

# Summer Skills Math Workbook

## Basic Math Review for the Middle Grades Curriculum Overview

From 7<sup>th</sup> → 8<sup>th</sup>

### Number Sense

- Add, subtract, multiply and divide with fractions and decimals.
- Order a set of fractions, percents and decimals from least to greatest.
- Compare numbers using the symbols for greater than, less than or equal to.
- Identify prime numbers.
- Write a number using exponents.
- Compare place value (e.g., how many times larger is the 5 in .051 than the 5 in .625).
- Add and subtract with positive and negative numbers.
- Approximate positive and negative numbers on a number line.
- Round numbers in a range from ten million to ten thousandths.
- Estimate using addition, subtraction, multiplication and division.
- Determine equivalent decimals (e.g.,  $0.8 = 0.80$ ).
- Find a fraction that is closer in value to a given percent.
- Find the equivalent values of a fraction, decimal, percent (e.g.,  $7\% = .07 = 7/100$ ).
- Find the number in a set of fractions, decimals and percents that is not equivalent to the others.
- Use mental math to multiply and divide fractions (e.g.,  $8 \frac{1}{2} \times 7/7$ ).
- Use mental math to halve and double numbers.
- Find the square root of a given number.
- Determine the greatest common divisor, least common denominator, least common multiple of a given set of numbers.

### Measurement

- Convert within a system of measurement (e.g., 86 ounces = 5 pounds 6 ounces).
- ~~• Determine the amount of elapsed time from one time to another.~~
- ~~• Determine the time after adding hours and minutes.~~
- ~~• Determine time using more than one time zone.~~
- Determine the fraction and the percent of an hour given the number of minutes.
- Determine the balance in a checking account.
- Determine the price per unit given the total cost and the total number of units.
- Estimate the price of a sale item given the percent discount.
- Determine the percent discount given the original price and the sale price.
- Determine the total price of several items after calculating the sales tax.
- Determine the best buy.
- Determine the total price of a restaurant bill after calculating the tip.
- Determine the percent of a dollar given a set of coins (e.g., 5 quarters = 125% of a dollar).
- Determine averages.

### Expressions and Equations

- Identify the radius, diameter and center of a circle.
- Find the circumference of a circle given the diameter.
- Determine the radius of a circle given the area.
- Determine the area of a quadrilateral and a triangle.
- Determine the third angle of a triangle given the other two angles..
- Determine the base of a triangle given the height and the area.
- Determine the perimeter of a quadrilateral given the length of one side and the area.
- Determine the length of the sides of a square given the area.
- Determine the area of a square after increasing the sides.
- ~~• Draw a geometric figure given the information of the angles and the sides (e.g., four congruent sides, two acute angles and two obtuse angles.)~~
- Identify angles.
- Find the complement and supplement of given angles.

## Expressions and Equations (continued)

- Find the volume of a cube.
- Locate points on a grid given the ordered pairs

## Data Analysis, Statistics and Probability

- Determine the probability of an event (e.g., your telephone number ending in a 5, today being your birthday in a non leap-year).
- Interpret information from charts and graphs (line, bar, and circle).

## Prealgebra Lessons

- Recognize and use the math verbs correctly in a math sentence.
- Explore the powers of 10, both positive and negative, by moving the decimal place accordingly.
- Demonstrate an understanding of terminating and non-terminating decimals.
- Evaluate expressions using the rules for the order of operations.
- Use the property of reciprocals to divide fractions.
- Describe rate as a fraction of two numbers with different units.
- Describe ratio as a fraction of two numbers with the same units.
- Demonstrate an understanding of the distributive, commutative and associative properties.
- ~~• Use scientific notation to represent large and small numbers.~~
- Describe a pattern using variables.
- Name and draw points on the xy-coordinates.
- ~~• Graph the solution to an equation on the xy-coordinates.~~
- ~~• Show slope as a rate of change.~~
- ~~• Calculate the slope given two points on a line or the equation for a line.~~
- ~~• Calculate the distance between two points.~~
- ~~• Graph linear, quadratic and exponential functions.~~
- ~~• Draw the image of a polygon under a translation or a reflection.~~
- ~~• Identify the legs and the hypotenuse of a right triangle.~~
- Translate words to algebraic expressions or equations.
- Create and apply an algebraic equation to solve a real life situation.
- Justify responses to problems.
- ~~• Find the next term, the constant difference and a rule for an arithmetic sequence.~~
- ~~• Make conclusions from a stem-and-leaf plot.~~
- Identify the range, mean, median and mode of a data set and explain the effect of an outlier.
- ~~• Create a box-and-whisker plot from a data set.~~
- Recognize that a sample may be biased.
- Solve probability problems that contain "or" and "and."
- Solve algebraic equations.
- ~~• Find the third side of a right triangle using the Pythagorean Theorem.~~
- Demonstrate an understanding of absolute value.
- Demonstrate an understanding of the area formulas.
- Simplify a polynomial.
- ~~• Determine the number of terms, the degree, and the constant for a polynomial.~~
- Solve simple interest problems.