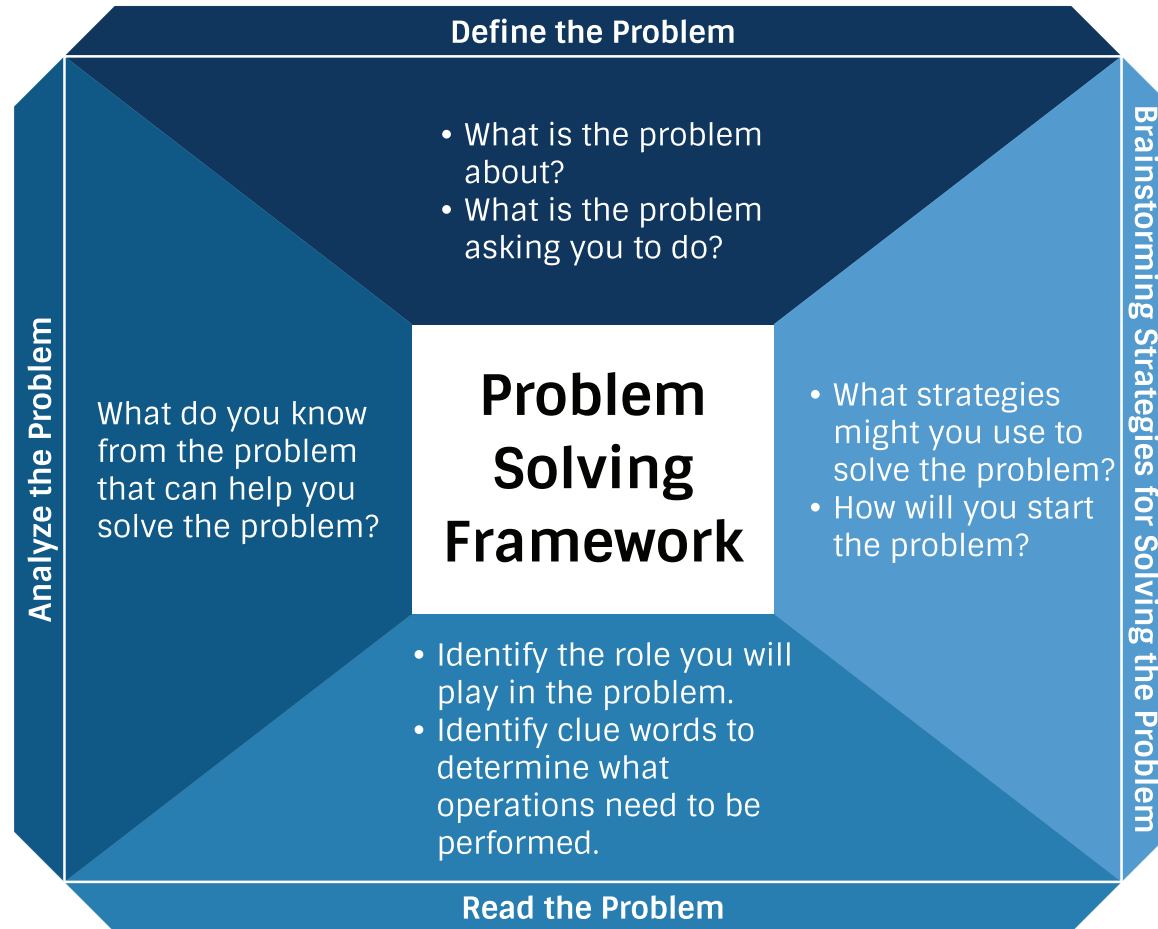


# Racing Barriers

## Problem Solving Framework



# Racing Barriers

## Performance Task Rubric



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**Skill: Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.**

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- |   |   |   |   |
|---|---|---|---|
| <ul style="list-style-type: none"><li>• Shows complete understanding of the embedded skill and applies the skill beyond the parameters of the task.</li></ul> | <ul style="list-style-type: none"><li>• Shows complete understanding of required mathematical knowledge for the specific skill.</li></ul> | <ul style="list-style-type: none"><li>• Shows some understanding of the required mathematical knowledge for the specific skill.</li></ul> | <ul style="list-style-type: none"><li>• Shows limited or no understanding of the mathematical knowledge for the specific skill.</li></ul> |
|---|---|---|---|

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**Skill: Use rate language and calculate rates expressed as a quantity of one.**

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- |   |   |   |   |
|---|---|---|---|
| <ul style="list-style-type: none"><li>• Shows complete understanding of the embedded skill and applies the skill beyond the parameters of the task.</li></ul> | <ul style="list-style-type: none"><li>• Shows complete understanding of required mathematical knowledge for the specific skill.</li></ul> | <ul style="list-style-type: none"><li>• Shows some understanding of the required mathematical knowledge for the specific skill.</li></ul> | <ul style="list-style-type: none"><li>• Shows limited or no understanding of the mathematical knowledge for the specific skill.</li></ul> |
|---|---|---|---|

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**Skill: Use tables of equivalent ratios, tape diagrams, or equations to determine unit rates.**

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- |   |   |   |   |
|---|---|---|---|
| <ul style="list-style-type: none"><li>• Shows complete understanding of the embedded skill and applies the skill beyond the parameters of the task.</li></ul> | <ul style="list-style-type: none"><li>• Shows complete understanding of required mathematical knowledge for the specific skill.</li></ul> | <ul style="list-style-type: none"><li>• Shows some understanding of the required mathematical knowledge for the specific skill.</li></ul> | <ul style="list-style-type: none"><li>• Shows limited or no understanding of the mathematical knowledge for the specific skill.</li></ul> |
|---|---|---|---|

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**Skill: Make tables of equivalent ratios and find missing values in tables, and plot the pairs of values on a coordinate plane.**

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- |   |   |   |   |
|---|---|---|---|
| <ul style="list-style-type: none"><li>• Shows complete understanding of the embedded skill and applies the skill beyond the parameters of the task.</li></ul> | <ul style="list-style-type: none"><li>• Shows complete understanding of required mathematical knowledge for the specific skill.</li></ul> | <ul style="list-style-type: none"><li>• Shows some understanding of the required mathematical knowledge for the specific skill.</li></ul> | <ul style="list-style-type: none"><li>• Shows limited or no understanding of the mathematical knowledge for the specific skill.</li></ul> |
|---|---|---|---|

# Racing Barriers

## Performance Task Rubric



### Skill: Solve unit rate problems including those involving unit pricing and constant speed.

- |   |   |   |   |
|---|---|---|---|
| <ul style="list-style-type: none"><li>Shows complete understanding of the embedded skill and applies the skill beyond the parameters of the task.</li></ul> | <ul style="list-style-type: none"><li>Shows complete understanding of required mathematical knowledge for the specific skill.</li></ul> | <ul style="list-style-type: none"><li>Shows some understanding of the required mathematical knowledge for the specific skill.</li></ul> | <ul style="list-style-type: none"><li>Shows limited or no understanding of the mathematical knowledge for the specific skill.</li></ul> |
|---|---|---|---|

### Skill: Find a percent of a quantity as a rate per 100.

- |   |   |   |   |
|---|---|---|---|
| <ul style="list-style-type: none"><li>Shows complete understanding of the embedded skill and applies the skill beyond the parameters of the task.</li></ul> | <ul style="list-style-type: none"><li>Shows complete understanding of required mathematical knowledge for the specific skill.</li></ul> | <ul style="list-style-type: none"><li>Shows some understanding of the required mathematical knowledge for the specific skill.</li></ul> | <ul style="list-style-type: none"><li>Shows limited or no understanding of the mathematical knowledge for the specific skill.</li></ul> |
|---|---|---|---|

### Planning and Execution

- |   |  |  |  |
|---|--|--|--|
| <ul style="list-style-type: none"><li>Uses an appropriate and complete strategy for solving the problem.</li><li>Uses clear and effective diagrams, tables, charts or graphs if required.</li></ul> | <ul style="list-style-type: none"><li>Uses an appropriate but incomplete strategy for solving the problem.</li><li>Appropriate but incomplete use of diagrams, tables, charts, and graphs if required.</li></ul> | <ul style="list-style-type: none"><li>Uses an inappropriate strategy or application of strategy is unclear.</li><li>Limited use or misuse of diagrams, tables, charts or graphs if required.</li></ul> | <ul style="list-style-type: none"><li>Works haphazardly with no particular strategy for solving the problem.</li><li>Does not show use of diagrams, tables, charts, or graphs if required.</li></ul> |
|---|--|--|--|

### Persistence

- |  |  |   |   |
|--|--|---|---|
| <ul style="list-style-type: none"><li>Works hard on the task and doesn't need much help</li><li>Students may extend their thinking beyond the problem and make new connections or make new problems.</li></ul> | <ul style="list-style-type: none"><li>Works hard on the task and only gets help after attempting many strategies.</li><li>Completes the task and works diligently at the harder parts.</li></ul> | <ul style="list-style-type: none"><li>Can do less difficult parts of the problem with little help.</li><li>Begins work on the harder parts, but unless help is provided gives up.</li></ul> | <ul style="list-style-type: none"><li>Needs help, even for the simple parts of the task.</li><li>Gives up quickly, often just wanted the answer giving.</li></ul> |
|--|--|---|---|

# Racing Barriers

## Performance Task Rubric



### Communication:

- There are clear effective explanations for the solutions when prompted to explain or describe.
- Mathematical representations are actively used as means of communicating ideas.
- There is precise and appropriate mathematical terminology used.
- There is clear explanation
- There is appropriate use of accurate mathematical representation.
- There is effective use of mathematical terminology.
- There is precise and appropriate mathematical terminology used.
- There are incomplete explanations.
- There is some use of appropriate mathematical representations.
- There is some use of appropriate mathematical terminology.
- There are no explanations for the solutions. The explanations cannot be understood or is unrelated to the task.
- There is no use or inappropriate use of mathematical representations.
- There is no use or mostly inappropriate use of mathematical terminology.

# Racing Barriers

## Critical Thinking/ Creative Thinking Problem Solving Rubric



### Ideation/Brainstorming:

- The learner frequently sees the links between unrelated ideas. The learner is able to produce well-developed results that are fresh and new with no support.
- The learner often produces new and unique ideas with little or no support.
- The learner occasionally produces new and unique ideas but only with guidance.
- The learner is unable to produce new and unique ideas without significant guidance and encouragement.

### Realization

- The learner actively seeks out and follows through with new ideas or approaches to a problem. The risk of failure is a real possibility but does not constrain the learner.
- The learner is willing to consider and follow through on ideas or approaches to a problem. The risk of failure is a possibility and puts some constraint on the learner.
- The learner considers new ideas or approaches to a problem only with strong encouragement. The risk of failure constrains the learner.
- The learner will not consider new ideas. The learner strictly stays within the constraints of the problem, which ensures that there is little risk of failure.

### Communication

- The learner identifies the main idea of the problem with numerous supporting details and examples, which are organized logically and coherently within the Problem Solving Framework with no assistance.
- The learner identifies the main idea of the problem with some supporting details and examples in an organized manner within the Problem Solving Framework with little assistance.
- The learner identifies the main idea of the problem with few details or examples in a somewhat organized manner within the Problem Solving Framework with assistance.
- The learner is unable to identify the key elements of the problem without a great deal of assistance.

# Racing Barriers

## Critical Thinking/ Creative Thinking Problem Solving Rubric



### Process:

- |  |  |   |   |
|--|--|---|---|
| <ul style="list-style-type: none"><li>• The learner develops strategies that are insightful and uses logical reasoning to reach accurate results with no assistance.</li></ul> | <ul style="list-style-type: none"><li>• The learner develops strategies that are insightful and uses logical reasoning to reach accurate results with little assistance.</li></ul> | <ul style="list-style-type: none"><li>• The learner develops strategies that are insightful and uses logical reasoning to reach accurate results with assistance.</li></ul> | <ul style="list-style-type: none"><li>• The learner is unable to develop strategies that are insightful and logical without a great deal of assistance.</li></ul> |
|--|--|---|---|

### Justification

- |   |   |   |  |
|---|---|---|--|
| <ul style="list-style-type: none"><li>• The learner clearly justifies the choices made for solving the problem.</li><li>• The learner can clearly explain new understandings gained from the problem.</li></ul> | <ul style="list-style-type: none"><li>• The learner justifies the choices made for solving the problem.</li><li>• The learner can explain new understandings gained from the problem.</li></ul> | <ul style="list-style-type: none"><li>• The learner attempts to justify the choices made for solving the problem.</li><li>• The learner can explain some things learned in the problem but are not entirely clear about new understandings.</li></ul> | <ul style="list-style-type: none"><li>• The learner shows limited attempts to justify the choices made for solving the problem.</li><li>• The learner struggles to explain important new understandings gained from the problem.</li></ul> |
|---|---|---|--|

### Reflection

- |   |   |  |   |
|---|---|--|---|
| <ul style="list-style-type: none"><li>• The learner clearly identifies strengths and weaknesses in their thinking.</li><li>• The learner clearly identifies improvements that would be made to solve the problem.</li></ul> | <ul style="list-style-type: none"><li>• The learner identifies strengths and weaknesses in their thinking.</li><li>• The learner identifies improvements that would be made to solve the problem.</li></ul> | <ul style="list-style-type: none"><li>• The learner attempts to identify strengths and weaknesses in their thinking.</li><li>• The learner attempts to demonstrate the improvements that would be made to solve the problem.</li></ul> | <ul style="list-style-type: none"><li>• The learner shows little attempt to identify strengths and weaknesses in their thinking.</li><li>• The learner shows little attempt to identify the improvements that would be made to solve the problem.</li></ul> |
|---|---|--|---|



# Racing Barriers

## Collaboration Rubric



### Participation:

- |  |   |  |  |
|--|---|--|--|
| <ul style="list-style-type: none"><li>• The group member participated fully and was on task.</li></ul> | <ul style="list-style-type: none"><li>• The group member participated and was on task most of the time.</li></ul> | <ul style="list-style-type: none"><li>• The group member participated but did not take full advantage of the time to work on the problem/task.</li></ul> | <ul style="list-style-type: none"><li>• The group member did not participate and worked on other material during the problem/task.</li></ul> |
|--|---|--|--|

### Leadership

- |   |   |  |   |
|---|---|--|---|
| <ul style="list-style-type: none"><li>• The group member assumed a leadership role by:<ul style="list-style-type: none"><li>• helping keep the group on task</li><li>• encouraging group participation</li><li>• posing solutions to the problem</li><li>• portraying a positive attitude</li></ul></li></ul> | <ul style="list-style-type: none"><li>• The group member sometimes assumed a leadership role in an appropriate way.</li></ul> | <ul style="list-style-type: none"><li>• The group member usually allowed other members to assume a leadership role or often attempted to dominate the group.</li></ul> | <ul style="list-style-type: none"><li>• The group member did not assume a leadership role or assumed it in a non-productive manner.</li></ul> |
|---|---|--|---|

### Listening:

- |   |   |   |   |
|---|---|---|---|
| <ul style="list-style-type: none"><li>• The group member listened carefully to others' ideas and contributions.</li></ul> | <ul style="list-style-type: none"><li>• The group member usually listened to others' ideas and contributions.</li></ul> | <ul style="list-style-type: none"><li>• The group member sometimes did not listen to others' ideas and contributions.</li></ul> | <ul style="list-style-type: none"><li>• The group member did not listen to others' ideas and contributions.</li></ul> |
|---|---|---|---|

### Feedback

- |  |  |   |   |
|--|--|---|---|
| <ul style="list-style-type: none"><li>• The group member offered detailed, constructive, and specific feedback when appropriate.</li></ul> | <ul style="list-style-type: none"><li>• The group member offered constructive feedback when appropriate.</li></ul> | <ul style="list-style-type: none"><li>• The group member sometimes offered constructive feedback but sometimes the comments were inappropriate or not useful.</li></ul> | <ul style="list-style-type: none"><li>• The group member did not offer constructive or useful feedback.</li></ul> |
|--|--|---|---|

# Racing Barriers

## Collaboration Rubric



### Cooperation:

- The group member treated others respectfully and shared the workload fairly.
- The group member usually treated others respectfully and shared the workload fairly.
- The group member sometimes treated other group members disrespectfully or did not share the workload.
- The group member often treated other members disrespectfully or did not share the workload fairly.

### Time Management

- The group member completed assigned parts of the problem on time.
- The group member usually completed assigned parts of the problem and did not hold up progress on the problem due to incomplete work.
- The group member often did not complete parts of the problem on time and held up the completion of work for the group.
- The group member did not complete most of the assigned parts of the problem and often forced the group to make last minute adjustments to accommodate missing work.





# Racing Barriers

## Writing in Math Rubric

Target Area



### Mathematical Correctness:

- |  |  |   |  |
|--|--|---|--|
| <ul style="list-style-type: none"><li>• Demonstrates complete understanding of the mathematical concept.</li></ul> | <ul style="list-style-type: none"><li>• Demonstrates adequate understanding of the mathematical concept.</li></ul> | <ul style="list-style-type: none"><li>• Demonstrates partial understanding of the mathematical concept.</li></ul> | <ul style="list-style-type: none"><li>• Demonstrates unsatisfactory understanding of the mathematical concept.</li></ul> |
|--|--|---|--|

### Language and Vocabulary:

- |   |   |   |   |
|---|---|---|---|
| <ul style="list-style-type: none"><li>• Skillful and accurate math vocabulary is utilized within the writing.</li></ul> | <ul style="list-style-type: none"><li>• Adequate and appropriate use of math vocabulary is utilized within the writing.</li></ul> | <ul style="list-style-type: none"><li>• Vague and weak use of math vocabulary is utilized within the writing.</li></ul> | <ul style="list-style-type: none"><li>• Ineffective or incorrect use of math vocabulary is utilized within the writing.</li></ul> |
|---|---|---|---|

### Organization and Fluency:

- |   |   |   |  |
|---|---|---|--|
| <ul style="list-style-type: none"><li>• Writing is easy to follow after initial reading and all the following are incorporated:</li><li>• Clarify topic in introduction</li><li>• Proper transitions are utilized</li><li>• Elaborate paragraphs with supporting details</li><li>• Appropriate word choice</li><li>• Strong concluding sentence</li></ul> | <ul style="list-style-type: none"><li>• Writing is generally easy to follow after one reading and most of the following are incorporated:</li><li>• Clarify topic in introduction</li><li>• Proper transitions are utilized</li><li>• Elaborate paragraphs with supporting details</li><li>• Appropriate word choice</li><li>• Strong concluding sentence</li></ul> | <ul style="list-style-type: none"><li>• Writing is difficult to understand after one reading and limited use of the following are incorporated:</li><li>• Clarify topic in introduction</li><li>• Proper transitions are utilized</li><li>• Elaborate paragraphs with supporting details</li><li>• Appropriate word choice</li><li>• Strong concluding sentence</li></ul> | <ul style="list-style-type: none"><li>• Writing is very difficult to read and understand and none of the following are incorporated.</li><li>• Clarify topic in introduction</li><li>• Proper transitions are utilized</li><li>• Elaborate paragraphs with supporting details</li><li>• Appropriate word choice</li><li>• Strong concluding sentence</li></ul> |
|---|---|---|--|

### Explanation

- |   |  |   |   |
|---|--|---|---|
| <ul style="list-style-type: none"><li>• Writing clearly translates computational strategies into written language with very limited use of numerals with no errors.</li></ul> | <ul style="list-style-type: none"><li>• Writing translates computational strategies into written language with some use of numerals with few errors.</li></ul> | <ul style="list-style-type: none"><li>• Writing translates some computational strategies into written language with the use of numerals and few errors.</li></ul> | <ul style="list-style-type: none"><li>• Writing translates some computational strategies into written language with the use of numerals and few errors.</li></ul> |
|---|--|---|---|