

### Tier 3 Addendum Math

IPTS Standard	0	1 - Unsatisfactory	2 - Basic	3 - Proficient	4 - Exceptional
			<i>Expected Range</i>		
<b>4c:</b> Incorporate knowledge of individual differences and the cultural and language diversity that exists within classrooms and include culturally relevant perspectives as a means to motivate and engage students.	Not Observed	The candidate does not demonstrate the ability to incorporate knowledge of individual differences and the cultural and language diversity that exists within classrooms and include culturally relevant perspectives as a means to motivate and engage students.	The candidate demonstrates limited ability to incorporate knowledge of individual differences and the cultural and language diversity that exists within classrooms and include culturally relevant perspectives as a means to motivate and engage students.	The candidate demonstrates the ability to incorporate knowledge of individual differences and the cultural and language diversity that exists within classrooms and include culturally relevant perspectives as a means to motivate and engage students.	The candidate demonstrates the ability to incorporate knowledge of individual differences and the cultural and language diversity that exists within classrooms and include culturally relevant perspectives as a means to motivate and engage students. The candidate seeks out supplemental resources to meet the needs of diverse students.
<b>4a:</b> Exhibit knowledge of adolescent learning, development, and behavior and demonstrate a positive disposition toward mathematical processes and learning	Not Observed	Lacks knowledge of theories and philosophies of learning and human development. Minimal knowledge about how students learn. Demonstrates a negative disposition towards mathematical processes and learning.	Demonstrates limited knowledge of theories and philosophies of learning and human development. Occasionally applies theories to the whole class rather than to individual students. Demonstrates a neutral disposition towards mathematical processes and learning.	Consistently demonstrates appropriate knowledge of theories and philosophies of learning and human development. Applies theories to individual and groups of students. Demonstrates a positive disposition towards mathematical processes and learning	Demonstrates extensive knowledge of theories and philosophies of learning and human development. Observes learners and seeks resources to adjust teaching. Systematically seeks out information about the learner from several sources. Uses information about learner interest to engage learners in a variety of learning experiences to capitalize on strengths and build on weaknesses. Demonstrates a positive disposition towards mathematical processes and learning and helps students develop a positive learning disposition and persistence.

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<p><b>2a:</b> Use problem solving to develop conceptual understanding, make sense of a wide variety of problems and persevere in solving them, apply and adapt a variety of strategies in solving problems confronted within the field of mathematics and other contexts, and formulate and test conjectures in order to frame generalizations.</p>	<p>Not Observed</p>	<p>The candidate does not demonstrate the ability to use problem solving to develop conceptual understanding, make sense of a wide variety of problems and persevere in solving them, apply and adapt a variety of strategies in solving problems confronted within the field of mathematics and other contexts, and formulate and test conjectures in order to frame generalizations.</p>	<p>The candidate demonstrates limited ability to use problem solving to develop conceptual understanding, make sense of a wide variety of problems and persevere in solving them, apply and adapt a variety of strategies in solving problems confronted within the field of mathematics and other contexts, and formulate and test conjectures in order to frame generalizations.</p>	<p>The candidate demonstrates the ability to use problem solving to develop conceptual understanding, make sense of a wide variety of problems and persevere in solving them, apply and adapt a variety of strategies in solving problems confronted within the field of mathematics and other contexts, and formulate and test conjectures in order to frame generalizations.</p>	<p>The candidate demonstrates the ability to use a wide variety of problem solving strategies to develop conceptual understanding, make sense of a wide variety of problems and persevere in solving them, apply and adapt a wide variety of strategies in solving problems confronted within the field of mathematics and other contexts, and formulate and test conjectures in order to frame generalizations.</p>
<p><b>2c:</b> Formulate, represent, analyze, and interpret mathematical models derived from real-world contexts or mathematical problems</p>	<p>Not Observed</p>	<p>The candidate does not demonstrate the ability to formulate, represent, analyze, and interpret mathematical models derived from real-world contexts or mathematical problems.</p>	<p>The candidate demonstrates limited ability to formulate, represent, analyze, and interpret mathematical models derived from real-world contexts or mathematical problems.</p>	<p>The candidate demonstrates the ability to formulate, represent, analyze, and interpret mathematical models derived from real-world contexts or mathematical problems.</p>	<p>The candidate demonstrates the ability to formulate, represent, analyze, and interpret mathematical models derived from real-world contexts or mathematical problems to solve a wide variety of problems and formulates and tests conjectures. The learners are engaged in applying methods of inquiry and standards of evidence used in the discipline.</p>

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<p><b>2e:</b> Demonstrate the interconnectedness of mathematical ideas and how they build on one another and recognize and apply mathematical connections among mathematical ideas and across various content areas and real-world contexts.</p>	<p>Not Observed</p>	<p>The candidate does not understand or explain the interconnectedness of mathematical ideas and how they build on one another and recognize and apply mathematical connections among mathematical ideas and across various content areas and real-world contexts.</p>	<p>The candidate demonstrates limited capacity to understand and explain the interconnectedness of mathematical ideas and how they build on one another and recognize and apply mathematical connections among mathematical ideas and across various content areas and real-world contexts.</p>	<p>The candidate understands and explains the interconnectedness of mathematical ideas and how they build on one another and recognize and apply mathematical connections among mathematical ideas and across various content areas and real-world contexts</p>	<p>The candidate understands and explains the interconnectedness of mathematical ideas and how they build on one another and recognize and apply mathematical connections among mathematical ideas and across various content areas and real-world contexts. Organization, explanation and presentation of the content contribute to student understanding. Learners are encouraged to see relationship across disciplines, teacher engages learners in applying content knowledge and skills in authentic contexts.</p>
<p><b>2f:</b> Model how the development of mathematical understanding within and among mathematical domains intersects with the mathematical practices of problem solving, reasoning, communicating, connecting, and representing.</p>	<p>Not Observed</p>	<p>The candidate does not model how the development of mathematical understanding within and among mathematical domains intersects with the mathematical practices of problem solving, reasoning, communicating, connecting, and representing.</p>	<p>The candidate demonstrates limited ability to model how the development of mathematical understanding within and among mathematical domains intersects with the mathematical practices of problem solving, reasoning, communicating, connecting, and representing.</p>	<p>The candidate models how the development of mathematical understanding within and among mathematical domains intersects with the mathematical practices of problem solving, reasoning, communicating, connecting, and representing.</p>	<p>The candidate models how the development of mathematical understanding within and among mathematical domains intersects with the mathematical practices of problem solving, reasoning, communicating, connecting, and representing. Organization, explanation and presentation of the content contribute to student understanding. The learners are engaged in applying methods of inquiry and standards of evidence used in the discipline. Learners are encouraged to see relationship across domains.</p>

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<p><b>3b:</b> Analyze and consider research in planning for and leading students in rich mathematical learning experiences.</p>	<p>Not Observed</p>	<p>Does not know how to access the tools and knowledge related to latest findings (e.g., research, practice, methodologies) and technologies related to in mathematics the disciplines. Lesson plans fail to consider student data (formative and summative) and available research related to the teaching of mathematics. Plans are inappropriate for the learners, considering the research and data.</p>	<p>Minimal attempts at accessing the tools and knowledge related to latest findings (e.g., research, practice, methodologies) and technologies related to in mathematics. Lesson plans regularly fail to consider student data (formative and summative) and available research related to the teaching of mathematics. Some of the lesson plans are inappropriate for learners, considering the research and data.</p>	<p>Knows how to access the tools and knowledge related to latest findings (e.g., research, practice, methodologies) and technologies related to in the mathematics disciplines, evaluates and modifies instructional resources for Lesson plans consistently reflect the use of research and student data (formative and summative). Lesson plans are appropriate for learners considering the available research and data related to the teaching of mathematics.</p>	<p>Regularly accesses the tools and knowledge related to latest findings (e.g., research, practice, methodologies) and technologies related to mathematics. Formative and summative data informs the lesson plans. Lesson plans are appropriate for learners considering the available research and data related to the teaching of mathematics. Plans indicate that adjustments are made for recurring learning needs. Plans use grouping to provide additional supports for students with varied needs or challenges.</p>
<p><b>6c:</b> Utilize resources from professional mathematics education organizations such as print, digital, and virtual resources/collections</p>	<p>Not Observed</p>	<p>Does not utilize resources from professional mathematics education organizations such as print, digital, and virtual resources/collections.</p>	<p>Minimal utilization of resources from professional mathematics education organizations such as print, digital, and virtual resources/collections.</p>	<p>Regularly utilizes resources from professional mathematics education organizations such as print, digital, and virtual resources /collections.</p>	<p>Extensive utilization of resources from professional mathematics education organizations such as print, digital, and virtual resources /collections.</p>
<p><b>3a:</b> Apply knowledge of curriculum standards for secondary mathematics and their relationship to student learning within and across mathematical domains.</p>	<p>Not Observed</p>	<p>The candidate does not apply knowledge of curriculum standards for secondary mathematics and their relationship to student learning within and across mathematical domains.</p>	<p>The candidate demonstrates limited ability to apply knowledge of curriculum standards for secondary mathematics and their relationship to student learning within and across mathematical domains.</p>	<p>The candidate applies knowledge of curriculum standards for secondary mathematics and their relationship to student learning within and across mathematical domains.</p>	<p>The candidate applies knowledge of curriculum standards for secondary mathematics and their relationship to student learning within and across mathematical domains. Sequence and learning experiences are linked to student centered measurable math objectives. The content is relevant and meaningful to all learners with high expectations and rigor for all learners.</p>

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<p><b>5b:</b> Engage students in developmentally appropriate mathematical activities and investigations that require active engagement and include mathematics-specific technology in building new knowledge.</p>	<p>Not Observed</p>	<p>The candidate does not engage students in developmentally appropriate mathematical activities and investigations that require active engagement and include mathematics-specific technology in building new knowledge.</p>	<p>The candidate demonstrates limited ability to engage students in developmentally appropriate mathematical activities and investigations that require active engagement and include mathematics-specific technology in building new knowledge.</p>	<p>The candidate engages students in developmentally appropriate mathematical activities and investigations that require active engagement and includes mathematics-specific technology in building new knowledge.</p>	<p>The candidate engages students in developmentally appropriate mathematical activities and investigations that require active engagement and includes mathematics-specific technology in building new knowledge. Provides graphic organizers, models and representations. Teacher stimulates learner reflection on prior knowledge and guides learners through learning progressions.</p>
<p><b>4e:</b> Apply mathematical content and pedagogical knowledge to select and use instructional tools such as manipulatives and physical models, drawings, virtual environments, spreadsheets, presentation tools, and mathematics-specific technologies (e.g., graphing tools, interactive geometry software, computer algebra systems, and statistical packages); and make sound decisions about when such tools enhance teaching and learning, recognizing both the insights to be gained and possible limitations of such tools</p>	<p>Not Observed</p>	<p>The candidate does not apply mathematical content and pedagogical knowledge to select and use instructional tools such as manipulatives and physical models, drawings, virtual environments, spreadsheets, presentation tools, and mathematics-specific technologies (e.g., graphing tools, interactive geometry software, computer algebra systems, and statistical packages); and make sound decisions about when such tools enhance teaching and learning, recognizing both the insights to be gained and possible limitations of such tools</p>	<p>The candidate demonstrates limited ability to apply mathematical content and pedagogical knowledge to select and use instructional tools such as manipulatives and physical models, drawings, virtual environments, spreadsheets, presentation tools, and mathematics-specific technologies (e.g., graphing tools, interactive geometry software, computer algebra systems, and statistical packages); and make sound decisions about when such tools enhance teaching and learning, recognizing both the insights to be gained and possible limitations of such tools</p>	<p>The candidate applies mathematical content and pedagogical knowledge to select and use instructional tools such as manipulatives and physical models, drawings, virtual environments, spreadsheets, presentation tools, and mathematics-specific technologies (e.g., graphing tools, interactive geometry software, computer algebra systems, and statistical packages); and make sound decisions about when such tools enhance teaching and learning, recognizing both the insights to be gained and possible limitations of such tools</p>	<p>The candidate applies mathematical content and pedagogical knowledge to select and use instructional tools such as manipulatives and physical models, drawings, virtual environments, spreadsheets, presentation tools, and mathematics-specific technologies (e.g., graphing tools, interactive geometry software, computer algebra systems, and statistical packages); and make sound decisions about when such tools enhance teaching and learning, recognizing both the insights to be gained and possible limitations of such tools. The candidates poses questions that elicit learner thinking and result in meaningful discussion between students about how the tools used assist in problem solving.</p>

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<p><b>2d:</b> Organize mathematical thinking and use the language of mathematics to express ideas precisely, both orally and in writing to multiple audiences.</p>	<p>Not Observed</p>	<p>The candidate does not organize mathematical thinking and use the language of mathematics to express ideas precisely, both orally and in writing to multiple audiences.</p>	<p>The candidate demonstrates limited ability to organize mathematical thinking and use the language of mathematics to express ideas precisely, both orally and in writing to multiple audiences.</p>	<p>The candidate organizes mathematical thinking and use the language of mathematics to express ideas precisely, both orally and in writing to multiple audiences.</p>	<p>The candidate organizes mathematical thinking and use the language of mathematics to express ideas precisely, both orally and in writing to multiple audiences. The candidate organizes mathematical thinking and use the language of mathematics to express ideas precisely, both orally and in writing to multiple audiences.</p>
<p><b>5a:</b> Verify that secondary students demonstrate conceptual understanding; procedural fluency; the ability to formulate, represent, and solve problems; logical reasoning and continuous reflection on that reasoning; productive disposition toward mathematics; and the application of mathematics in a variety of contexts within major mathematical domains</p>	<p>Not Observed</p>	<p>The candidates does not verify that secondary students demonstrate conceptual understanding; procedural fluency; the ability to formulate, represent, and solve problems; logical reasoning and continuous reflection on that reasoning; productive disposition toward mathematics; and the application of mathematics in a variety of contexts within major mathematical domains</p>	<p>The candidate demonstrates limited ability to verify that secondary students demonstrate conceptual understanding; procedural fluency; the ability to formulate, represent, and solve problems; logical reasoning and continuous reflection on that reasoning; productive disposition toward mathematics; and the application of mathematics in a variety of contexts within major mathematical domains</p>	<p>The candidate verifies that secondary students demonstrate conceptual understanding; procedural fluency; the ability to formulate, represent, and solve problems; logical reasoning and continuous reflection on that reasoning; productive disposition toward mathematics ; and the application of mathematics in a variety of contexts within major mathematical domains</p>	<p>The candidate verifies that secondary students demonstrate conceptual understanding; procedural fluency; the ability to formulate, represent, and solve problems; logical reasoning and continuous reflection on that reasoning; productive disposition toward mathematics; and the application of mathematics in a variety of contexts within major mathematical domains The candidate accurately uses data from multiple assessments to draw conclusions about learner progress toward learning objectives that lead to standards and uses this analysis to guide instruction. Monitors each student’s progress and keeps records to support the analysis and reporting of learner progress. Provides criteria for learner assignments. Engages students in reflection on the quality of their work.</p>

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<p><b>6a:</b> Take an active role in their professional growth by participating in professional development experiences that directly relate to the learning and teaching of mathematics</p>	<p>Not Observed</p>	<p>The candidate does engage in professional growth by participating in professional development experiences that directly relate to the learning and teaching of mathematics</p>	<p>The candidate displays minimal effort in engaging in professional growth by participating in professional development experiences that directly relate to the learning and teaching of mathematics</p>	<p>The candidate takes an active role in their professional growth by participating in professional development experiences that directly relate to the learning and teaching of mathematics</p>	<p>The candidate takes an active role in their professional growth by participating in professional development experiences that directly relate to the learning and teaching of mathematics The candidate demonstrates outstanding leadership skills that contribute to individual growth, collegial growth, school improvement or the teaching profession. The candidate makes practice transparent by sharing plans and inviting observation and feedback.</p>
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Student Teacher Name: \_\_\_\_\_ Date: \_\_\_\_\_

University Supervisor Name: \_\_\_\_\_ University Supervisor Signature: \_\_\_\_\_