03_Language for Mathematics.

Content Area: **English Language Services**
Course(s):
Time Period: **Full Year**
Length: **5 weeks**
Status: **Published**

General Overview, Course Description or Course Philosophy

Students identified as limited English proficient, will receive pull-out services in individual or small groups settings for a minimum of 120 minutes per week of instruction. *This course is designed for English Language Learners in* ***grades 6-8***. Throughout the school year the students will investigate the following global themes: school culture, holidays, immigration, challenges, growing & changing, communicating for academia & social skills. This enables the students to focus & progress on their skills in listening, reading, speaking & writing as they progress through English language proficiency levels. Students will learn content and be assessed through various performance tasks using many different methodologies that are scaffolded to meet the ever-changing needs of English language learners. The goal of the ESL program is to help students develop language skills necessary to be successful students and members of society.

OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS

Students will understand:

Interpret mathematical explanations by:

- identifying concept or entity
- analyzing possible ways to represent and solve a problem
- evaluating model and rationale for underlying relationships in selected problem-solving approach

Interpret mathematics arguments by:

- comparing conjectures with previously established results
- distinguishing commonalities among strategies used
- evaluating relationships between evidence and mathematical facts to create generalizations
- classifying or organize information presented in visuals or graphs

Essential Questions:

- How does the student use English language during mathematics instruction?

- How can we compare the sizes of objects when we can't place them next to each other?
- What ways do we use math in everyday life?
- How do we identify patterns and use them to predict what will happen next?
- How does the student interpret pictures, graphs, tables, and data?
- How do I determine the best strategy to use for tackling a specific mathematical problem?
- How can I best represent a pattern using mathematical principles?

Enduring Understandings:

- English language learners engage in oral communication in a variety of situations in the content area of mathematics.
- English language learners engage in written communication in a variety of forms in the content area of mathematics.
- English language learners process, interpret, and evaluate written language, symbols, and text with understanding and fluency in the content area of mathematics.
- English language learners process, understands, interpret, and evaluate spoken language in a variety of situations in the content area of mathematics.
- Number sense develops through experience.
- Patterns and relationships can be represented numerically, graphically, symbolically, and verbally.

CONTENT AREA STANDARDS

WIDA Standard 3:

Language for mathematics-

English language learners communicate information, ideas and concepts necessary for academic success in the content area of mathematics.

MATH.6	In Grade 6, instructional time should focus on four critical areas: (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; (3) writing, interpreting, and using expressions and equations; and (4) developing understanding of statistical thinking.
MATH.7	In Grade 7, instructional time should focus on four critical areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and working with expressions and linear equations; (3) solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume; and (4) drawing inferences about populations based on samples.
MATH.8	In Grade 8, instructional time should focus on three critical areas: (1) formulating and reasoning about expressions and equations, including modeling an association in bivariate

	data with a linear equation, and solving linear equations and systems of linear equations; (2) grasping the concept of a function and using functions to describe quantitative relationships; (3) analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.
ELL.6.3	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics
ELL.7.3	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics
ELL.8.3	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics

RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion Standards are Required)

21st Century Life & Careers

- Plan and deliver a media production (e.g., video, and mobile).
- Critical Thinking
- Collaboration
- Communication
- Life & Career Skills
- Information Literacy
- Media Literacy
- Chronological Thinking
- Spatial Thinking
- Presentational Skills
- Problem Solving
- Decision Making

LA.RI.6	Reading Informational Text
LA.RI.7	Reading Informational Text
LA.RI.8	Reading Informational Text
LA.RI.8.10	By the end of the year read and comprehend literary nonfiction at grade level text-complexity or above, with scaffolding as needed.
LA.RI.6.10	By the end of the year read and comprehend literary nonfiction at grade level text-complexity or above, with scaffolding as needed.
LA.RI.7.10	By the end of the year read and comprehend literary nonfiction at grade level text-complexity or above, with scaffolding as needed.
LA.SL.8.6	Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.
LA.SL.6.6	Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.
LA.SL.7.6	Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.
LA.L.6.1	Demonstrate command of the conventions of standard English grammar and usage when

	writing or speaking.
LA.L.7.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
LA.L.8.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
LA.L.7.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.
LA.L.6.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.
LA.L.8.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.
LA.L.7.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
LA.L.8.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
LA.L.6.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

STUDENT LEARNING TARGETS

Refer to the 'Declarative Knowledge' and 'Procedural Knowledge sections.

Declarative Knowledge

Students will understand: Language functions & language features

- mathematical terms and phrases to describe concept, process, or purpose.
- relating verbs (belong to, are part of, be, have) to define or describe concept.
- conditional conjunctions (if or when) to make and justify conjecture (If I add 4/5 and 3/4, the result will be less than 2 because each fraction is less than a whole number.).
- relating verbs (have, belong to, be) to define principles, operational theorems, and properties (for right angled triangles the Pythagorean formula is $a^2 + b^2 = c^2$).
- adverbial phrases (qualities, quantities, frequencies) to add precision related to conjecture (For all integers, For every vote candidate A received, candidate B received three votes which means…).
- written communication using algebraic equations.
- geometric relations ratio concepts and use ratio reasoning to solve problems.
- analyzing proportional relationships and use them to solve real-world and mathematical problems.
- reasoning about and solve one-variable equations and inequalities.
- applying and extending previous understandings of operations with fractions to add,

subtract, multiply, and divide rational numbers.

Procedural Knowledge

Students will be able to:

- Listening: aurally comprehend spoken English in both a social and academic setting.
- Speaking: speak English in both social and school setting.
- Reading: read (decode and comprehend) text for recreational and academic purposes.
- Writing: write for personal and academic purposes.
- create and extend numerical patterns.
- identify relationships of corresponding terms.
- demonstrate that they can translate symbols to words.
- classify or organize information presented in visuals or graphs.
- introduce concept or entity.
- share solution with others.
- describe data and/or problem-solving strategy.
- state reasoning used to generate solutions.

EVIDENCE OF LEARNING

Refer to the 'Formative Assessments' and 'Summative Assessments' sections.

Formative Assessments

- class participation/discussions
- teacher observations/monitors how students' are learning
- daily communication activities
- worksheets
- homework
- retell
- list
- sorting

- rubrics
- math related games
- following directions
- answer comprehension questions
- charts & graphic organizers
- fluency
- practice and successfully completing activities and exercises with little assistance
- modified quizzes/tests
- listening comprehension tasks
- strategic questioning
- individual/group response
- journal writing
- on-line mini-assessments
- exit tickets

Summative Assessments

- completing projects or assignments
- role playing
- presentations
- using manipulatives
- completing assignments
- final interpersonal or speaking presentations
- tests/quizzes
- research papers
- culminating communicative activity
- cumulative work over an extended period such as a final project or creative portfolio.
- end-of-unit

RESOURCES (Instructional, Supplemental, Intervention Materials)

https://www.vp.k12.mo.us/Page/715#:~:text=https%3A//www.mathsisfun.com/definitions/

https://www-k6.thinkcentral.com/content/hsp/math/gomath/common/video/video.html#videoId=ref:En_1042

https://www-k6.thinkcentral.com/content/hsp/math/gomath/common/video/video.html#videoId=ref:En_106

1

https://www-k6.thinkcentral.com/content/hsp/math/gomath/common/video/video.html#videoId=ref:En_1062

https://www-k6.thinkcentral.com/content/hsp/math/gomath/common/video/video.html#videoId=ref:En_1063

https://www-k6.thinkcentral.com/content/hsp/math/gomath/common/video/video.html#videoId=ref:En_1138

https://www-k6.thinkcentral.com/content/hsp/math/gomath/common/video/video.html#videoId=ref:En_1139

https://hippocampus.org/

https://kithub.cc/free-stem-lesson-plans/

activities

Youtube videos

ipads

INTERDISCIPLINARY CONNECTIONS

WIDA Standard 3 – Language of Mathematics

- English language learners communicate information, ideas and concepts necessary for academic success in the content area of mathematics.
- Based on information in the unit, measurement, and solving word problems.

WIDA Standard 1 Social and Instructional Language is an integral part of growing and changing.

WIDA Standard 2: Reading, writing, listening, and speaking about growth and change allows the student to express their feelings about real-life experiences.

Career Ready Practices:

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP6. Demonstrate creativity and innovation.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

CRP9. Model integrity, ethical leadership, and effective management.

CRP11. Use technology to enhance productivity.

Technology Operations & Concepts/ Interdisciplinary Connections:

- Implementation of conventions of Standard English
- Language acquisitions
- Google
- Educational tech applications
- Data Collection/analysis
- Computations
- Utilize critical thinking to make sense of problems and persevere in solving them.
- Use technology to enhance productivity.

ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS

See link to Accommodations & Modifications document in course folder.

- modify activities & assessments
- scaffolding
- graphic organizers
- modify assessment type, length, an/or format
- modify lesson pacing and/or structure
- word banks
- provide regular and/or picture dictionaries
- couple new vocabulary with visual references
- provide extended time
- teacher modeling
- providing examples
- high level questions

- simplify written and verbal instructions
- provide additional instruction including reviews, & drills.
- alternate responses such as, drawing a series of pictures with captions, oral responses, etc.
- frequent breaks
- guided reading
- rephrase questions, directions & explanations
- shorten reading assignments
- adapt homework to reflect language proficiency and home support
- use story retellings to assess comprehension