem is students fighting in the classroom, your purpose would be to stop the fighting. The solutions your team derives should lead to that end.
6. **BRAINSTORM SOLUTIONS.** Have the students brainstorm as many solutions to the problem that they have defined.



7. **EVALUATE THE SOLUTIONS.** In order to find the best solutions, students must evaluate their solutions and select the one solution or combination of solutions that will best solve the problem. Ways to evaluate the solution might include: the cost of the solution, the people involved in executing the solution, the ways of communicating the solution, the results if this solution is used. What is the most promising solution? What will give the most benefit to the most people? Is the solution feasible?
8. **CHOOSE AND DRAW CONCLUSIONS. SUMMARIZE AND DESCRIBE THE “BEST” SOLUTION.**



WHO?

WHAT?

WHEN?

WHERE?

HOW?

PROBLEM SOLVING COMPETITION

Presentation problem solving competition is a written and oral presentation. Early in the year, students are given the problem solving topic. They should do research on this topic. In a competition, students will be given a specific situation focusing on the topic. This situation is called a *scenario*.

Presentation problem solving involves a team of four to ten students, including students who help with artwork and props. The students have 75 minutes to define a specific problem, write the main problem in the correct format, generate possible solutions, develop criteria to help evaluate solutions, and elaborate on the solution to the problem they have defined.

The problem solving team should include students who have creative ideas; students who have critical-thinking skills; students who can write; students who can do artwork; and students who can communicate orally. As many as ten, but no fewer than four students must be involved in making the oral presentation.

Presentation problem solving involves writing a statement defining the main problem using the problem solving steps. In addition, the students must deliver an oral presentation to demonstrate their problem and solution. The presentation may take many forms including, but not limited to, a skit, a debate, a simulated TV talk show or news magazine, a congressional hearing, a PTA or school board meeting, a club meeting, or a classroom activity.

While creativity and humor may be used, the purpose of this activity is to emphasize higher-level thinking skills. Students will be judged on good content, good problem analysis (defining the problem), convincing solutions to the specific problem they have defined, and effective presentation of the problem and solution. Students will compete before an audience of coaches, judges, other students and parents. A draw will take place on the day of the Mayor's Cup planning meeting to determine the order of appearance.

In preparation, students must research the topic and be prepared to state research relevant to the problem. Research should be current. While the process for problem solving in the classroom may be used with past, present and future material, all competition scenarios will deal with current or futuristic subjects.

The written main problem should be a one-to-three sentence statement that defines the problem. It must NOT contain a solution. It may NOT be a restatement of the situation. Remember! The scenario is NOT the problem. If the scenario states that ducks are crossing the road, the problem is not the ducks crossing the road. The problem is that they may get killed or they may cause an accident. Why are they crossing the road? Are they hungry? Do they not know the danger? Are they looking for something? The main problem and purpose will be read aloud to the audience before the team begins its presentation.

FACILITIES

The host school will provide separate rooms for each team to prepare and a special room for the presentations. The staging area should be equipped with as many as 10 chairs that may be used in the presentation. Students may NOT use tables, desks or microphones.

MATERIALS

The following is a list of materials that the team members may take into the preparation room for the competition. Students may NOT take research material with them into the preparation room. They are not allowed to use research materials they find in the room, nor are they allowed to use the computer in the room. They may use the following material in their preparation of props for their presentation.

5 pieces of poster board (any color)

5 pieces of colored paper (9x12)

2 large plastic garbage bags

Aluminum foil (1 roll)

Scissors

Pencils

10 pieces of 8 ½ X 11 white scratch paper

Calculator (Basic four-function)

3x5 or 4x6 index cards

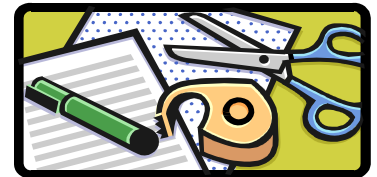
12 in. ruler

Glue stick

Tape

Magic markers

Dictionary and or thesaurus



SUGGESTIONS

Have good writers on the team. They can be writing the solution while other members of the team create the presentations.

Have one or more students who are good in artwork on the props while other team members work on the presentation.

Remember! All of the students on the team do not have to appear in the verbal presentation. Some of the students will be involved in preparation only. They will be introduced as members of the team, but do not have to take part in the presentation.

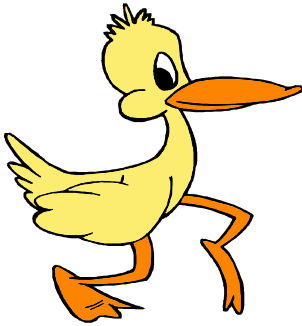
Have the students practice speaking LOUDLY and CLEARLY. Remember! The audience and the judges need to hear the presentation. Microphones are not allowed.

Have the team practice in a room larger than a classroom and have them perform before an audience before the actual competition. Work on the basics like facing the audience and staging a scene. Teach your students not to stand in unnatural looking lines in front of the audience during the skit.

Simulate an actual competition before the day of competition. Have the students prepare in 75 minutes, practice reading their main problem and purpose, make introductions and perform their presentation. Have them work on timing the presentation (3-7 minutes) to not go over or under.

Include the parents. Ask them to come after school and help with the process. Ask them to write scenarios for practice.

Develop main problems. Write several main problems from scenarios.



THIS IS THE SCENARIO:

In the year 2015, there is a mother duck and her three ducklings that cross the road every day in front of the school in Birdville, USA. Cars slam on their brakes. Sometimes one of the ducklings gets left on the other side of the road. Sometimes it seems as if the ducks don't know how to get back.

BRAINSTORM POSSIBLE PROBLEMS

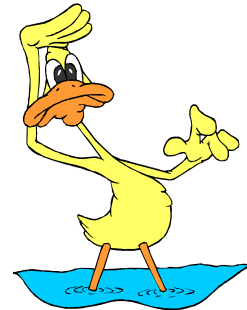
- The mother duck could get hit by a car and the ducklings wouldn't have a mother.
- One or more of the baby ducks could get killed and the others would be sad.
- The mother duck might leave one of the ducklings behind and he would get lost.
- A car could have an accident trying to stop for the ducks.
- The ducks might not have any food when they get across the road.
- They wouldn't have any water to swim in on the other side of the road.
- The students in the playground might harm the ducks.
- The ducks could lose their way and not be able to get back.
- Someone might steal one of the ducks.
- There might be a law against animals on the school grounds
- There wouldn't be any other ducks on the other side of the road and the ducks might get lonely.

What problem do you choose to solve?

Ducks getting killed.

OR

Duck not having adequate food or shelter.



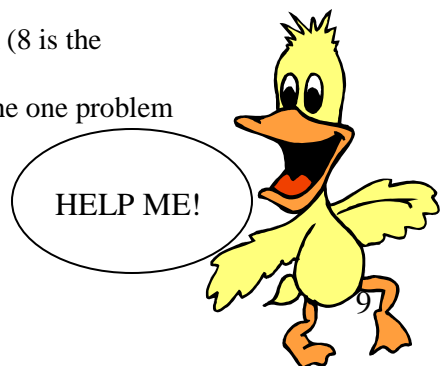
PICKING A MAIN PROBLEM

- Read the scenario.
- Underline the key words and phrases in the scenario.
- Brainstorm problems related to the underlined words.
- Select one or two specific problems.
- State what this problem may cause.
- Write a clear and concise statement stating the problem and the possible outcomes if the problem is not addressed.
- Complete the main problem by adding any necessary qualifying phrase(s).

A main problem may include one problem or a combination of problems. If the main problem includes more than one problem, the solution must address all of the issues mentioned in the problem.

In order to write a good main problem, students should brainstorm (8 is the recommended number) several problems related to the scenario.

Using the list of problems, students must evaluate and decide on the one problem they choose to solve. Writing the main problem is the next task.



WRITE THE MAIN PROBLEM

It should include the following:



A STATEMENT DESCRIBING THE PROBLEM YOU CHOSE FROM THE SCENARIO

Describe the current situation and the problem you are going to attempt to solve.

YOUR PURPOSE

Tell the reason why this problem must be solved.

Questions to ask yourself to help you write the purpose:

WHAT WOULD BE THE END RESULT IF NOTHING IS DONE ABOUT THE PROBLEM?

WHY ARE YOU MAKING THE CHANGE?

WHAT WILL YOU ACHIEVE?

WHAT IS YOUR DESIRED OUTCOME?



There should be **ONLY ONE** purpose.

MAIN PROBLEM:

Because ducks are getting killed on the roadway in Birdville in 2015, how could we inform the people driving down our street to watch out for the ducks?

(Notice that the statement above tells the current conditions, as well as presents the problem you are attempting to solve, in the form of a question.)

PURPOSE:

This way the Mother Duck and her ducklings will not get hit while crossing the street.

BRAINSTORM SOLUTIONS TO THE MAIN PROBLEM

- Put up signs warning motor vehicles of the duck crossing.
- Be sure that there is food for the ducks on the other side of the road.
- Build a pond on this side of the road.
- Invite more ducks to cross the road so the ducks won't be lonely.
- Build a pen for the ducks.
- Build a fence for the ducks.
- Catch the ducks and take them to the zoo.
- Kill the ducks.



DEVELOP CRITERIA TO HELP YOU CHOOSE THE BEST SOLUTION

<u>Criteria</u> <input type="checkbox"/>	<u>1.</u> Easiest to do	<u>2.</u> Safest for the ducks	<u>3.</u> Most humane	<u>4.</u> Least expensive	<u>5.</u> Fastest to do	<u>Total number of plus signs</u>
<u>Solutions</u> <input type="checkbox"/>						
Kill the ducks.	-	-	-	+	+	2
Build pond	-	-	+	-	-	1
Put up a sign	+	+	+	-	+	4
Put ducks in zoo.	-	+	-	+	-	2
Build a fence.	-	+	-	-	-	1

Develop a chart like the one above and decide on the five criteria to evaluate solution ideas.

Put a plus sign next to the solution if it is a good one for that criterion. Put a minus sign if it's not so good. Total the plus signs **across each row to determine which solution is best.**

EVALUATE YOUR SOLUTIONS

- Putting up warning signs would require the help of the county government.
- We would need money to buy food for the ducks.
- It would be hard to build a pond. We would need help from others.
- We don't know any other ducks so we can't invite more ducks.
- The ducks don't like being in a pen and they wouldn't have any place to swim.
- Ducks might be able to get out of the fence and they don't like fences.
- If we caught the ducks, we would need to know if the zoo will take them.
- Killing the ducks is cruel and inhumane.

SO - WHAT CAN YOU DO?

SOLUTION:

We will design a sign that says "Duck Crossing" (with a silhouette of a mother duck followed by three ducklings). After spending one week designing the signs, we will write a letter to the County Judge and request that the county sign-makers make the signs (two for each side of the road) to warn people of the ducks. When they see the signs, people will think about the baby ducks and be more careful.

SOLUTION BREAKDOWN: Does it answer every question?

Who?	We...
What?	...will design a sign that says “Duck Crossing” (with a silhouette of a mother duck followed by three ducklings).
When?	After spending one week designing the signs, the students will write a letter to the County Judge and request that the county sign-makers make the signs (two on each side of the road) to warn people of the ducks.
Where?	Signs will be placed (two on each side) of the road.
How?	Write a letter to the County Judge.
Conclusion:	When they see the signs, people will think about the baby ducks and be more careful.

PRESENTATION

On the day of competition, teams will be taken to the preparation room by a proctor. The proctor will give the students a copy of the scenario, directions on preparation, and forms on which to write their main problem. Remember, the scenario they are given focuses on only ONE of the topics. They will have 75 minutes to prepare. Time will start after the proctor gives instructions. The proctor will give the students a warning after 55 minutes and a warning after 65 minutes. **At the end of the 75 minutes, the teams will all proceed to the competition room.**

1. Students begin their presentation by introducing all of the team members to the audience. Each student may introduce himself or herself or one person may introduce the team.
2. One student will read the main problem and purpose aloud to the audience.
3. The student will hand the main problem to the head judge. Students may decide to wait until the end to turn in the main problem if it is their only copy and they want to reread it later in the presentation. However, it is better to make a second copy, so that the judges have it to refer to during your presentation.
4. Students may choose to include research in their presentation to support the solution they chose. However, it is not required. If they do choose to cite research, it should flow into the presentation. **UNDER NO CIRCUMSTANCES** should students “make up” research data. It is better to give no research than to use false information made up on the spot.

Example: While researching the topic “animal safety”, we found out from the Birdville police department records on motor vehicle accidents that 16% of the accidents that occur each year involve animals in the road.

5. The time (3-7 minutes) begins **AFTER** the introduction and after the reading of the main problem. Students present the body of the presentation. They will be given a one-minute warning after 6 minutes by the head judge.
6. Although the criteria chart must be turned into the judges at the end of the presentation, it is not necessary to explain it during the presentation if it interferes with the flow of a particular skit.

7. At the end of the presentation, the students repeat their main problem and solution. They then hand the criteria chart and solution statement to the judges. (If they didn't turn in the main problem at the beginning, they turn that in also at this time.)

SCORING

Teams will be scored on set criteria. (See score sheet at the end of this booklet for point determination.) **Teams are NOT expected to have perfect scores!** Some judges will score lower and some higher; however, in most cases, the judges will be consistent. The high and low scores from all the score sheets are thrown out. The remaining judges' score sheets will be averaged to determine the final score. Penalty points will be deducted by the head judge from the final averaged score.

PENALTIES

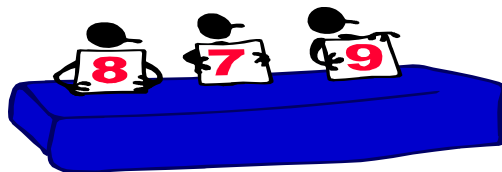
Teams will be penalized:

5 points (from the final averaged score) for having fewer than four students or more than ten making the oral presentation;

5 points (from the final averaged score) for going under the 3-minute or over the 7-minute time;

5 points (from the final averaged score) for not having a written main problem, solution, or criteria chart. (Penalty is assessed just once for missing any one or all of these items. Do NOT take 5 points off for *each* missing item in this category.)

5 points (from the final averaged score) for using materials in their presentation other than those listed in the PS manual.



PROBLEM SOLVING JUDGING

The problem solving coaches from each participating school will judge the presentations. Each school will provide one additional person familiar with the rules to judge as well. The teams will make their presentations before an audience. All judges should be familiar with the topic and the scoring sheet prior to competition. *Every judge should be given a copy of the rule book, which includes a copy of the score sheet, before the competition. Training is available for judges, and it is strongly encouraged that all judges attend.*

After the final presentation, judges should have time to review and make changes in their individual score sheets if necessary. Judges should hold their score sheets until all of the presentations have been made. Judges have the right to make adjustments in their score sheets after all of the presentations have been made.

Judges and coaches may NOT communicate in any way with their team during any of the presentations or after the first team makes its presentation. **Judges may NOT compare or change scores based on another judge's opinion. Judges should not discuss scores with each other.**

After all of the presentations have been made, the head judge will collect the score sheets and, with the help of another coach, discard the highest and lowest score, add the scores together and divide by the number of scores to get the team's average score. Penalties are assessed at this time.

Should a tie result after the scores are averaged, duplicate awards are given to each team. Each tied school receives the full number of points for that place.

The host school should provide the **Head Judge** who is familiar with the rules. **The head judge MAY be the problem solving coach of the host school.** He or she should conduct the meeting of the judges before the competition and lead the discussion on the scenario, the clarification of rules and the score sheet. Please do NOT make adjustments to the score sheet.

DUTIES OF THE HEAD JUDGE



1. Conducts the meeting of the judges before the presentations and is sure that all understand and agree on the rules. The hosting manual has an agenda for this meeting.
2. Indicates to the teams that they may enter the presentation room.
3. Gives the signal to begin the introductions.
4. Collects the written statement from the team, after they have finished reading it.
5. Keeps the official time (3-7 minutes). Gives the one-minute warning at 6 minutes as necessary.
6. Asks the students at the end of their presentation when they prepared their skit.
7. Collects the papers from the other judges. Judges may keep their sheets until all of the teams have presented and may adjust their sheets after the final presentation.
8. Takes the judges' score sheets and with another coach, checks the addition on the score sheets, throws out the highest and lowest score, adds the scores together, and divides the total by the number of score sheets. If a penalty for time, number of students, wrong materials, or lack of written problem has been given, subtract that number from the final averaged score.

Scoring Tips for Problem Solving Judges

1. **Read the score sheet carefully.** Ask questions in the meeting! Clarify anything about which there are questions. Be very sure all of the judges are on the same wave-length. This is a time to learn from the other coaches.
2. **Judges should rely on their own judgment and not discuss their opinions with the other judges at any time.** Scoring problem solving presentations is a very subjective process and no one is going to tell you otherwise. We want to get as many different opinions as possible. Collaborating with other judges about scoring cuts down on the number of varied opinions. We don't want that!
3. **Be consistent.** There are very tough judges and very lenient judges. It doesn't matter which you are as long as you are consistent with all teams. If you are a tough judge with one team, score all the others with the same tough attitude.
4. **Main problems must be specific to the scenario and narrow down the topic in order to be scored high.** Teams that do not narrow down the topic should be scored lower in #2 of the "Content" section and in "Overall Content." For instance, if the overall topic is "Bullying," a team that narrows the problem down might choose cyber-bullying as their main problem and come up with solutions about how to deal with that. Another team may choose to focus on alleviating the stress the bullied students are feeling that is creating the health problems and stomachaches, etc. at school.
A team that *doesn't* narrow the focus will have a main problem something like this:
Because students are being bullied at Middleboro Elementary School in the year 2030, how might we decrease the amount of bullying so that kids will feel safe at school. The above main problem is too broad and is not specific to the scenario they received. Therefore, they should be scored lower.

NOTE: This prevents teams from coming on Saturday with a main problem and solutions prepared in advance, which is a big No-No!

5. **Don't fall into the trap of scoring the most entertaining skit the highest, and ignoring the teams with the best ideas.** Cute skits are fun and entertaining, but sometimes the ideas behind the cute skits aren't so wonderful. Keep in mind that this is about solving problems not just entertaining people and score accordingly. Does the team show originality? Does the solution address the stated problem or is it generic? Have the students used material prepared to address the broad topic or does it address the specific problem?
6. **Keep the written main problem in mind.** Do students address this problem or do they address the broad topic? Do they give and elaborate on the solution they state? Do they stick to their stated purpose? Remember! The presentation may look "cute", but *it must address the problem and it must present a solution to the stated problem.*
7. **The head judge will ask the team when they prepared their skit. If you find that the team had a skit, song, poem, etc. prepared in advance, you should score that team down.** The students should respond with a variation of "just now in the preparation room." Having any portion of their presentation prepared in advance is completely unacceptable. These are called "canned skits" and are not allowed. Students are scored low in creativity and content for this violation. (*Often this is connected with #3 above.*)
8. **You may keep all your score sheets and make changes on any one of them until after the last team presents.**
9. **Do not subtract penalties.** That is the job of the head judge after the scores are averaged. (The head judge also keeps time and gives the "one minute left" warning.)

SAMPLE PROBLEM SOLVING TOPIC!

ENVIRONMENT



Scenarios might be about:

- School Recycling
- Waste
- Ozone
- Clean Water

ON THE DAY OF COMPETITION:

Students will be given an envelope with the scenario that focuses on the topic and the following instructions.

INSTRUCTIONS FOR STUDENTS

1. Decide on a main problem that addresses the scenario. **REMEMBER!** The scenario is NOT the problem. Please use the sheet provided to write your main problem and purpose.
2. Your presentation should last between 3 and 7 minutes (not counting the introductions and reading of the main problem) and there should be at least 4 people in the oral presentation.
3. Before beginning your presentation, have one person, or the whole team, introduce the team members.
4. After the team is introduced, read your main problem and purpose aloud and hand it to the head judge.
5. At the conclusion of your presentation, summarize your solution. This is the final part of your presentation. **Be sure that your audience knows your solution. This is a good time to restate your problem.**

PROBLEM SOLVING SCENARIO

In the year 2010, XYZ Elementary School is located in an area of Harbortown, USA that looks bad. People do not feel safe. Parents are hesitant to send their students to the school because they don't like the looks of the area and they don't like the gangs hanging out on the street corners. The school must do something to improve its image or students will quit coming to the school.

This scenario deals with several potential problems. Define a problem related to this scenario and suggest a solution to that problem.

Beginning the Project

In the process of getting ready for the Problem Solving competition, the students on the problem solving team will have researched several different subtopics. One of these subtopics might be the community surrounding the school. In order to study that component, the students on the problem solving team took a walk around the neighborhood. They recorded what they saw, documenting the litter, uncut grass and peeling paint. "When it looks bad, it feels bad," said one student. "Does anybody in this neighborhood care what it looks like?" said another student. Why did the area look so bad? If the area looked better, would people be more willing to send their students to that school? Could they possibly affect the area around the school? What would happen if they did? Is there a reason that the area looks so bad? What kinds of things affect this scenario? What are the problems outlined in the scenario and the problems that may have caused the situation?

Brainstorm Problems

- No one mows the grass in the public areas.
- The people in the neighborhood are old and they can't do the work.
- It is a busy street and people throw things out of car windows.
- There aren't any trash cans.
- The stores are closed because there is no business in this area.
- The houses are old and they haven't been repaired.
- Older kids hang out on the street corners after school and leave candy wrappers and soft drink cans.
- There are no flowers planted.
- The trees are old and some of them are dying.

Write the Main Problem (To be read aloud before the presentation.) It should include the following:

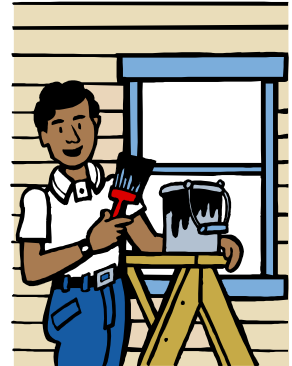
A STATEMENT DESCRIBING THE PROBLEM YOU CHOSE FROM THE SCENARIO:

Parents in Harbortown in 2010 do not want to send their children to a school in an unattractive and seemingly unsafe neighborhood.

YOUR PURPOSE: We want the parents of students to perceive the area around XYZ Middle School as more safe, so that they will be more willing to send their children to that school.

Brainstorm Solutions

- Pick up trash.
- Put up signs asking people not to throw trash.
- Change the traffic patterns so the street won't be so busy.
- Mow the grass.
- Paint the houses.
- Talk to the people who live in the houses about fixing them up.
- Talk to the housing authority about helping people fix up their houses.
- Ask the police to make more frequent visits to the area to discourage the gangs.
- Sweep the sidewalks.



Develop a SOLUTION on which to base your presentation

We will organize a clean-up campaign to make the area around XYZ school look more attractive and safe and parents will be more willing to send their students to a school that looks safe.

The campaign will begin when the students take weekly walks and pick up the trash around the school. The students will also design flyers and deliver them to all of the residents in the neighborhood asking them to pick up trash in their yards. The students will contact Habitat for Humanity and ask them if they will assist the older people in the neighborhood by painting and repairing their houses. The students will contact the county works department and ask them to mow the common areas and install additional trashcans. They will also contact the local police department and ask them to visit the area more often, keeping the gangs off the streets.

NOTE: Please remember that no part of the presentation should be prepared in advance. Any skit, song, poem, etc. in your presentation MUST BE PREPARED DURING YOUR 75 MINUTE PREP TIME.

SAMPLE PRESENTATION

Introduction: We have been invited to visit the local neighborhood association and present our ideas for helping the neighborhood around the school.

President of the Neighborhood Association:

Welcome to XYZ Neighborhood Association monthly meeting. Today our guests are the members of the XYZ Elementary School Problem Solving Team. The image of XYZ School has been declining over the past few years and these students are here to discuss ways of improving that image. Their teacher is Ms. Image. We also have with us a member of the local police force, Paul Police. Ms. Image, let's begin with you.

- Ms. Image: XYZ School is located in an area of town that is old. Some of the houses are in need of repair. The streets are littered with trash and there are gangs that hang out on the street corners. We used to have a lot of students who came to this school from other neighborhoods, but most of them have quit coming. They don't feel safe. The students realize that we need to improve the neighborhood. We started our project by walking around the neighborhood and asking people what they thought of the neighborhood. We tried to see the problems. We had to find out the real problems before we could seek a solution.
- Student #1: We identified a number of problems in the XYZ area. We observed trash on the streets, lawns and common areas not mowed, houses with peeling paint, groups of older kids hanging out on the street corners. When we took a good look at the neighborhood, we realized that it looked unsafe. Nothing about the area looked inviting. We understood why parents didn't want their students to attend school - it didn't look like a good place to be!
- Student #2: After walking around the area, we went back to school and brainstormed all of the problems we thought contributed to looking bad. We thought if we could make the neighborhood look better, people would think it was safe.
- Policeman: The area has a bad reputation because some of the students from the high school hang out at the grocery store on the corner. We have trouble with that store. They encourage those kids to hang out. I don't know why! Those kids are always stealing from the old man that runs the store. I think he's afraid of them.
- Pessimist: You just don't know the problems we have here. The police won't do anything to protect us and nobody picks up the trash. City hall has forgotten us. The kids at the school run wild. They tramp on the grass. The people in this neighborhood are too old; they can't fix up their houses. They don't have any money and they can't work.
- Student #3: We think that with the cooperation of the police, the County Judge, the Mayor, the people in the community and the students at the school, we can change the image of this neighborhood. We know we can't do it alone. We need help!
- Pessimist: That sounds good, but nobody cares. You can't change things. Besides, you are just kids. What do you know?
- President: Yes, students, just how do you expect to accomplish this? You have heard the police are too busy to pick up trash; the people in the neighborhood are too old. Who do you think is going to change this image?
- Ms. Image: Well, Mr. President, I think the students on the problem solving team have an answer for all of those questions. Let them outline their solution.
- Student #1: The students of XYZ School Problem Solving team will initiate a campaign to clean-up, spruce-up the area around the XYZ school will help make the area more safe and parents will be more willing to send their students to a school that looks safe.
- Student #2: The solution has to begin with us - the members of the XYZ problem solving team. We plan to make our neighborhood a priority and once each week we are going to walk the area around the school and pick up all of the trash. We will contact the county works department and ask them to mow the common areas and install additional trash cans.

Student #3: With permission from our parents and the principal, we plan to distribute flyers to all of the houses in the neighborhood asking them to pick up their trash and keep their yards clean. We will put a telephone number on the flyer and if the people are too old or too sick to clean up their yards, we will come and do it for them.

NOTE: Make a sample flyer and show it to audience.

Student #1: We will contact Habitat for Humanity and ask them if they will assist the older people in the neighborhood by painting and repairing their houses. We will ask the local hardware store to donate paint and supplies.

Student #2: We will ask the local police force to make more frequent runs to the corners where the gangs hang out.

Student #3: We plan to have t-shirts that say on the front, "We're cleaning up XYZ neighborhood" and on the back they will say, "Let it begin with me!" We will find a sponsor for the shirts and give them to people in the neighborhood who want to join us in the campaign.

NOTE: Use paper to make signs that say (above) and tape it to the front and back of your shirt.

Policeman: I am really impressed that you kids want to help. I grew up in this neighborhood and it was a wonderful place. If we all get on the bandwagon, we might be able to change the image of this neighborhood.

Pessimist: Well, it sounds good. You kids have really put a lot of effort into this. I will speak to the neighborhood association and see if we can sponsor the t-shirts. The people in the neighborhood will be so proud.

Sally: As you have seen and heard, these students are putting their learning to work. XYZ School has encouraged a meaningful educational program. Everyone of us can make a difference - including kids!

At this point, you may want to repeat your main problem and solution as a conclusion to your presentation. Leave NO DOUBT about what you see as the problem and how you plan to execute the solution.

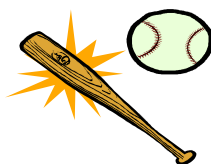
SAMPLE SCENARIOS

For each of the following scenarios, brainstorm problems related to the scenario; write an main problem; brainstorm solutions; and develop your solution taking into the following: safety, time involved, people and equipment necessary, cost, ethical consideration and other criteria. Explain who, what, when, where, and how. Prepare a 3-7 minute presentation demonstrating your problem and solution.



The New Dress Code

Your school just voted in a very strict new dress code two weeks before school started. Your school has never had a dress code before. Identify some of the problems related to this situation. What are the problems? What is the main problem? Write an main problem. What are some of the possible solutions to the main problem? Prepare a 3-7 minute presentation illustrating your problem and your solution.



The Ball Game

Your brother is the star of the local softball team. During the season, the whole family goes to his ball games three times a week. At the end of the season, the team plays in a tournament. They play every night until they lose. They have played two nights this week and will play again tonight. You have a big project due at school. You really don't want to tell your parents because they might make you stay home from the game. Brainstorm some of the problems related to this situation. Select a main problem and brainstorm possible solutions. Prepare a presentation to illustrate your problem and solution.

The Neighborhood Bully

There is a boy who lives down the street who is bigger than you. The rest of the kids in the neighborhood look up to him. You really don't like him, but you are afraid of him and you are afraid of losing your friends if you are not friends with him. When no one else is around, he bullies you. You are afraid to tell, because you don't think people will believe you and you don't want to be a tattletale. There are several problems in this situation. What can you do about it?

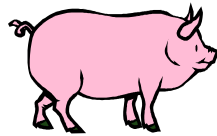




School Lunches

You have a new cafeteria manager at your school. She is very concerned about the health of the students. She believes that lunches should be good for you and is very careful to include all of the right foods in the lunch program. Some days, the students at your school waste a lot of food because they don't like what has been prepared. What is the problem here? What are some of the possible solutions? What is the best solution?

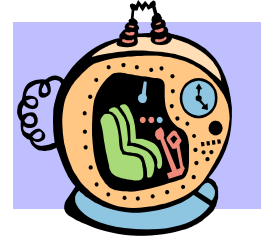
The Pet Pig



Your older brother has a dog. While you love the dog, he belongs to your brother. You want a pet of your own. You really want a potbellied pig. Your mother has said, "No!" Your father seems to be considering it. Brainstorm all of the things you would have to consider if you got a pig. Prepare a checklist. Make a presentation to convince your mother and father to let you have a pig.

Trip in Time #1

You are going for a ride in a time machine. You were supposed to go forward to see what Louisville is like in 150 years, but your space capsule hit an electric wire and you ended up going back 150 years. You know and understand everything you know and understand today, including computers, television, etc. What are some of the problems that will occur. Brainstorm the problems you will have living in that time period and the problems that will occur because you know so much more than any of the other people of that time. Write an main problem and give a presentation.



Other practice situations:

To Camp Or Not To Camp?

You have to make a decision—guitar lessons or summer camp. You can go to camp with all your friends. You had such a good time last year. Being at camp seems to make friendships really solid. But decisions like this aren't so easy. You really like playing guitar and are good at it. You'd like to get better. You need lessons to improve your playing. You have to make a choice.

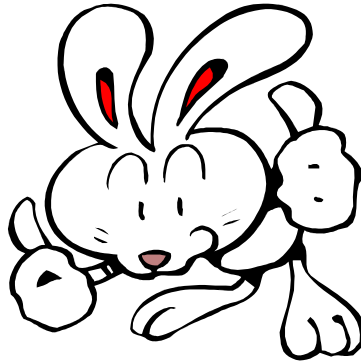


Derby Festival

Every spring in Louisville, the Derby Festival captures the attention of the people of Louisville and the national press. The festival sponsors numerous spectacular events throughout the county and has more than 200 individual and corporate sponsors. One of the most important events is the Chow Wagon, which nets close to \$1 million in revenue for the Derby Festival, Inc.

The Festival Board, which includes local civic and business leaders, has authorized the festival management to find a permanent home for the Chow Wagon. Some of the members of the board want to locate it downtown because it is a central location. Some want it in the east end because that is where the growth area is located. Some want it in the southwest because they feel that section of the city is often left out. Some want it in the west end because they feel it will attract people to that part of town. Your task is to have a debate on the pros and cons of locating the Chow Wagon in each of these areas. After the debate, determine the best solution to the dilemma.

Now you are ready to start your team in the right direction with PS.



**JEFFERSON COUNTY PUBLIC SCHOOLS
ELEMENTARY PRESENTATION PROBLEM SOLVING SCORE SHEET**

SCHOOL _____ JUDGE _____

Score: 10=Superior; 8 =Above Average; 6=Standard; 4 =Fair; 2 =Poor; 0 =Not Observed

ORGANIZATION	0	2	4	6	8	10	TOTAL
1. Does the team have an introduction that states the main problem?							
2. Is the presentation easy to follow? Is the body in logical and coherent order?							
3. Does the body include concrete details, examples and/or illustrations to support the position?							
4. Is there a conclusion that restates the position and brings closure to the presentation?							

STYLE	0	2	4	6	8	10	TOTAL
1. Can you hear the presenters?							
2. Is the eye contact made during the presentation appropriate to the presentation format (i.e., eye contact with the audience, other team members, setting)?							
3. Do students use correct grammar? Is the vocabulary appropriate?							
4. Is the material presented without long pauses, verbal stumbling, and/or fillers (and, uh, well-uh, etc.) Is the presentation interesting to watch?							

CONTENT	0	2	4	6	8	10	TOTAL
1. Does the presentation clearly address the problem stated by the students?							
2. Is the main problem written clearly?							
3. Are the most important parts of the problem addressed? Do they stick to their purpose?							
4. Are the facts presented accurate and pertinent? Do the students use facts and examples that clarify their position?							
CONTENT (Cont.)	0	2	4	6	8	10	TOTAL

5. Is the solution validated by the criteria chart? Are the critical facts presented in the solution (Who, what, how, etc.)?							
6. Is the solution creative and/or original? Thought-provoking?							
7. Does the solution show use of higher level thinking skills?							
8. Are the visual aids clear and do they strengthen and support the presentation?							

OVERALL SCORE	0	2	4	6	8	10	TOTAL
1. How would you rate the overall <i>method</i> of presentation?							
2. How would you rate the overall <i>content</i> of the presentation?							

LIGHT BULB IDEA: Did the team present one or more ideas that are unique? Different from all other presentations? Something no one else thought of? If so, please give the team five extra points for a light bulb idea.

Add your scores: Organization(40) ___ Style(40) ___ Content(80)___ Overall(20) ___ Light Bulb(5) ___

TOTAL _____
(185)



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