

# Free Throw Shooter

This task assesses your ability to **reason logically**.

## STUDENTS:

Your response will be scored using the **Mathematical Reasoning** Scoring Guide.

Show your best work by:

- using examples, models, facts, patterns, and/or relationships to validate and support a solution;
- evaluating effectiveness of procedures and results;
- giving complete support for results;
- being clear and organized from one step to the next.



Late in the basketball season Johnson High School is playing Thomas High School. The scoreboard reads:

|                |               |
|----------------|---------------|
| <b>Johnson</b> | <b>Thomas</b> |
| 79             | 78            |

With one second left, a player from Johnson High School fouls Terry, a player from Thomas High School. Terry goes to the line for two foul shots, with each basket worth 1 point. As a free throw shooter, Terry has made 50% of his shots this season.

**Is the game more likely to end in a tie, a win, or a loss for Thomas High School? Show all parts of your solution and explain how you arrived at your answer.**

# Free Throw Shooter continued ...

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## Reflections

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My response is good because I ...

- used examples, models, facts, patterns, and/or relationships to support my solution;
- evaluated the effectiveness of my procedures and results;
- gave complete support for my results;
- was clear and organized from one step to the next.

# '99 Math Power Scoring Guide: Free Throw Shooter • Reasons Logically • Grade 7

|                      | Criteria   | 4 Points<br><i>very fine work</i>  | 3 Points<br><i>fully acceptable work</i>   | 2 Points<br><i>partially acceptable</i>  | 1 Point<br><i>response attempted</i>   | 0 Points<br><i>none or insufficient</i>   |
|----------------------|--|--|--|--|--|---|
| Solution             | <ul style="list-style-type: none"> <li>Is the probable outcome identified and correct?</li> </ul>              | <ul style="list-style-type: none"> <li>identifies the outcome of the game as a tie; AND</li> </ul>   | <ul style="list-style-type: none"> <li>identifies the outcome of the game as a tie; AND</li> </ul>   | <ul style="list-style-type: none"> <li>identifies the outcome of the game as a tie; AND</li> </ul>   | <ul style="list-style-type: none"> <li>identifies a win or loss as the most probable outcome, or concludes that all outcomes are equally likely <u>or</u> identifies a tie with no support offered; AND</li> </ul> | <ul style="list-style-type: none"> <li>shows an attempt to answer some part of the questions, but all responses have major errors, or no new information is provided; OR</li> </ul> |
| Justifies            | <ul style="list-style-type: none"> <li>Are comparisons of possible outcomes provided and justified?</li> </ul> | <ul style="list-style-type: none"> <li>justification includes a comparison or general explanation that a win and/or loss is possible; AND</li> </ul>   | <ul style="list-style-type: none"> <li>justification supports the outcome of the game as a tie but does not consider other possible outcomes such as a win or loss; AND</li> </ul>   | <ul style="list-style-type: none"> <li>includes justification for identified outcome, but does not consider other possible outcomes; AND</li> </ul>  | <ul style="list-style-type: none"> <li>justification exists but does not consider other possible outcomes such as a tie, win, or loss; AND</li> </ul>  | <ul style="list-style-type: none"> <li>no evidence of an attempt to justify outcomes; OR</li> </ul>   |
| Probability Concepts | <ul style="list-style-type: none"> <li>Are the ideas supported using probability?</li> </ul>                   | <ul style="list-style-type: none"> <li>probability arguments include fractions or percents and demonstrate an understanding that 1/2 is the same as 50% by using words, pictures, a chart, or comparison to 100%.</li> </ul> | <ul style="list-style-type: none"> <li>probability arguments include fractions or percents and demonstrate an understanding that 1/2 is the same as 50% by using words, pictures, a chart, or comparison to 100%, <b>but</b> understanding is limited to absolutes (eg., 1 made shot is always followed by a miss).</li> </ul> | <ul style="list-style-type: none"> <li>process demonstrates an intuitive understanding of probability by stating that 50% indicates that 1 shot will be made, but may not make a connection to fractions.</li> </ul> | <ul style="list-style-type: none"> <li>process shows little or no understanding of probability; <b>or</b> may attempt to use irrelevant information.</li> </ul>  | <ul style="list-style-type: none"> <li>restates the problem; <b>or</b> is incomplete; <b>or</b> not enough information is given to evaluate.</li> </ul>                             |

|                                  |                      |                  |
|----------------------------------|----------------------|------------------|
| <b>Numerical part of answer:</b> |                      |                  |
| Make/Make                        | Make/Miss; Miss/Make | Miss/Miss        |
| Win = 1/4 (25%)                  | Tie = 2/4 (50%)      | Loss = 1/4 (25%) |