# Mathematics Priority Performance Indicators and Transferable Skills Connections

# Purpose

Transferable skills are an essential set of skills and competencies that promote the integration and application of knowledge across contexts and are critically important to success in today’s world, particularly in post-secondary programs and career readiness.

Transferable skills identified by the Agency of Education include the following:

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| --- | --- | --- | --- | --- | --- |
| **Transferable Skills**  |   | No data  | No data  | No data  | No data  |
| Clear and EffectiveCommunication | Self-Direction | Creative and PracticalProblem-Solving | Responsible and InvolvedCitizenship | Informed and IntegrativeThinking |

While it may be possible to demonstrate proficiency in transferable skills that are not connected to content, it is more effective and relevant to assess these skills in the context of disciplinary content areas. When transferable skills are emphasized in the context of academic content, academic classes become more applicable to students’ future careers and lives. As a result, students build cohesiveness and connection both within and across disciplines. Ultimately, this approach helps students become not only knowledgeable in specific subjects but also versatile, adaptable, and well-prepared for challenges of the future.

This document outlines connections between the transferable skills and the [Mathematics Proficiency-Based Graduation Requirement (PBGR) Hierarchy](https://education.vermont.gov/document/mathematics-proficiency-based-graduation-hierarchy), which includes the PBGR, Critical Proficiencies, and Priority Performance Indicators. It is intended to exemplify how transferable skills related to Priority Performance Indicators can be embedded into instruction and performance assessments in a unit of study.

In addition to the [transferable skills](https://education.vermont.gov/documents/proficiency-based-education-transferable-skills), each table that follows includes the [performance indicator scoring criteria](https://education.vermont.gov/student-learning/proficiency-based-learning/transferable-skills#scoring-criteria) and the criteria for “proficient.”This is not an exhaustive list, but rather a sampling of the most explicit connections. It is important to note that there may be an inequity of representation of the transferable skills in the following crosswalk document. For example, although *Responsible and Involved Citizenship* is important, it is not as prevalent as other transferable skills in the crosswalk. This is because the inclusion of certain transferable skills in a unit is based on decisions made at the instructional or curricular level and would therefore not be represented in a document highlighting inherent connections between PPIs and transferable skills.

This document has been intentionally posted as a Word document so educators can modify it to reflect the transferable skills connections that are addressed through their specific curriculum.

# Proficiency-Based Graduation Requirement: Mathematics

A mathematically literate individual can reason quantitatively about patterns and shapes to analyze and solve real-world and hypothetical problems. They can use equations, data, tables, and graphs to validate hypotheses and model situations that individuals encounter throughout their lives.

## Critical Proficiency: Quantitative Reasoning

Reason quantitatively and use units to solve problems.

### Priority Performance Indicator: Reasoning Quantitatively

Reason quantitatively and use units to solve problems (HSN.Q.A)

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| **Transferable Skill(s)** | **Performance Indicator for Transferable Skill Scoring Criteria** | **Proficient Criteria (from Transferable Skill Scoring Criteria)*****I can…*** |
| Clear and Effective Communication | B. Use evidence and logic appropriately in communication. | * Use reasoning to synthesize evidence to support a claim.
 |
| Creative and Practical Problem-Solving | G. Use a range of tools, including technology, to solve a problem. | * Use multiple tools together to effectively solve a problem.
 |
| Informed and Integrative Thinking | D. Use evidence and reasoning to justify claims. | * Use valid and reliable evidence to support a claim and develop a well-reasoned argument.
 |
| Informed and Integrative Thinking | F. Use technology to support and enhance the critical thinking process | * Use technology, including digital technology, to organize, analyze, and synthesize information.
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## Critical Proficiency: Algebraic Reasoning

Create, interpret, use, and analyze expressions, equations, and inequalities.

### Priority Performance Indicator: Interpreting Expressions

Interpret the structure of expressions. (HSA.SSE.A)

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| **Transferable Skill(s)** | **Performance Indicator for Transferable Skill Scoring Criteria** | **Proficient Criteria (from Transferable Skill Scoring Criteria)*****I can…*** |
| Creative and Practical Problem-Solving | A. Observe and evaluate situations in order to define problems. | * Articulate the problem and identify constraints, based on observations, and collect related information from multiple sources.
 |
| Informed and Integrative Thinking | C. Apply systems thinking to understand the interaction and influence of related parts on each other, and on outcomes. | * Explain how the interactions of parts of a system influence outcomes.
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### Priority Performance Indicator: Creating Equations

Create equations that describe numbers or relationships. (HSA.CED.A)

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| **Transferable Skill(s)** | **Performance Indicator for Transferable Skill Scoring Criteria** | **Proficient Criteria (from Transferable Skill Scoring Criteria)*****I can…*** |
| Self-Direction | C. Apply knowledge in familiar and new contexts. | * Apply a concept to a new or familiar context or settings.
 |
| Creative and Practical Problem-Solving | G. Use a range of tools, including technology, to solve a problem. | * Use multiple tools together to effectively solve a problem.
 |
| Informed and Integrative Thinking | E. Develop and use models to explain phenomena. | * Create and use an evidence-based model to explain a system or situation and analyze relationships within it.
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### Priority Performance Indicator: Solving Equations

Solve equations and inequalities in one variable. (HSA.REI.B)

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| **Transferable Skill(s)** | **Performance Indicator for Transferable Skill Scoring Criteria** | **Proficient Criteria (from Transferable Skill Scoring Criteria)*****I can…*** |
| Creative and Practical Problem-Solving | E. Generate a variety of solutions, use evidence to build a case for best responses, and repeat the process to generate alternate solutions. | * Generate and consider a range of solutions and compare the strengths and weaknesses of each, using evidence to justify the choice of solution.
 |
| Informed and Integrative Thinking | C. Apply systems thinking to understand the interaction and influence of related parts on each other, and on outcomes. | * Explain how the interactions of parts of a system influence outcomes.
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### Priority Performance Indicator: Graphing Equations

Represent and solve equations and inequalities graphically. (HSA.REI.D)

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| **Transferable Skill(s)** | **Performance Indicator for Transferable Skill Scoring Criteria** | **Proficient Criteria (from Transferable Skill Scoring Criteria)*****I can…*** |
| Creative and Practical Problem-Solving | C. Identify patterns, trends, and relationships that apply to solutions. | * Explain patterns and/or trends (including outliers) in the data and the relationship to the proposed solution.
 |
| Creative and Practical Problem-Solving. | G. Use a range of tools, including technology, to solve a problem. | * Use multiple tools together to effectively solve a problem.
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## Critical Proficiency: Functional Reasoning

Use linear and non-linear functions to interpret and analyze a variety of contexts.

### Priority Performance Indicator: Function Notation

Understand the concept of a function and use function notation. (HSF.IF.A)

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| **Transferable Skill(s)** | **Performance Indicator for Transferable Skill Scoring Criteria** | **Proficient Criteria (from Transferable Skill Scoring Criteria)*****I can…*** |
| Clear and Effective Communication | A. I can demonstrate organized and purposeful communication. | * Present my ideas coherently, with a logical sequence;
* Use academic language and/or images to enhance my message and present my subject in a precise manner.
 |
| Informed and Integrative Thinking | A. Apply knowledge from various disciplines and contexts to real life situations. | * Analyze real-life situations, data, patterns, texts, artifacts, or other products using knowledge from other disciplines and situations.
 |
| Informed and Integrative Thinking | C. Apply systems thinking to understand the interaction and influence of related parts on each other, and on outcomes. | * Explain how the interactions of parts of a system influence outcomes.
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### Priority Performance Indicator: Analyzing Functions

Analyze linear and non-linear functions using different representations to solve problems. (HSF.IF.C, HSF.LE.A)

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| **Transferable Skill(s)** | **Performance Indicator for Transferable Skill Scoring Criteria** | **Proficient Criteria (from Transferable Skill Scoring Criteria)*****I can…*** |
| Creative and Practical Problem-Solving | G. Use a range of tools, including technology, to solve a problem. | * Use multiple tools together to effectively solve a problem.
 |
| Informed and Integrative Thinking | B. Analyze, evaluate, and synthesize information from multiple sources to build on knowledge. | * Evaluate the credibility of multiple and varied sources to analyze the interrelationships among concepts.
 |
| Informed and Integrative Thinking | E. Develop and use models to explain phenomena. | * Create and use an evidence-based model to explain a system or situation and analyze relationships within it.
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### Priority Performance Indicator: Building Functions

Build a function that models a relationship between two quantities. (HSF.BF.A)

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| **Transferable Skill(s)** | **Performance Indicator for Transferable Skill Scoring Criteria** | **Proficient Criteria (from Transferable Skill Scoring Criteria)*****I can…*** |
| Self-Direction | C. Apply knowledge in familiar and new contexts. | * Apply a concept to a new or familiar context or settings.
 |
| Creative and Practical Problem-Solving | C Identify patterns, trends, and relationships that apply to solutions. | * Explain patterns and/or trends (including outliers) in the data and the relationship to the proposed solution.
 |
| Informed and Integrative Thinking | C. Apply systems thinking to understand the interaction and influence of related parts on each other, and on outcomes. | * Explain how the interactions of parts of a system influence outcomes.
 |
| Informed and Integrative Thinking | E. Develop and use models to explain phenomena. | * Create and use an evidence-based model to explain a system or situation and analyze relationships within it.
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## Critical Proficiency: Geometric Reasoning

Apply geometric concepts to solve problems in a variety of contexts

### Priority Performance Indicator: Geometric Theorems

Prove geometric theorems. (HSG.CO.C)

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| **Transferable Skill(s)** | **Performance Indicator for Transferable Skill Scoring Criteria** | **Proficient Criteria (from Transferable Skill Scoring Criteria)*****I can…*** |
| Clear and Effective Communication | A. Demonstrate organized and purposefulcommunication. | * Present my ideas coherently, with a logical sequence.
 |
| Clear and Effective Communication | B. Use evidence and logic appropriately in communication.  | * Use reasoning to synthesize evidence to support a claim.
 |
| Self-Direction  | C. Apply knowledge in familiar and new contexts. | * Apply a concept to a new or familiar context or settings.
 |
| Creative and Practical Problem-Solving | D. Analyze, evaluate, and synthesize evidence, arguments, claims, and beliefs. | * Analyze, synthesize, and cite evidence to develop a claim or argument.
 |
| Informed and Integrative Thinking | D. Use evidence and reasoning to justify claims. | * Use valid and reliable evidence to support a claim and develop a well-reasoned argument.
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### Priority Performance Indicator: Right Triangle Trigonometry

Define trigonometric ratios and solve problems involving right triangles. (HSG.SRT.C)

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| **Transferable Skill(s)** | **Performance Indicator for Transferable Skill Scoring Criteria** | **Proficient Criteria (from Transferable Skill Scoring Criteria)*****I can…*** |
| Self-Direction | C. Apply knowledge in familiar and new contexts.  | * Apply a concept to a new or familiar context or settings.
 |
| Creative and Practical Problem-Solving | H. Persist in solving challenging problems and learn from failure. | * Learn from experience and continue to put forth effort even after trying several times.
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## Critical Proficiency: Statistical Reasoning

Interpret and apply statistics and probability to analyze data, justify conclusions, and make inferences

### Priority Performance Indicator: Single Count Data

Summarize, represent, and interpret data on a single count or measurement variable. (HSS.ID.A)

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| Clear and Effective Communication | A. I can demonstrate organized and purposeful communication. | * Present my ideas coherently, with a logical sequence;
* Use academic language and/or images to enhance my message and present my subject in a precise manner.
 |
| Self-Direction | C. Apply knowledge in familiar and new contexts | * Apply a concept to a new or familiar context or settings.
 |
| Creative and Practical Problem-Solving | A. Observe and evaluate situations in order to define problems. | * Articulate the problem and identify constraints, based on observations, and collect related information from multiple sources.
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### Priority Performance Indicator: Data Inferences

Make inferences and justify conclusions from sample surveys, experiments, and observational studies. (HSS.IC.B.)

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| **Transferable Skill(s)** | **Performance Indicator for Transferable Skill Scoring Criteria** | **Proficient Criteria (from Transferable Skill Scoring Criteria)*****I can…*** |
| Self-Direction | F. Analyze the accuracy, bias, and usefulness of information. | * Apply criteria to evaluate multiple sources for bias
 |
| Creative and Practical Problem-Solving | B. Frame questions, make predictions, and design data collection and analysis strategies. | * Identify tools and design procedures needed for collecting, managing, and analyzing information.
 |
| Creative and Practical Problem-Solving | D. Analyze, evaluate, and synthesize evidence, arguments, claims, and beliefs. | * Evaluate the strengths and weaknesses of the argument; or
* Create alternative evidence that expands upon proficient.
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