

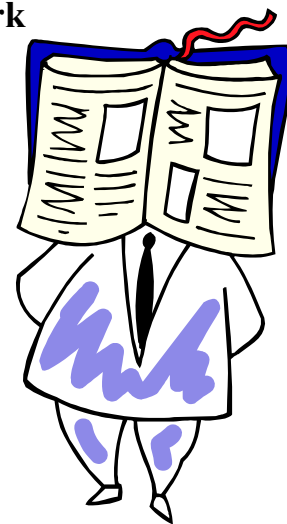
Task Specific Rubric

Class Line-Up...

Grade 4

## A Few Notes about Rubrics, Benchmark Papers and Scoring...

- Proficiency levels are determined by the content and performance standards, teachers should always compare the student's performance to the standards to assess proficiency levels.
- The benchmark papers and task specific rubric are designed to help the teacher analyze student thinking and understanding at each of the four performance levels: **Novice**, **Apprentice**, **Practitioner**, and **Expert** (NAPE).
- It is recommended that teachers use the task specific rubric given for the assessment to identify the specific math skills that make up each section of the four performance levels for the task.
- Teachers should also review the benchmark papers provided to get a sense of the mathematics that students will use to solve the task.
- The benchmark papers and task specific rubric are generalizations of what student work could look like. **It is not possible to anticipate every answer a student can give, so in scoring student work the teacher must use these generalizations to come to their own conclusions as to where a student is performing on the assessment.**
- Teachers should use the three analytic criteria of Understanding, Strategies and Communication to determine a student's holistic performance on a task. The holistic score reflects the overall student's performance on the task and indicates the student's understands the mathematics concepts being assessed in the task.



# Rubric: Class Line-Up...

## Target APS Mathematics Performance Standards

### Strand I: Number Sense and Operations - Grade 3

- Models, represents, and explains multiplication and division equations and situations using words, pictures, manipulatives, etc.

### Strand I: Number Sense and Operations - Grade 4

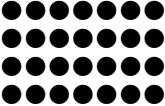
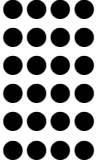
- Identifies all factor pairs of common numbers (e.g., 12, 20, 24, 36, etc.) and uses them to model, and solves real-life problems using concrete representations.

### Strand V: Patterns, Functions and Algebraic Concepts - Grade 4

- Explains patterns in factors, multiples, and unit fractions, emphasizing the anchor numbers 10 and 100 (e.g.,  $100 = 25 \times 4$ ;  $100 = 10 \times 10$ ).

Level	Understanding	Strategies, Reasoning, & Procedures	Communication
<b>Unscorable</b>	<ul style="list-style-type: none"> <li>✓ The student demonstrates no understanding of the mathematics in the problem.</li> </ul>	<ul style="list-style-type: none"> <li>✓ The student does not attempt to implement a strategy or procedure for solving the problem.</li> <li>✓ The student makes random attempts to solve the task.</li> </ul>	<ul style="list-style-type: none"> <li>✓ The student does not attempt to use mathematical representations, language or symbols to communicate a solution to the problem.</li> </ul>

Level	Understanding	Strategies, Reasoning, & Procedures	Communication
<b>Novice</b>	<ul style="list-style-type: none"> <li>✓ The student understands that:               <ul style="list-style-type: none"> <li>• The task is a multiple step problem, but doesn't have the mathematical knowledge to complete the task.</li> <li>• There is a need to work with the number 24, but does not know what to do with it.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✓ Student does not use an effective strategy to solve the problem.</li> <li>✓ The student's work may have no correlation to the given problem.</li> </ul>	<ul style="list-style-type: none"> <li>✓ There is little communication of the procedures used to solve the problem.</li> <li>✓ The student cannot verbalize the answer.</li> <li>✓ The student uses little or no mathematical language or symbols to solve the task.</li> </ul>
Level	Understanding	Strategies, Reasoning, & Procedures	Communication
<b>Apprentice</b>	<ul style="list-style-type: none"> <li>✓ The student understands that s/he must determine the number of rows the students can be placed in.</li> <li>✓ The student will have some understanding of the task, but will have reasoning errors that result in an incorrect overall solution.</li> </ul>	<ul style="list-style-type: none"> <li>✓ The student may solve the task correctly, but will not use multiplication to do so.</li> <li>✓ The student will start the task, but may not see all 8 possible row arrangements.</li> <li>✓ There is no continuation of the numbers 25 &amp; 26, or the student didn't know how to do those class sizes correctly.</li> </ul> <p><u>Sample Strategy</u>  <math>8 \times 3 = 24</math>  <math>6 \times 4 = 24</math>  <math>24 \times 1 = 24</math>  <math>2 \times 12 = 24</math></p> <ul style="list-style-type: none"> <li>✓ The student does not recognize the difference between <math>8 \times 3</math> &amp; <math>3 \times 8</math>.</li> </ul>	<ul style="list-style-type: none"> <li>✓ The student explains his/her reasoning and uses some basic mathematical language without being clearly organized.</li> <li>✓ The student states his/her final answer.</li> </ul>

Level	Understanding	Strategies, Reasoning, & Procedures	Communication
<b>Practitioner/Proficient</b>	<ul style="list-style-type: none"> <li>✓ The student understands that:               <ul style="list-style-type: none"> <li>• He/she is finding the amount of rows the students could be arranged for a class of 24 students.</li> <li>• Using division or multiplication is the most efficient method to solve the task</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✓ The student will have a math representation to show work.</li> <li>✓ The student correctly finds all 8 solutions.</li> <li>✓ The student uses an efficient strategy to solve the task.</li> </ul> <p><u>Sample Strategies:</u></p> <ul style="list-style-type: none"> <li>✓ The student will depict a picture displaying the possible rows and equations.</li> </ul> <div style="text-align: center; margin: 10px 0;"> <math>4 \times 6</math>      AND      <math>6 \times 4</math> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div>	<ul style="list-style-type: none"> <li>✓ The explanations are concise and clear as to how the student organized the problem and solutions.</li> <li>✓ The student uses proper mathematical language and symbols to explain the possible row arrangements.</li> <li>✓ The student shows all 8 possible row arrangements, and can explain the difference between the factor pair (i.e., <math>6 \times 4</math> and <math>4 \times 6</math>).</li> </ul>

Level	Understanding	Strategies, Reasoning, & Procedures	Communication
<b>Expert</b>	<p>✓ The student understands that:</p> <ul style="list-style-type: none"> <li>• He/she is finding the amount of rows the students could be arranged for a class of 24 students.</li> <li>• Using division or multiplication is the most efficient method to solve the task</li> </ul> <p><u>Task Extension:</u> The student must find all of the possible row arrangements for classes of 25 and 26 students.</p>	<p>✓ The student uses one strategy to correctly solve the task, and also solves for the numbers 25 &amp; 26.</p> <p>✓ The student uses equations and representations to solve the task and determine all 8 row arrangements for 24 students; 3 row arrangements for 25 students; and 4 row arrangements for 26 students.</p> <p><u>Task Extension:</u> The student solves the other parts of the task correctly.</p> <p>25 ) 5 x 5 5 by 5  25 ) 1 x 25 1 set of 25  25 ) 25 x 1 25 sets of 1  26 ) 26 x 1 1 set of 26  26 ) 1 x 26 26 sets of 1  26 ) 13 x 2 2 sets of 13  26 ) 2 x 13 13 sets of 2</p>	<p>✓ The explanations are concise and clear as to how the student organized the problem and solutions.</p> <p>✓ The student uses proper mathematical language and symbols to explain the possible row arrangements.</p> <p>✓ The student shows all 8 possible rows, and can explain the difference between the factor pair (i.e., 6 x 4 and 4 x 6).</p> <p><u>Task Extension:</u> Student includes a written rule/generalization regarding the possible row arrangements.</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• Prime #'s will only have 2 possibilities</li> <li>• Even numbered classes can always be in rows of 2.</li> </ul>