Unit 1: Numerical Expressions & Factors

Content Area: **Math**
Course(s):
Time Period: **September**
Length: **4-5 Weeks**
Status: **Published**

Unit Overview

In this unit, students learn about the following topics:

- Powers & Exponents

- Order of Operations

- Properties of Operations

- Prime Factorization

- GCF & LCM

Enduring Understandings

SWBAT:

- Write and evaluate expressions involving exponents

- Write and evaluate numerical expressions using the order of operations

- Apply properties of operations to write and evaluate equivalent expressions

- Write a number as the product of prime factors and represent the product using exponents

- Find the greatest common factor of two numbers

- Find the least common multiple of two numbers

Essential Questions

How can we:

- write an evaluate expressions involving exponents?

  - Can we write products of repeated factors as powers?
  - Can we evaluate powers?
  - Do we understand the concepts of squared, cubed, and perfect square?

- write and evaluate numerical expressions using the order of operations?

- Can we explain why there is a need for a standard order of solving expressions?
- Can we evaluate numerical expressions involving several operations, exponents, and grouping symbols?
- Can we write numerical expressions involving exponents to represent a real-life problem?

- apply properties of operations to write and evaluate/simplify equivalent expressions?

- Can we identify equivalent expressions?
- Are we able to use properties of operations to rewrite expressions?
- Can we accurately evaluate expressions?

- write a number as the product of prime factors and represent the product using exponents?

- Can we find factor pairs of numbers?
- Are students able to explain meanings of prime and composite numbers?
- Can students create a factor tree to find the prime factors of a number?
- Can students write the prime factorization of a number?

- find the greatest common factor of two or more numbers?

- Can students explain the meaning of factors of a number?
- Can they use lists of factors to identify the greatest common of them?
- Can they use factor trees (prime factors) to identify the greatest common of them?

- find the least common multiple of two numbers?

- Can students explain the meaning of multiples of numbers?
- Can students use lists of multiples to identify the least common multiple of numbers?
- Can students use factor trees (prime factors) to identify the least common multiple of numbers?

- use the stacking/ladder method to efficiently find both GCF and LCM?

Instructional Strategies & Learning Activities

- Guided Practice

- Do Now

- Extra Practice & Puzzle Time (Resources)

- Scavenger Hunts

- Coloring Activities

- Task Cards (Around the World)

- Maze Activities

- Quizizz Online Assignments

- Kahoot! Online Games

- GimKit Online Games

Integration of 21st Century Themes and Skills

PFL.9.1.2.FP.1	Explain how emotions influence whether a person spends or saves.
PFL.9.1.2.FP.2	Differentiate between financial wants and needs.
PFL.9.1.2.FP.3	Identify the factors that influence people to spend or save (e.g., commercials, family, culture, society).
PFL.9.1.2.PB	Planning and Budgeting
PFL.9.1.2.PB.1	Determine various ways to save and places in the local community that help people save and accumulate money over time.
PFL.9.1.2.PB.2	Explain why an individual would choose to save money.
CRP.K-12.CRP1.1	Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.
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.
CRP.K-12.CRP4.1	Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.
TECH.9.4.8.TL.1	Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision-making.
TECH.9.4.8.TL.3	Select appropriate tools to organize and present information digitally.

Technology and Design Integration

CS.6-8.8.1.8.CS.4	Systematically apply troubleshooting strategies to identify and resolve hardware and software problems in computing systems.

CS.6-8.8.1.8.DA.1	Organize and transform data collected using computational tools to make it usable for a specific purpose.
CS.6-8.8.1.8.DA.5	Test, analyze, and refine computational models.
CS.6-8.8.2.8.ITH.1	Explain how the development and use of technology influences economic, political, social, and cultural issues.
CS.6-8.8.2.8.ITH.2	Compare how technologies have influenced society over time.
CS.6-8.DA	Data & Analysis
TECH.8.1.8.A.1	Demonstrate knowledge of a real world problem using digital tools.
TECH.8.1.8.A.CS1	Understand and use technology systems.
TECH.8.1.8.A.CS2	Select and use applications effectively and productively.
TECH.8.1.8.B.CS1	Apply existing knowledge to generate new ideas, products, or processes.

Interdisciplinary Connections

ELA.L.VL.6.3.A	Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.
ELA.L.VL.6.3.B	Determine the meaning of words and phrases as they are used, including figurative, connotative, and technical meanings.
ELA.L.VL.6.3.C	Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., audience, auditory, audible).
ELA.L.VL.6.3.D	Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech.
ELA.L.VL.6.3.E	Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).
ELA.L.VI.6.4.B	Use the relationship between particular words (e.g., cause/effect, part/whole, item/category) to better understand each of the words.

Differentiation

Definitions of Differentiation Components:

- Content – the specific information that is to be taught in the lesson/unit/course of instruction.
- Process – how the student will acquire the content information.
- Product – how the student will demonstrate understanding of the content.
- Learning Environment – the environment where learning is taking place including physical location and/or student grouping

Differentiation occurring in this unit:

- High-achieving students will assist low-achieving students in mixed ability groupings for games and activities.

- High-achieving students can complete sudoku puzzles and logic puzzles as extension activities.
- Limit number/difficulty of problems for low-achieving students to demonstrate mastery.
- Narrow down problem choice to core concepts for low-achieving students.

- Leveled group-based activities, determined by formative assessment.

Modifications & Accommodations

- High-achieving students will assist low-achieving students in mixed ability groupings for games and activities.

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Benchmark Assessments

Benchmark Assessments are given periodically (e.g., at the end of every trimester or as frequently as once per month) throughout a school year to establish baseline achievement data and measure progress toward a standard or set of academic standards and goals.

Schoolwide Benchmark assessments:

IXL benchmarks 2X a year

Linkit Benchmarks 3X a year

End of year testing (NJSLA)

Formative Assessments

Formative Assessments used in this unit:

- Kahoot! Games

- Quizizz Games

- Homework

- Q & A

- Scavenger Hunts

- Coloring Activities

- Task Cards

- Partner Activities

Summative Assessments

Summative assessments for this unit:

- Chapter Test
- Quizzes

Instructional Materials

1. Big Ideas Math: Math & You 6th Grade Textbook
2. Quizizz
3. Kahoot!
4. Scavenger Hunts
5. Task Cards
6. Coloring Activities
7. GimKit

Standards

MATH.6.NS.B.4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.
MATH.6.EE.A.1	Write and evaluate numerical expressions involving whole-number exponents.