



SIXTH GRADE Learning Objectives for **Mathematics**



NUMBER SENSE

The learner will

- identify and write to 100 billion's place.
- compare numbers from 0-100 using $> < =$.
- compare decimals and fractions using $> < =$ to ten-thousandths.
- use strategy for rounding whole numbers and decimals to a given place.
- compare, sequence and order decimals.
- identify terminating and non-terminating decimals.
- identify and create fractional parts with denominators to 16.
- identify the value of improper fractions and mixed numbers.
- compare, sequence and order fractions.
- interpret pictorial representations of percents.
- compare and sequence a combination of decimals, fractions and percents.
- identify prime and composite numbers.
- master use of primes and properties of numbers such as greatest common factor (GCF) and least common denominator (LCD).
- find equivalent fractions.
- compare integers using $> < =$.
- understand and compute using exponents.
- identify situations involving whole numbers in which estimation is useful.
- predict computational results.
- determine the reasonableness of answers.
- demonstrate an understanding of fraction as a ratio of whole numbers, as parts of unit wholes, as parts of a collection and as locations on the number line.
- find and position integers, fractions, mixed numbers and decimals (both positive and negative) on a number line.
- estimate results of computations with whole numbers and with positive fractions, mixed numbers, decimals and percents.
- describe reasonableness of estimates.

COMPUTATION

The learner will

- know basic multiplication facts by rote memory to twelve.
- add, subtract, multiply and divide decimals to hundred-thousandths place.
- round decimals to nearest hundredth.
- divide using decimal divisor.
- divide to find the average.
- use least common multiple to compute least common denominator.
- convert improper to mixed fractions, vice versa.
- add, subtract, multiply and divide fractions.
- add, subtract, multiply and divide fractions with unlike denominators (using regrouping).
- use mental math, paper and pencil, calculator or computer as appropriate to the task.
- convert decimal, fraction and percents.
- calculate percents.
- use processes involving LCM and GCF.
- compute powers of rational numbers with whole number exponents.
- demonstrate an understanding of positive integer exponents, in particular, when used in powers of ten.



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PROBLEM SOLVING

The learner will

- ☑ organize relevant information, set up and solve problems, use appropriate materials, apply appropriate methods, operations and processes to construct a solution.
- ☑ formulate questions and define the problem using relevant information.
- ☑ eliminate extraneous information from problems.
- ☑ identify unknowns.
- ☑ restate or identify the question.
- ☑ search for patterns, uses a variety of strategies: guess and check, work backwards, act out/use objects, draw pictures, make a table or chart, organized list.
- ☑ interpret and compare information based on analysis of data.
- ☑ check for reasonable answers and justifies answers.
- ☑ think using models, known facts or patterns.
- ☑ verify or justify results by explaining how the problem was solved.
- ☑ test conjectures and inferences and explains why they are true or false.

ALGEBRA

The learner will

- ☑ represent and analyze mathematical situations and structures using algebraic symbols.
- ☑ replace variables with given values and evaluate/simplify.
- ☑ use expressions with variables, e.g., letters, shapes, to understand and describe algebraic relationships, mappings, formulas, expressions, equations and inequalities.
- ☑ use algebraic procedures and strategies to solve real-world and mathematical problems using equations and inequalities.
- ☑ use multiple strategies and tools to solve equations.

GEOMETRY

The learner will

- ☑ identify congruent shapes.
- ☑ identify polygons based on their properties, including types of interior angles, perpendicular or parallel sides and congruence of sides, e.g., squares, rectangles, rhombuses, parallelograms, trapezoids and isosceles, equilateral and right triangles.
- ☑ identify three-dimensional shapes, e.g., cubes, prisms, spheres, cones and pyramids, based on their properties, such as edges and faces.
- ☑ identify relationships among points, lines and planes, e.g., intersecting, parallel, perpendicular.
- ☑ predict, describe and perform transformations on two-dimensional shapes, e.g., translations, rotations and reflections.
- ☑ identify types of symmetry, including line and rotational.
- ☑ identify point and line symmetry in given polygons.
- ☑ identify and describe transformations, reflections, translations, slides, flips and rotations.
- ☑ determine if two shapes are congruent by measuring sides or combination of sides and angles.
- ☑ find the sum of the angles in simple polygons (up to eight sides) with and without measuring angles.
- ☑ identify, measure, describe, classify and construct various angles, triangles and quadrilaterals.
- ☑ identify, name and construct plane and simple solid figures.
- ☑ find areas of triangles, parallelograms, squares and rectangles.
- ☑ recognize that shapes with the same number of sides but with different appearances can have the same area.
- ☑ develop strategies to find area of complex shapes.
- ☑ identify 2-D and 3-D shapes.
- ☑ explore identify, describe spatial relationships and properties of 2D shapers using manipulatives.
- ☑ know, draw and identify a line segment; ray; and perpendicular, parallel, or intersecting line.
- ☑ use a compass and protractor to draw an measure acute, right and obtuse angles.
- ☑ understand degrees (line, circle).



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MEASUREMENT

The learner will

- use customary measurement to show the relationship between inch, foot, yard, mile.
- use metric measurement to show the relationship between mm, cm, m, km, dm.
- make change using amounts to \$/R100,000.
- select correct tools and scales-reading to appropriate degree of precision.
- know how and when to use estimation.
- understand the concept of perimeter, compute perimeter of polygon.
- understand how to compute area of rectangles.
- understand relationship among perimeter, area and volume.
- understand how dimension affects perimeter and area.
- compute area of triangles, quadrilaterals and circles.
- compute surface area of rectangular prisms and cylinders.
- understand the concept of mass, volume and capacity.
- use metric measure to compute volume and mass.
- compute the volume of rectangular prisms and cylinders.

STATISTICS AND GRAPHING

The learner will

- describe and compare data sets using the concepts of median, mean, mode, maximum and minimum range and outliers.
- construct and interpret stem-and-leaf plots, line plots, bar graphs, coordinated graphs and circle graphs.
- construct and interpret line plot, stem-and-leaf plots and frequency distributions.
- use tree diagrams and other models to represent possible or actual outcomes of trials and analyze the outcomes.
- utilize appropriate technology to simulate, display, graph and analyze data with multiple representations such as tables, charts and graphs.
- read and interpret statistical data to make predictions and to solve problems.
- formulate questions that can be answered with data and collect, organize and display relevant data to answer them.
- select and use appropriate statistical methods to analyze data.
- develop and evaluate inferences and predictions that are based on the data.

RESOURCES

Saxon Math 7/6