

**2000 - 2006 Mathematics Problem Solving Official Scoring Guide 2000 – 2006**

	<b>CONCEPTUAL UNDERSTANDING</b> <i>Interpreting the concepts of the task and translating them into mathematics</i> <b>WHAT?</b>	<b>PROCESSES &amp; STRATEGIES</b> <i>Choosing strategies that can work, and then carrying out the strategies chosen</i> <b>HOW?</b>	<b>VERIFICATION</b> <i>In addition to solving the task, <u>identifiable evidence</u> of a second look at the concepts/ strategies/ calculations to defend a solution</i> <b>DEFEND!</b>	<b>COMMUNICATION</b> <i>Using pictures, symbols, and/or vocabulary to convey the path toward the identified solution</i> <b>THE CONNECTING PATH!</b>
<b>6</b>	The translation of the task is enhanced through connections and/or extensions to other mathematical ideas	Elegant, complex and/or enhanced mathematical processes / strategies used to solve the task are completed	The review is related to the task, and enhanced, possibly by using a different perspective as the defense	The connecting path is enhanced (e.g., graphics, examples) allowing the reader to move easily and make connections from one thought to another
<b>5</b>	The translation of the task into mathematical concepts is thoroughly developed	Pictures, models, diagrams, and/or symbols used to solve the task are thoroughly developed	The review is a thoroughly developed look at the concepts/ strategies/ calculations in relation to the task	The path connecting concepts, strategies, and/or verification toward the identified solution is thoroughly developed
<b>4</b>	The translation of the task into adequate mathematical concepts using relevant information is completed	Pictures, models, diagrams, and/or symbols used to solve the task are complete	The review is completed (concepts/ strategies/calculations), and supports a solution	The path connecting concepts, strategies and/or verification toward the identified solution is complete
<b>3</b>	The translation of the major concepts of the task is partially completed and/or partially displayed	Pictures, models, diagrams, and/or symbols used to solve the task may be only partially useful and/or partially recorded	The review is partially completed, partially recorded, and/or partially effective	The path connecting concepts, strategies and/or verification toward the solution is partially complete, and/or partially displayed with significant gaps that have to be inferred
<b>2</b>	The translation of the task is underdeveloped or sketchy	Pictures, models, diagrams, and/or symbols used to solve the task are underdeveloped or sketchy	The review is underdeveloped or sketchy (e.g., focusing <u>only</u> on its reasonableness)	The path connecting concepts, strategies and/or verification toward a solution is underdeveloped or sketchy
<b>1</b>	The translation of the task uses inappropriate concepts or is minimal or not evident	Pictures, models, diagrams, and/or symbols used to solve the task are ineffective, minimal, not evident, or may conflict with their solution	The review is ineffective, minimal, inappropriate and/or not evident	The path connecting concepts, strategies and/or verification toward a solution is ineffective, minimal or not evident

**Accuracy:**

<b>5)</b> The answer given is mathematically justifiable and supported by the work.	<b>4)</b> The answer given is adequate or it may contain a minor error, but no additional instruction in the key concepts appears necessary.	<b>1)</b> The answer given is incorrect, incomplete or correct but conflicts with the work.
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# Mathematics Problem Solving Student Directions

*Please, show your answer and all of your work  
(first efforts and those that worked) in the spaces provided,  
so everything you do is clear to the readers.*

**You may use manipulatives or a calculator to work on your problem.**

To receive the highest score in each of the five areas, you will want to be certain your work **SHOWS** each of these parts of a successful solution.

## 1. CONCEPTUAL UNDERSTANDING - the “what”

- I showed that I used the important information, changing it into mathematical ideas.
- The mathematics I used fits what was requested in the problem.

## 2. PROCESSES & STRATEGIES - the “how”

- I used mathematical problem solving skills/strategies that fit the problem.
- I showed all of the diagrams, pictures, models, numbers and/or symbols I used to solve the problem.

## 3. VERIFICATION - the “defense”

- My review of the concepts, processes and calculations I used to get to my solution is **clearly identified**.
- If appropriate, I worked the entire problem a second way to defend my first solution.

## 4. COMMUNICATION - the “connecting path”

- The path leading to my complete solution is shown with no gaps for the reader to fill in.
- My work fits all of the parts (the concepts, strategies, and verification) together by using pictures, charts, diagrams and/or words.

## 5. ACCURACY - “correctness”

- My final answer is complete, justifiable and **clearly identified**.
- My answer matches what the problem was asking.

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	<p><b>CONCEPTUAL UNDERSTANDING</b></p> <p><i>Interpreting the concepts of the task and translating them into mathematics</i></p> <p><b>WHAT?</b></p>	<p><b>PROCESSES &amp; STRATEGIES</b></p> <p><i>Choosing strategies that can work, and then carrying out the strategies chosen</i></p> <p><b>HOW?</b></p>	<p><b>VERIFICATION</b></p> <p><i>In addition to solving the task, <u>identifiable evidence</u> of a second look at the concepts/ strategies/ calculations to defend a solution</i></p> <p><b>DEFEND!</b></p>	<p><b>COMMUNICATION</b></p> <p><i>Using pictures, symbols, and/or vocabulary to convey the path toward the identified solution</i></p> <p><b>THE CONNECTING PATH!</b></p>
6	The task is changed into thoroughly developed ideas <b>and</b> is enhanced by other math ideas	Complex and/or enhanced processes and strategies are used to solve the task	The second time solving the task is enhanced, possibly by solving with a new strategy	The path connecting concepts and strategies to the identified answer is very clear and enhanced possibly by graphics or examples
5	The task is changed into thoroughly developed math ideas that work	A thoroughly developed plan using pictures, charts, words, graphs, and/or symbols solves the task	The second time solving the task is clear, and thoroughly developed, checking all parts of the work	The path through all parts of the work toward the identified answer is thoroughly developed
4	The task is changed into complete math ideas that can work	A complete plan using pictures, charts, words, graphs, and/or symbols is used to solve the task (all work is shown)	The check completely solves the task a second time checking ideas, math steps, <b>and</b> a solution	The path through the work toward the identified answer is complete
3	Parts of the task are changed into math ideas that can work	The plan could solve parts of the task <b>or</b> the work is only partly shown	Some parts but not all of the work is checked	The path through the work is partly shown
2	The concepts of the task are underdeveloped <b>or</b> the task is changed into some ideas that do not work	The plan is underdeveloped (many missing sections) <b>or</b> the plan includes some strategies that cannot work	The check is underdeveloped (only a small section of the work is checked)	The path is not clear or is underdeveloped showing few connections within the work
1	Inappropriate <b>or</b> minimal concepts are used <b>or</b> no ideas are shown	The plan is ineffective, the work is minimal, the work conflicts with the answer given <b>or</b> no work is shown	The check is ineffective for the task, is only minimal, <b>or</b> no identifiable check is shown	The path is ineffective, minimal, <b>or</b> is not shown at all

**Accuracy:**

5) The answer is correct <b>and</b> the work supports it	4) The work had a small mistake but the important parts of the work are fine	1) The answer is not correct, not finished, or does not match the work
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