

6th Grade Mathematics

Course Description:

Welcome to the exciting world of 6th-grade mathematics! This course is designed to build upon your prior computational knowledge while taking your understanding of math to new heights through practical applications and conceptual thinking. Get ready to explore real-world situations where math comes to life and to uncover the underlying patterns and principles that make mathematics such a powerful tool.

Course Goals:

- Strengthen and refine fundamental arithmetic skills, including addition, subtraction, multiplication, and division, with an emphasis on accuracy and efficiency.
- Develop proficiency in working with fractions, decimals, and percentages, enabling you to confidently solve everyday problems involving these concepts.
- Explore geometry concepts, such as area, perimeter, angles, and transformations, while applying these ideas to practical scenarios.
- Introduce the basics of algebraic thinking, including expressions, equations, and variables, to solve problems and model real-world situations.
- Foster critical thinking by analyzing data sets, creating graphs, and making interpretations, promoting an understanding of data representation and trends.

Course Highlights:

Number Sense and Operations: Refine your computational skills with a focus on mental math strategies, estimation, and applying operations to solve real-world problems involving money, time, and measurements.

Fractions, Decimals, and Percentages: Dive deeper into fractions and decimals, comparing, ordering, and converting between them. Understand the concept of percentages and apply it to scenarios like discounts, taxes, and interest calculations.

Geometry Adventures: Embark on a journey through geometry, discovering the properties of shapes, calculating areas and perimeters, and exploring symmetry and transformations through hands-on activities and projects.

Introduction to Algebra: Uncover the mysteries of algebra by learning to simplify expressions, solve basic equations, and grasp the concept of variables as you solve puzzles and word problems.

Data Analysis and Interpretation: Collect and analyze data, create various types of graphs, and draw meaningful conclusions. Apply your skills to interpret real-world data sets and understand trends.

Real-World Problem Solving: Encounter everyday challenges that require mathematical solutions, such as budgeting, scaling, and designing, to see how math plays a vital role in making informed decisions.

Critical Thinking and Mathematical Communication: Develop your ability to explain your reasoning clearly, both in writing and verbally, as you tackle complex problems and justify your solutions.

Assessment and Grading:

Assessment in this course will focus on a balance between foundational skills, problem-solving abilities, and conceptual understanding. Expect a mix of quizzes, individual and group projects, written assignments, and in-class discussions to gauge your progress.

Our Goal!

By the end of this 6th-grade math course, you will have fortified your computational skills while gaining the confidence to apply math in real-life scenarios. You will leave with a deeper appreciation for the practicality and beauty of mathematics, along with the ability to think critically, communicate effectively, and solve problems using mathematical concepts. Get ready for an engaging and rewarding mathematical journey ahead! You will also leave even more AWESOME than you already are!

Some of the concepts we will cover:

1. Find the least common multiple of two whole numbers less than or equal to 12
2. Find the greatest common factor of two whole numbers less than or equal to 100
3. Apply the distributive property to express a sum of two whole numbers, 1 through 100, with a common factor as a multiple of a sum of two whole numbers with no common factor
4. Identify parts of an expression using mathematical terms (i.e. sum, product, factor, quotient)
5. Solve problems involving operations (+, -, ×, /) with whole numbers, decimals (through thousandths), straight computation, or word problems
6. Fluently add, subtract, multiply, and divide multi-digit decimals & whole numbers
7. Apply & extend previous understandings of multiplication and division to divide fractions by fractions (solve related word problems)

8. Determine the opposite of a number & recognize that the opposite of the opposite of a number is the number itself (i.e. $-(-3)=3$, and that 0 is its own opposite)
9. Represent quantities in real-world contexts using positive and negative numbers, explaining the meaning of 0 in each situation (i.e. Temps above/below zero, elevation above/below sea level, credits/debits)
10. Write, interpret, and explain statements of order for rational numbers in real-world contexts
11. Locate & plot integers & other rational numbers on a horizontal or vertical number line; locate & plot pairs of integers & other rational numbers on a coordinate plane
12. Interpret the absolute value of a rational number as its distance from 0 on the number line and as a magnitude for a positive or negative quantity in a real-world situation
13. Solve real-world & mathematical problems by plotting points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate
14. Use ratio language & notation (such as 3 to 4, 3:4, $3/4$) to describe a ratio relationship between two quantities
15. Construct tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and/or plot the pairs of values on the coordinate plane. Use tables to compare ratios
16. Find the unit rate a/b associated with a ratio $a:b$ (with $b \neq 0$), & use rate language in the context of a ratio relationship
17. Solve unit rate problems including those involving unit pricing & constant speed
18. Find a percent of a quantity as a rate per 100 (i.e. 30% of a quantity means $30/100$ times the quantity); solve problems involving finding the whole, given a part & the percent
19. Use ratio and rate reasoning to solve real-world and mathematical problems
20. Write an equation to express the relationship between the dependent & independent variables
21. Write and evaluate numerical expressions involving whole-number exponents
22. Write algebraic expressions from verbal descriptions
23. Identify parts of an expression using mathematical terms (i.e. term, coefficient)
24. Evaluate expressions at specific values of their variables, including expressions that arise from formulas used in real-world problems
25. Apply the properties of operations to generate equivalent expressions
26. Write algebraic expressions to represent real-world or mathematical problems
27. Use substitutions to determine whether a given number in a specified set makes an equation or inequality true

28. Solve real-world & mathematical problems by writing & solving equations of the form $x+p=q$ & $px=q$ for cases in which p , q , and x are all non-negative rational numbers
29. Write an inequality of the form $z>c$ or $x>30$. Write an equation to express the relationship between the dependent & independent variables
31. Analyze the relationship between the dependent & independent variables using graphs & tables, &/or relate these to an equation
32. Determine the area of triangles & special quadrilaterals (i.e. square, rectangle, parallelogram, rhombus, & trapezoid). Formulas will be provided
33. Determine the area of irregular or compound polygons. (Example: Find the area of a room in the shape of an irregular polygon by composing &/or decomposing)
34. Given coordinates for the vertices of a polygon in the plane, use the coordinates to find side lengths & area of the polygon (limited to triangles & special quadrilaterals). Formulas will be provided
35. Represent three-dimensional figures using nets made up of rectangles and triangles
36. Determine the surface area of triangular & rectangular prisms. Formulas provided
37. Determine the volume of right rectangular prisms with fractional edge lengths.
Formulas provided
38. Display numerical data in plots on a number line, including dot plots, histograms, & box-and-whisker plots
39. Determine quantitative measures of center (i.e. median, mean, &/or mode)
40. Determine quantitative measures of variability (i.e. range, interquartile range, &/or mean absolute deviation)
41. Describe any overall pattern & any deviations from the overall pattern with reference to the context in which the data were gathered
42. Relate the choice of measures of center & variability to the shape of the data distribution & the context in which the data were gathered

This seems like a lot and it looks scary, but remember Math people like to give complicated names to easy concepts so we sound smart!

Required Materials:

- 3-ring binder (provided)
- TI-15 calculator (provided)
- Chromebook (provided)
- Pencils and pens
- Spiral notebook
- Positive Attitude and a smile!

Grading Policy:

- Homework: 2 points
- Homework that is turned in late or incomplete will not receive full credit. See homework policy in "Class Policy" section below.
- Quizzes: 5-10 points
- Tests: 50 points

Grading Scale:

- 93%-100%: A
- 85%-92%: B
- 75%-84%: C
- 65%-74%: D
- 0%-64%: F

Class Policies and Expectations:

In my class, we have 2 simple rules:

1. Respect: This is how we treat others. We listen when they speak, we accept them for who they are, we recognize they may have different opinions and ideas and allow them to express them without judgement, we respect personal space and follow the rules of society, and we DO NOT BULLY.
2. Dignity: This is how you treat yourself. You are truly unique and special. Your thoughts and opinions are important and deserve to be heard. Never forget that you are awesome just the way you are!

Homework Policy:

Homework is to be worked on for no more than 10 minutes. If a student has focused and worked for 10 minutes on an assignment and has not completed it, then a parent or guardian may sign the top of the assignment verifying the student's work. The student must then give the assignment to Mr. Conkle at the beginning of class. At this time, Mr. Conkle will look over it and give the student a mini lesson to help them with the concept while their classmates work on review concepts, ask the students to complete another problem or 2 to demonstrate knowledge, or mark it as complete if the student demonstrates understanding but only completed part of the assignment in 10 minutes. All of these will result in the student receiving full credit for the assignment.

Course Topics:

1. Understanding Ratios
2. Fractions, Decimals, and Percents
3. Compute with Multi-digit Numbers and Fractions
4. Integers, Rational Numbers, and the Coordinate Plane
5. Numerical and Algebraic Expressions
6. Equations and Inequalities
7. Relationships Between 2 Variables
8. Area
9. Volume and Surface Area
10. Statistical Measures and Displays

Any questions about 6th Grade Math should be directed to:

Mr. Conkle

Tidioute Community Charter School

(814)484-3550

bconkle@tidioutecharter.com

I have read and understood the course syllabus:

Parent/Guardian Signature: _____ Date: _____

Student Signature: _____ Date: _____