Unit 4 - Math in Another Language

Content Area: **World Language**
Course(s): **Sample Course**
Time Period: **MarApr**
Length: **8 weeks Grade 5**
Status: **Published**

Title Section

Department of Curriculum and Instruction

Belleville Public Schools

Curriculum Guide

World Language

Grade 5 Unit 4

Math in Another Language

Belleville Board of Education

102 Passaic Avenue

Belleville, NJ 07109

Prepared by: Josephine Palmieri

Dr. Richard Tomko, Superintendent of Schools

Mr. Thomas D'Elia, Director of Curriculum and Instruction

Ms. Diana Kelleher, District Supervisor of ELA/Social Studies

Mr. George Droste, District Supervisor of Math/Science

Board Approved: August 24, 2015

Unit Overview

- Learners continue their exploration of the target language by acquiring phrases to exchange information about numbers and mathematical computation. Teachers will reinforce elements from the mathematics curriculum by guiding students through multiplication activities in the target language. The unit's essential questions will encourage students to see how they are connected to children from around the world through the shared experience of using numbers.

5th graders finish their elementary world language studies with an emphasis on reading and speaking comprehension. Each unit will provide opportunities for students to read closely to determine what the text says explicitly and to make logical inferences from it. These opportunities complement objectives in the Language Arts curriculum. Students will exit the program having acquired sentences, words and phrases that allow them to communicate at the Novice Mid or High Level. According to the American Council on the Teaching of Foreign Languages, target language "speakers at this level are able to manage successfully a number of uncomplicated communicative tasks in straightforward social situations. Conversation is concentrated to on topics necessary for basic expression in the target language culture, such as basic personal information, basic objects, and a limited number of activities, preferences, and immediate needs. Novice High speakers respond to simple, direct questions or requests for information. They are also able to ask a few formulaic questions."

NJSLS

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Reading

CCSS.ELA-Literacy.CCRA.R.4 Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.

CCSS.ELA-Literacy.CCRA.R.3 Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

Writing:

CCSS.ELA-Literacy.CCRA.W.6 Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

CCSS.ELA-Literacy.CCRA.W.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking and Listening

CCSS.ELA-Literacy.CCRA.SL.1 Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

CCSS.ELA-Literacy.CCRA.SL.5 Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

CCSS.ELA-Literacy.CCRA.SL.6 Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

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Standard(s)

World Language Standards

- Interpretive Mode
  - 7.1.NH.A.2- Demonstrate comprehension of a series of oral and written directions, commands, and requests through appropriate physical response.
  - 7.1.NM.A.4- Identify familiar people, places, and objects based on simple oral and/or written descriptions.
- Interpersonal Mode
  - 7.1.NM.B.4- Ask and respond to simple questions, make requests, and express preferences using memorized words and phrases.
- Presentational Mode
  - 7.1.NM.C.4- Present information from age- and level-appropriate, culturally authentic materials orally or in writing.

Common Core Standards (Mathematics)

- CCSS.Math.Content.K.CC.A.2 Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
- CCSS.Math.Content.K.CC.B.5 Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.
- CCSS.Math.Content.K.OA.A.1 Represent addition and subtraction with objects, fingers, mental images, drawings[1], sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
- CCSS.Math.Content.2.MD.C.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?
- CCSS.Math.Content.2.NBT.B.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.
- CCSS.Math.Content.1.OA.A.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.[1]
- CCSS.Math.Content.1.NBT.C.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.
- CCSS.Math.Content.1.NBT.C.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
- CCSS.Math.Content.3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

Technology Standard(s)

- 8.1.P.A.1 Use the mouse to negotiate a simple menu on the screen (e.g., to print a picture)
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Social Studies Standard(s)

- 6.1. P.A.1 Demonstrate an understanding of rules by following most classroom routines.
- 6.1. P.A.3 Demonstrate appropriate behavior when collaborating with others.
- 6.1. P.D.4 Learn about and respect other cultures within the classroom and community.
- 6.1.4. D.20 Describe why it is important to understand the perspectives of other cultures in an interconnected world.

Exit Skills

Students Will Be Able To...

1. Ask and answer in the target language "What number is this"? with numbers through 1-100. Interpersonal Mode
2. Count by tens to 100- Presentational Mode
3. Count by fives to 100- Presentational Mode
4. Ask and answer multiplication problems in complete target language sentences. Interpersonal Mode
5. Write down any number the teacher says from 0-100-Interpretive Mode
6. Solve mathematical problems to find the missing variable and write the answer in the target language.- Presentational Mode

Enduring Understanding

- Although words used to describe them are different, mathematical computations behave the same in both the target language and English speaking countries.
- Math is a universal concept and means of communication.
- In all cultures, math is essential to productive and enriched lives.

Essential Questions

- How do numbers and mathematical computations behave in other languages?
- How can I use the target language to communicate cross culturally regarding numbers and mathematical computations?
- How is math an important part of our lives and society?

Learning Objectives

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7. Analyze math functions as a universal concept. Interpretive Mode

A. To lay a foundation of second language skills that will equip students to succeed at other levels of language learning.

B. To foster in students an enjoyment of foreign language and an appreciation of cultural diversity.

C. To develop students' abilities to communicate using memorized words and phrases to talk about familiar topics related to school, home, and the community.

D. To guide students in the development of healthy social interactions with diverse peers through the discussion of the course's "Essential Questions".

E. To allow students to see connections between language learning and their academic tasks in other subject areas.

F. To introduce the learners to the analysis of diverse cultural patterns and to compare them with their own cultural patterns.

Interdisciplinary Connections

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Alignment to 21st Century Skills & Technology

Key SUBJECTS AND 21st CENTURY THEMES

Mastery of key subjects and 21st century themes is essential for all students in the 21st century.

Key subjects include:

- English, reading or language arts
- World languages
- Arts
- Mathematics
- Economics
- Science
- Geography
- History
- Government and Civics

21st Century/Interdisciplinary Themes

- Civic Literacy
- Environmental Literacy
- Financial, Economic, Business and Entrepreneurial Literacy
- Global Awareness
- Health Literacy

21st Century Skills

- Communication and Collaboration
- Creativity and Innovation
- Critical thinking and Problem Solving
- ICT (Information, Communications and Technology) Literacy
- Information Literacy
- Life and Career Skills
- Media Literacy

Technology Infusion

Students will participate in various activities that will support the technology standards listed above. Activities include manipulation of SmartBOARD, collaboration in internet searches, aid teacher in the use of power point, and use video projection to present their work.

Differentiation

- TPR (Total Physical Response) and TPRS (Storytelling)
- Keep the use of English to a minimum, with most instructions, directions and explanations given in the target language.
- Use real objects, gestures, pictures, and other visuals to convey meaning.
- Focus on language that is concerned with functional situations and authentic utterances.
- Do not always insist on complete sentences, but mirror natural speech patterns.
- Adopt a conversational approach replicating “real” situations likely to occur.
- Teach vocabulary in context, including all kinds of idiomatic phrases.
- Use paired activities and small-group learning (cooperative learning groups).
- Use technology (including SmartBoards, multimedia presentations, turning point, video projection to share student work...etc).
- Use a variety of print and non-print materials.
- Strive to develop cultural awareness using authentic cultural realia as a springboard for communication

in the language.
- Emphasize acceptable communication, rather than near-native pronunciation.
- Ensure a match between the learner and the language in terms of relevance and learning styles.
- Use games and activities that involve movement to aid in the teaching kinesthetic learning.
- Activation of prior knowledge through teacher led discussions.

Special Education

- printed copy of board work/notes provided
- additional time for skill mastery
- assistive technology
- behavior management plan
- Center-Based Instruction
- check work frequently for understanding
- computer or electronic device utilizes
- extended time on tests/ quizzes
- have student repeat directions to check for understanding
- highlighted text visual presentation
- modified assignment format
- modified test content
- modified test format
- modified test length
- multiple test sessions
- multi-sensory presentation
- preferential seating
- preview of content, concepts, and vocabulary
- reduced/shortened reading assignments
- Reduced/shortened written assignments
- secure attention before giving instruction/directions
- shortened assignments
- student working with an assigned partner
- teacher initiated weekly assignment sheet
- Use open book, study guides, test prototypes

ELL

- teaching key aspects of a topic. Eliminate nonessential information
- using videos, illustrations, pictures, and drawings to explain or clarif
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning;
- allowing students to correct errors (looking for understanding)
- allowing the use of note cards or open-book during testing
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using computer word processing spell check and grammar check features
- using true/false, matching, or fill in the blank tests in lieu of essay tests

Intervention Strategies

- allowing students to correct errors (looking for understanding)
- teaching key aspects of a topic. Eliminate nonessential information
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning
- allowing students to select from given choices
- allowing the use of note cards or open-book during testing
- collaborating (general education teacher and specialist) to modify vocabulary, omit or modify items to reflect objectives for the student, eliminate sections of the test, and determine how the grade will be determined prior to giving the test.
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes
- marking students' correct and acceptable work, not the mistakes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using authentic assessments with real-life problem-solving
- using true/false, matching, or fill in the blank tests in lieu of essay tests
- using videos, illustrations, pictures, and drawings to explain or clarify

Evidence of Student Learning-CFU's

Please list ways educators may effectively check for understanding in this secion.

- Admit Tickets
- Anticipation Guide
- Common benchmarks
- Compare & Contrast
- Create a Multimedia Poster
- Define
- Describe
- Evaluate
- Evaluation rubrics
- Exit Tickets
- Explaining
- Fist- to-Five or Thumb-Ometer
- Illustration
- Journals
- KWL Chart
- Newspaper Headline
- Outline
- Question Stems
- Quickwrite
- Quizzes
- Red Light, Green Light
- Self- assessments
- Socratic Seminar
- Study Guide
- Teacher Observation Checklist
- Think, Pair, Share
- Think, Write, Pair, Share
- Top 10 List
- Unit tests

Primary Resources

Reading A-Z.com

Student made portfolio

Ancillary Resources

Blank maps

Vocabulary handouts

Alphabet worksheets

Magnetic letters

Flash cards

Whiteboard

Crossword puzzles

Number searches

Calendars

Color worksheets

Classroom objects

Picture cards

Songs

Vocabulary charts and walls

Manipulatives

Posters

Story telling

Sample Lesson

Math Lesson Plan for World Language

Teacher: _____ Grade level: **Fifth** Subject: **Math/World Language**

Unit topic: **Addition and subtraction concepts** Length of time: 2 **weeks**

1. ***1.*** ***Introduction:***

The nature of this unit is for students to apply previously learned knowledge to a mathematical skills in the target language. Students will use number sense and apply it to basic addition and subtraction concepts. This is important for students to learn and understand the concept of this unit. Students will learn important target language vocabulary and demonstrate understanding of this vocabulary through the use of assessments. Students will be given manipulatives to demonstrate what they know, as well as games, peer work, and graphic organizers. This unit focuses on using the addition, subtraction, and equal sign in different positions in order to ensure student understanding.

1. ***2.*** ***Objectives:***
    1. Students will be able to: (in the target language)

- Use manipulatives to demonstrate addition and subtraction problems
- Manipulate number sentences to demonstrate understanding by switching around the addition, subtraction, and equal signs
- Write and say number sentences correctly
- Solve addition and subtraction problems with peers and independently
- Play addition and subtraction games to solve problems

1. The changes in behavior I wish to see are:

- Student ability to work cooperatively with peers
- Student ability to work independently to complete tasks
- Student ability to follow game directions and be a team player
- Student ability to use manipulatives appropriately

1. To demonstrate mastery students will be able to:

- Write and say addition and subtraction sentences in the target language
- Solve problems independently through worksheets
- Demonstrate ability through teacher observation

1. ***3. Content of unit:***
    1. The topics I will cover in my teaching are basic addition and subtraction skills. I introduce addition first and emphasize the sign which indicates addition. Then I will introduce subtraction and emphasize the sign which indicates subtraction. Students will practice various methods in solving addition and subtraction problems. Students will then demonstrate knowledge about the equal sign, and manipulate the number sentence so that the equal sign comes first. This will demonstrate that students are able to decompose number sentences as well as build them.
    2. The skills, topics, subtopics, concepts, issues, and information covered in this unit are addition and subtraction through the use of manipulatives, the composing and decomposing of numerical sentences, and the idea of word problems will be introduced to add and subtract.
2. ***4. Methods and activities:***
    1. I am going to teach this unit through various stages. Every day we will begin with a whole group lesson, group work, and finally independent work. Students will also have opportunities to work together as a group in centers to play and manipulate numbers. I also would like to work with groups one on one for students who are struggling and to check for understanding. I will incorporate videos into lessons as well.
    2. The methods I will use for teaching this unit are whole group introductions, partner work, group work, games, center work, math videos, songs, manipulative work, and students will be given the opportunity to share what they have learned verbally.
    3. The activities students will participate in are addition and subtraction games with peers which will require them to follow directions and demonstrate knowledge, using manipualtives such as counting objects, number tiles, magnetic numbers and drawings to demonstrate knowledge of the concept. Students will work in groups to complete worksheets and tasks. Students will work with the teacher to complete word problems. Students will take written assessments to check for understanding.
3. ***5. Teaching materials/resources***
    1. The resources and materials I will need to teach this unit are grade level appropriate worksheets, promethean or smart board, math videos, songs, assessments, and magnetic white board.
    2. The materials students will need are counting manipulatives (such as buttons), magnetic cookie sheets, magnetic numbers or counting objects, number tiles including math signs, pencils, coloring materials, and graphic organizers.
    3. Additional resources found on the internet through Discovery Education.com and Reading A-Z.com. and worksheets.
4. ***6. Assessments of student learning:***
    1. I will measure and evaluate student progress by student produced work such as worksheets. I will also have small group centers which I will work with a group to check for progress and mastery. I will observe for understanding in whole group discussions, as well as in group work games.

2. I will know if I achieved the objectives in this unit by student written assessments.
3. The assessments I will use to measure student learning are weekly lesson worksheets, work produced by students independently or student group work.

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- CCSS.Math.Content.2.MD.C.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?
- CCSS.Math.Content.2.NBT.B.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.
- CCSS.Math.Content.1.OA.A.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.[1]
- CCSS.Math.Content.1.NBT.C.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.
- CCSS.Math.Content.1.NBT.C.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
- CCSS.Math.Content.3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

Technology Standard(s)

- 8.1.P.A.1 Use the mouse to negotiate a simple menu on the screen (e.g., to print a picture)
- 8.1.2. A.4 Create a document with text using a word processing program.
- 8.1. P.C.2 Access materials on a disk, cassette tape, or DVD. Insert a disk, cassette tape, CD-ROM,

DVD, or other storage device and press “play” and “stop.”

Social Studies Standard(s)

- 6.1. P.A.1 Demonstrate an understanding of rules by following most classroom routines.
- 6.1. P.A.3 Demonstrate appropriate behavior when collaborating with others.
- 6.1. P.D.4 Learn about and respect other cultures within the classroom and community.
- 6.1.4. D.20 Describe why it is important to understand the perspectives of other cultures in an interconnected world.