Unit 4: Math in Another Language

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Department of Curriculum and Instruction

Belleville Public Schools

Curriculum Guide

Fifth Grade World Language

Unit 4: Math in Another Language

Belleville Board of Education

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Unit Overview

Learners continue their exploration of the target language by acquiring phrase 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.

Enduring Understandings

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 comunicate cross culturally regarding numbers and mathematical computations?

How is math an important part of our lives and society?

Exit Skills

Students will be able to:

Ask and answer in the target language "What number is this?" with numbers from 1 to 100.

Count by tens to 100.

Count by fives to 100.

Ask and answer multiplication problems in complete target language sentences.

Write down any number the teacher says from 0 to 100.

Solve mathematical problems to find the missing variable and write the answer in the target language.

New Jersey Student Learning Standards (NJSLS)

Standard 7.1 **Novice-High** for Grades 5 & 6

Strand A: Interpretative Mode

Linguistic - has progressed from understanding and communicating at the word level to understanding and communicating at the sentence level and can use words, lists, and simple sentences to:

- Identify the main idea and some supporting details when reading.
- Understand the gist and some supporting details of conversation dealing with everyday life.
- Infer the meaning of some unfamiliar words when used in familiar contexts.

Cultural

- Immigration changes both the community of origion and the new community.
- The study of another language and culture deepends understanding of where and how people live and why events occur.
- Due to globalization and advances in technology, the products and practices of a culture change over time, and these changes may impact cutlural perspectives.
- Human and animal migration often related to availability of resources and the ability to adapt to the environment.
- Perseonal preferences and skills are key factors to consider when making decisions about postsecondary plans.
- The amount of leisure time available and how it is spent varies among cultures.
- Wellness practices may vary across cultures.
- Online newspapers, magazines, blogs, wikis, podcasts, videos, and government websites provide current information on perspectives of the target culture on local, national, and global problems/issues.
- Current trends and issues influence popular culture.

Strand B: Interpersonal Mode

Linguistic - has progressed from understanding and communicating at the word level to understanding and communicating at the sentence level and can use words, lists, and simple sentences indepednently to:

- Ask and answer questions related to everyday life.

- Handle simple transactions related to everyday life:

Initiate, maintain, and end a conversation
Ask for and give permission
Express needs
Give reasons
Request, suggest, and make arrangements
Extend, accept, and decline an invitation
Express an opinion and preference

Cultural (please see above)

Strand C: Presentational Mode

Linguistic - has progressed from understanding and communicating at the word level to understanding and communicating at the sentence level and can use words, lists, and simple sentences indepednently to:

- Handle simple transactions related to everyday life:

Express needs

Give reasons

Express an opinion and preference

Request and suggest

Cultural (please see above)

WL.7.1.NM.A.2	Demonstrate comprehension of simple, oral and written directions, commands, and requests through appropriate physical response.
WL.7.1.NM.A.L.1	The Novice - Mid language learner understands and communicates at the word level and can independently identify and recognize memorized words and phrases that bring meaning to text.
WL.7.1.NM.B.L.1.a	Respond to learned questions.
WL.7.1.NM.B.L.1.b	Ask memorized questions.

Interdisciplinary Connections

LA.RL.5.1	Quote accurately from a text, and make relevant connections when explaining what the text says explicitly and when drawing inferences from the text.
MA.5.5	In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.
SOC.5-8.1.1	Chronological Thinking

Learning Objectives

Students will be able to:

Ask and answer in the target language "What number is this?" with numbers from 1 to 100.

Count by tens to 100 in target language.

Count by fives to 100 in target language.

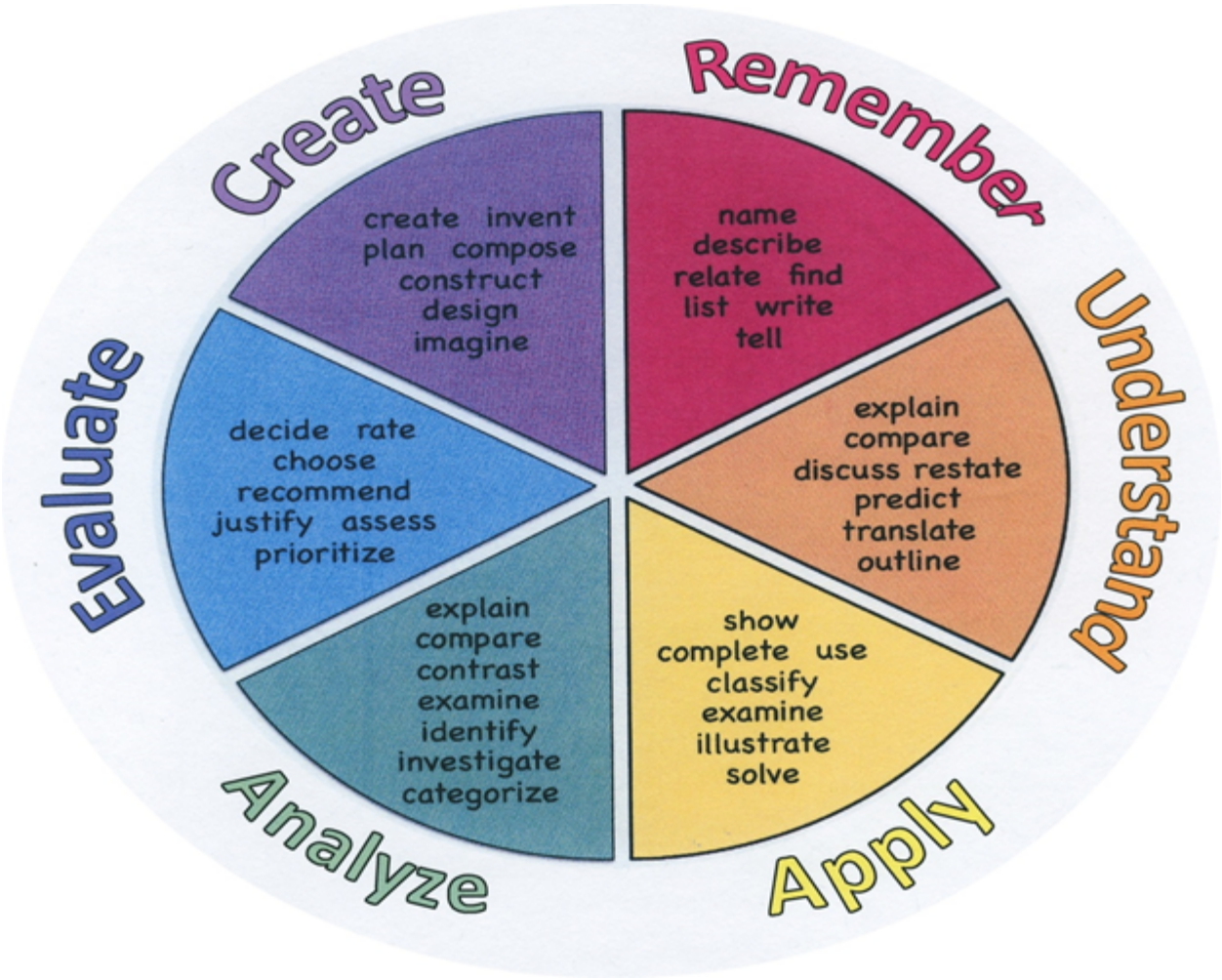
Ask and answer multiplication problems in complete target language sentences.

Write down any number the teacher says from 0 to 100 in target language.

Solve mathematical problems to find the missing variable and write the answer in the target language.

Action Verbs: Below are examples of action verbs associated with each level of the Revised Bloom's Taxonomy.

Remember	Understand	Apply	Analyze	Evaluate	Create
Choose	Classify	Choose	Categorize	Appraise	Combine
Describe	Defend	Dramatize	Classify	Judge	Compose
Define	Demonstrate	Explain	Compare	Criticize	Construct
Label	Distinguish	Generalize	Differentiate	Defend	Design
List	Explain	Judge	Distinguish	Compare	Develop
Locate	Express	Organize	Identify	Assess	Formulate
Match	Extend	Paint	Infer	Conclude	Hypothesize
Memorize	Give Examples	Prepare	Point out	Contrast	Invent
Name	Illustrate	Produce	Select	Critique	Make
Omit	Indicate	Select	Subdivide	Determine	Originate
Recite	Interrelate	Show	Survey	Grade	Organize
Select	Interpret	Sketch	Arrange	Justify	Plan
State	Infer	Solve	Breakdown	Measure	Produce
Count	Match	Use	Combine	Rank	Role Play
Draw	Paraphrase	Add	Detect	Rate	Drive
Outline	Represent	Calculate	Diagram	Support	Devise
Point	Restate	Change	Discriminate	Test	Generate
Quote	Rewrite	Classify	Illustrate		Integrate
Recall	Select	Complete	Outline		Prescribe
Recognize	Show	Compute	Point out		Propose
Repeat	Summarize	Discover	Separate		Reconstruct
Reproduce	Tell	Divide			Revise
	Translate	Examine			Rewrite
	Associate	Graph			Transform
	Compute	Interpolate			
	Convert	Manipulate			
	Discuss	Modify			
	Estimate	Operate			
	Extrapolate	Subtract			
	Generalize				
	Predict				



Suggested Activities & Best Practices

Write random numbers on the board for students to call aloud in the target language.

When referring to pages, use the target language.

Assessment Evidence - Checking for Understanding (CFU)

Administer quiz on numbers in the target language to identify wih the cardinal number.

Student's recognition of numbers on flash cards and creating math sentences with them.

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

- Unit review/Test prep
- Unit tests
- Web-Based Assessments
- Written Reports

Primary Resources & Materials

Spanish is Fun workbook, Teach Them Spanish workbook, Teacher made worksheets

Ancillary Resources

YouTube, SmartBoard, Flash cards

Technology Infusion

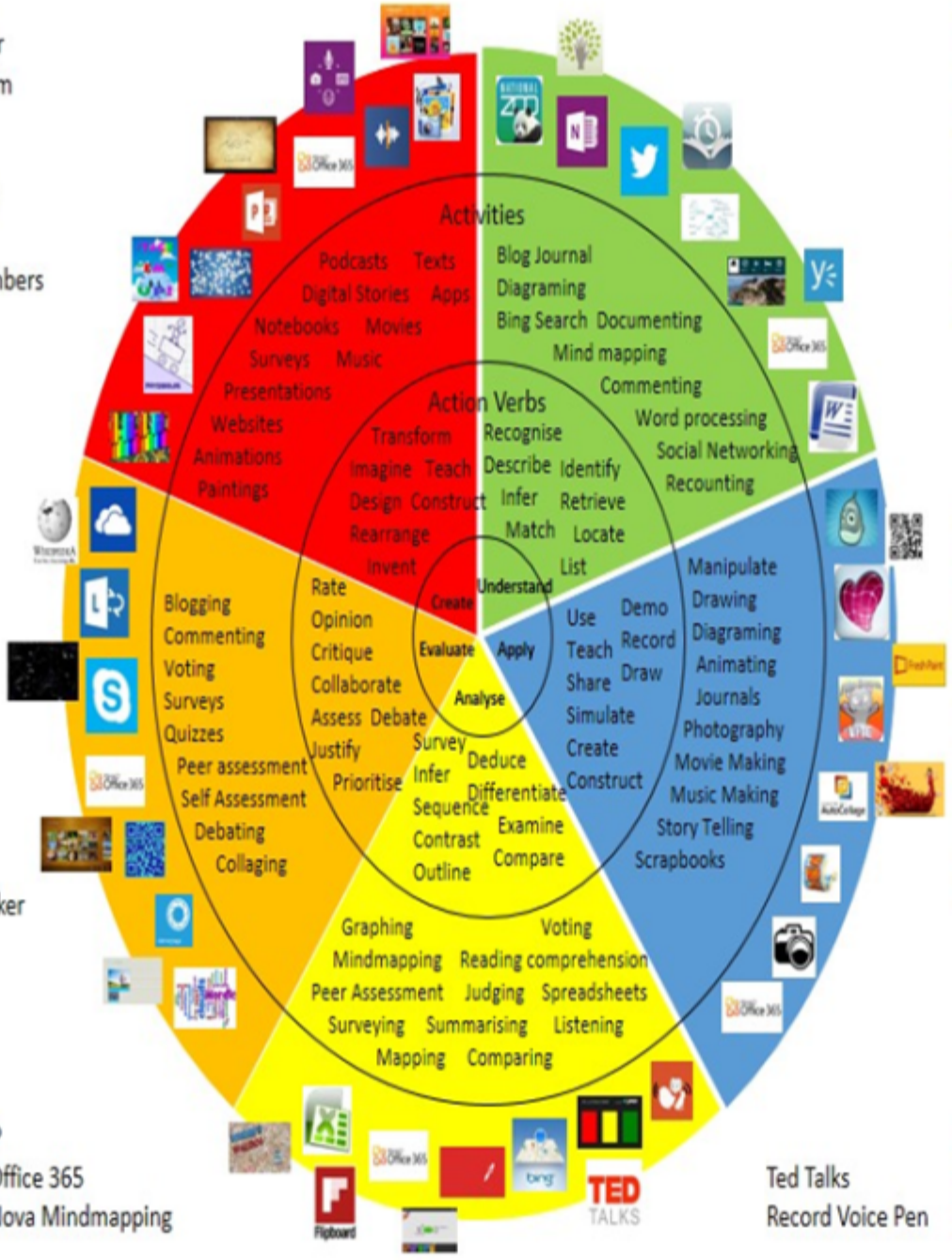
Students may use Chromebooks for reference of number forms of different languages, like Roman or Egyptian.

Students use SmartBoard for the solving of math problems in a class activity.

Win 8.1 Apps/Tools Pedagogy Wheel

Podcasts
Photostory 3
Kid Story Builder
Music Maker Jam
Paint A Story
Office 365
MS PowerPoint
Stack 'Em Up
NqSquared Numbers
Physamajig
Xylophone 8

Wikipedia
Skydrive
Lync
SkyMap
Skype
Office 365
Puzzle Touch
Easy QR
Memorylage
Life Moments
Word Cloud Maker



Where's Waldo?
MS Excel Office 365
Flipboard Nova Mindmapping

Ted Talks
Record Voice Pen

Originally taken from http://www.coetail.com/vzimmer/files/2013/02/iPadagogy-Wheel.001.jpg
And adapted for Windows 8.1 devices by Charlotte Beckhurst @CharBeckhurst

Alignment to 21st Century Skills & Technology

Mastery and infusion of **21st Century Skills & Technology** and their Alignment to the core content areas is essential to student learning. The core content areas include:

- English Language Arts;
- Mathematics;
- Science and Scientific Inquiry (Next Generation);
- Social Studies, including American History, World History, Geography, Government and Civics, and Economics;
- World languages;
- Technology;
- Visual and Performing Arts.

CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP2.1	Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.
CAEP.9.2.8.B.3	Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.
TECH.8.1.5.A	Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.
TECH.8.1.5.A.CS1	Understand and use technology systems

21st Century Skills/Interdisciplinary Themes

- 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

21st Century Skills

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

Differentiation

Visuals are utilized for the counting of objects in math computations.

Manipulatives are also offered for the ease of counting larger numbers.

Differentiations:

- Small group instruction
- Small group assignments
- Extra time to complete assignments
- Pairing oral instruction with visuals
- Repeat directions
- Use manipulatives
- Center-based instruction
- Token economy
- Study guides
- Teacher reads assessments allowed
- Scheduled breaks
- Rephrase written directions
- Multisensory approaches
- Additional time
- Preview vocabulary
- Preview content & concepts
- Story guides
- Behavior management plan
- Highlight text
- Student(s) work with assigned partner
- Visual presentation
- Assistive technology
- Auditory presentations
- Large print edition
- Dictation to scribe
- Small group setting

Hi-Prep Differentiations:

- Alternative formative and summative assessments
- Choice boards
- Games and tournaments
- Group investigations
- Guided Reading
- Independent research and projects
- Interest groups
- Learning contracts
- Leveled rubrics
- Literature circles
- Multiple intelligence options
- Multiple texts
- Personal agendas
- Project-based learning
- Problem-based learning
- Stations/centers
- Think-Tac-Toes
- Tiered activities/assignments
- Tiered products
- Varying organizers for instructions

Lo-Prep Differentiations

- Choice of books or activities
- Cubing activities
- Exploration by interest
- Flexible grouping
- Goal setting with students
- Jigsaw
- Mini workshops to re-teach or extend skills
- Open-ended activities
- Think-Pair-Share
- Reading buddies
- Varied journal prompts
- Varied supplemental materials

Special Education Learning (IEP's & 504's)

Additional time is offered in computations of larger numbers.

Chromebooks can be used to check spelling of numbers.

- 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
- multi-sensory presentation
- multiple test sessions
- preferential seating
- preview of content, concepts, and vocabulary
- Provide modifications as dictated in the student's IEP/504 plan
- 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

English Language Learning (ELL)

Native speakers may assist those students who might be struggling to pronounce numbers.

Have students repeat back the instructions given before the math quiz.

- 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

At Risk

Utilize YouTube video to accentuate the review of numbers and their functions.

Allow students to use note cards for spelling of numbers during the numbers quiz.

- 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

Talented and Gifted Learning (T&G)

Students create a wordsearch of numbers up to 100 for classmates to solve.

Students assist those struggling with the math computations on classroom assignment.

- Above grade level placement option for qualified students

- Advanced problem-solving
- Allow students to work at a faster pace
- Cluster grouping
- Complete activities aligned with above grade level text using Benchmark results
- Create a blog or social media page about their unit
- Create a plan to solve an issue presented in the class or in a text
- Debate issues with research to support arguments
- Flexible skill grouping within a class or across grade level for rigor
- Higher order, critical & creative thinking skills, and discovery
- Multi-disciplinary unit and/or project
- Teacher-selected instructional strategies that are focused to provide challenge, engagement, and growth opportunities
- Utilize exploratory connections to higher-grade concepts
- Utilize project-based learning for greater depth of knowledge

Sample Lesson

Using the template below, please develop a **Sample Lesson** for the first unit only.

Unit Name:

NJSLS:

Interdisciplinary Connection:

Statement of Objective:

Anticipatory Set/Do Now:

Learning Activity:

Student Assessment/CFU's:

Materials:

21st Century Themes and Skills:

Differentiation/Modifications:

Integration of Technology: