

Using a Solution Guide

Purpose:

Participants will solve the problem “Tick Tock” using a solution guide and compare their group solution(s) with their previous work without a solution guide. They will discuss the advantages of using a solution guide to solve a problem and the implications for informal assessment.

Overview:

Participants will solve the problem “Tick Tock” using a solution guide with descriptors to guide their solution of the problem. They will work in small groups to prepare a poster that meets the criteria of the *Problem Solving Solution Guide*. Their solution(s) must communicate a clear and accurate solution that is capable of “standing alone”. Each group will use the solution guide to assess another group’s work by giving written feedback for each criteria. After written feedback is given to each group, groups will review the feedback. A whole group discussion will follow.

TEXES Mathematics 4-8 Competencies. The beginning teacher:

- VI.017.G Recognizes the implications of current trends and research in mathematics and mathematics education.
- VI.019.A Demonstrates an understanding of the purpose, characteristics, and uses of various assessments in mathematics, including formative and summative assessments.

Materials.

- Chart paper
- Markers
- Tape
- Calculators

Terms.

Solution guide, assessment, formative assessment, feedback, descriptor, mathematical relationships, reasonableness, strategy, criteria

Transparencies.

- *Problem Solving Solution Guide*
- “Tick Tock” problem from day 2

Activity Sheet(s).

- *Problem Solving Solution Guide*
- “Tick Toc” problem

References:

TEXTEAMS Practiced-Based Professional Development (2003). Austin, TX: The Charles A. Dana Center.

Procedure:

Steps	Questions/Math Notes
1. Have participants revisit the problem “<i>Tic Tock</i>” from day 2. Explain that they will be working as a group to write a solution to the problem using the “<i>Problem Solving Solution Guide</i>”. Explain that a “solution guide” is used during the solution of a problem. They are to meet each of the criteria on the “<i>Problem Solving Solution Guide</i>” as they write a solution to “<i>Tick Tock</i>”. To the right of each criterion is a set of descriptors that can be adapted for the grade level. In using this type of solution guide with students, it would be appropriate to start with one or two of the criteria. Teachers need to model and explain what the descriptors mean. Students need to understand what the work looks like to meet the criteria. Have a discussion about the descriptors in column 2 of the solution guide with participants. The solution guide will serve two purposes in this activity: 1) Identify the criteria that need to be met in the solution of the problem 2) Provide an opportunity for specific feedback on how the criteria were met in the solution of the problem Feedback will be written in the third column of the “<i>Problem Solving Solution Guide</i>”.	Ask participants questions during this activity to stimulate their thinking about informal assessment using a solution guide through written feedback. <i>How does the “Problem Solving Solution Guide” compare with the stages of problem solving?</i> <i>What are other descriptors you would include in “demonstrates an understanding of the problem”? Explain your reasoning.</i> <i>What would you do in your solution to “communicate how a strategy is used to solve the problem”?</i> <i>What does it mean to “use mathematical properties appropriately”?</i> <i>How could a group’s work meet the criterion “states mathematical relationships correctly”?</i> <i>How will this solution guide be used in solving the problem “Tick Tock”?</i>
2. Inform participants that they will be given 15 minutes to write a solution on chart paper. Their solution will be assessed informally by a partner group using the solution guide. The solution must “stand alone” without any explanation provided by the developers.	<i>What does it mean for a solution on a poster to be able to “stand alone”?</i> <i>Which NCTM K-12 Standard for School Mathematics does this address? Explain.</i>
3. After solutions have been posted around the room and labeled with a table number, pair the groups (1-2, 3-4, 5-6, 7-8, ...) and have them go to the poster of their partner group. They are to take a pencil/pen and a blank solution guide to the site. Within each group, participants will give written feedback on the solution guide in column 3 beside each criterion with descriptors. Upon completion of the written feedback, the solution guide will be taped to the poster.	<i>What is the purpose of providing feedback to your partner group?</i> <i>How will you communicate this feedback?</i>

4. After groups complete their written feedback, have them return to their work and read the written feedback provided by their partner group. Then have participants do a gallery tour of the other posters and observe how each group met the criteria in their solution.	
5. Debrief the activity with the whole group by asking questions like those in the opposite column.	<i>What type of feedback did you receive?</i> <i>How beneficial was your written feedback?</i> <i>What have you learned by informally assessing another group's work?</i> <i>How did your solution using the "Problem Solving Solution Guide" compare with previous work on the problem "Tick Tock"?</i> <i>How can a solution guide benefit students as they solve problems?</i> <i>What role can a solution guide have in assessing student work?</i> <i>How does the use of a solution guide support "All kids can learn!"?</i> <i>How can a solution guide be used as formative assessment?</i>