

6TH GRADE MATHEMATICS CHECKLIST

Goals 6 – 10

Illinois Learning Standards A-D

Assessment Frameworks

Calculators Allowed on ISAT

ISAT test questions are derived from this checklist. Use as a curriculum guide.

REPRESENTATIONS AND ORDERING

- _____ Read, write, recognize, and model equivalent representations of whole numbers and their place values.
- _____ Read, write, recognize, model, and interpret numerical expressions from a given description or situation.
- _____ Read, write, recognize, and model equivalent representations of fractions, including improper fractions and mixed numbers.
- _____ Recognize, translate between, and apply multiple representations of decimals, fractions, percents (less than 100%), and mixed numbers (halves, quarters, fifths, and tenths).
- _____ Read, write, recognize, and model equivalent representations of decimals and their place values through thousandths.
- _____ Represent repeated factors using exponents.
- _____ Order and compare whole numbers.
- _____ Order and compare decimals through thousandths.
- _____ Order and compare fractions and mixed numbers having like or unlike denominators.
- _____ Identify and locate decimals, fractions, and mixed numbers on a number line.
- _____ Solve problems involving descriptions of numbers, including characteristics and relationships (e.g., odd/even, factors/multiples, greater than, less than, square numbers, primes).

COMPUTATION, OPERATIONS, ESTIMATION, AND PROPERTIES

- _____ Solve problems and number sentences involving addition, subtraction, multiplication, and division using whole numbers.
- _____ Solve problems and number sentences involving addition, subtraction, and multiplication of decimals.

_____ Solve problems involving addition and subtraction of fractions and mixed numbers, and express answers in simplest form.

_____ Identify and apply order of operations to simplify numeric expressions involving whole numbers.

_____ Solve problems involving the commutative, distributive, and associative properties of operations on whole numbers [e.g., $(5 \times 7) \times 2 = 5 \times (7 \times 2)$].

_____ Make estimates appropriate to a given situation, and analyze what effect the estimation method used has on the accuracy of results.

RATIOS, PROPORTIONS AND PERCENTS

_____ Identify and express ratios using appropriate notation (i.e., a/b , a to b , $a:b$), identify equivalent ratios, and explain ratios that represent a given situation.

_____ Solve problems involving proportional relationships, including unit pricing (e.g., seven apples cost \$1.40, so nine apples cost \$1.80).

_____ Read, write, recognize, and model percents from 0% to 100%.

_____ Solve number sentences and problems involving percents.

UNITS, TOOLS, ESTIMATION, AND APPLICATIONS

_____ Select and use appropriate standard units and tools to measure length, mass/weight, capacity, and angles.

_____ Solve problems involving the perimeter and area of a triangle, parallelogram, or irregular shape using diagrams, models, and grids or by measuring or using given formulas (may include sketching a figure from its description).

_____ Compare and estimate length (including perimeter), area, volume, weight/mass, and angles (0° to 180°) using referents.

_____ Determine the volume of a right rectangular prism using an appropriate formula or strategy.

_____ Solve problems involving unit conversions within the same measurement system for time, length, and weight/mass, including compound units (e.g., 5ft 5in, 2lbs 2oz).

_____ Solve problems involving scale drawings and maps.

REPRESENTATIONS, PATTERNS, AND EXPRESSIONS

_____ Determine a missing term in a sequence, extend a sequence, and construct and identify a rule that can generate the terms of a given sequence (e.g., 3, 6, 9, . . . is explained by the rule $3n$, for $n \geq 1$).

_____ Write an expression using variables to represent unknown quantities.

_____ Evaluate algebraic expressions with up to two whole number variable values (e.g., evaluate $3m + n + 3$ when $m = 4$ and $n = 2$).

CONNECTIONS USING TABLES, GRAPHS, AND SYMBOLS

_____ Identify and use appropriate metric and U.S. units and tools (e.g., ruler, protractor, angle ruler, graduated cylinder, and thermometer) to estimate, measure, and solve problems involving length, area, volume, weight, time, angle size, and temperature.

_____ Determine a rule having two operations from an input–output table (e.g., multiply by 3 and add 2).

_____ Select a table of values that satisfies a linear equation, and recognize the ordered pairs on a rectangular coordinate system.

_____ Translate between different representations (table, written, or pictorial) of whole number relationships.

_____ Identify graphs of inequalities on a number line.

WRITING, INTERPRETING, AND SOLVING EQUATIONS

_____ Represent problems with equations and inequalities.

_____ Solve for the unknown in an equation with one operation (e.g., $8x = 24$, $m \div 2 = 25$).

_____ Solve word problems involving unknown quantities.

PROPERTIES OF SINGLE FIGURES AND COORDINATE GEOMETRY

_____ Classify, describe, and sketch regular and irregular two–dimensional shapes according to the number of sides, length of sides, number of vertices, and interior angles.

_____ Identify and describe three–dimensional shapes (cubes, spheres, cones, cylinders, prisms, and pyramids) according to their characteristics (faces, edges, vertices).

_____ Solve problems using properties of triangles and quadrilaterals (e.g., sum of interior angles of a quadrilateral is 360°).

_____ Identify, describe, and sketch circles, including radius, diameter, and chord.

_____ Graph, locate, identify points, describe paths, and plot figures using ordered pairs (first quadrant).

_____ Identify, describe, and predict results of reflections, translations, and rotations of two–dimensional shapes.

_____ Identify and sketch parallel, perpendicular, and intersecting lines.

_____ Identify and sketch acute, right, and obtuse angles.

RELATIONSHIPS BETWEEN AND AMONG MULTIPLE FIGURES

_____ Identify a three-dimensional object from its net.

_____ Recognize which attributes (such as shape, perimeter, and area) change or don't change when plane figures are composed, decomposed, or rearranged.

_____ Identify congruent and similar figures by visual inspection.

_____ Determine if figures are similar, and identify relationships between corresponding parts of similar figures.

_____ Determine the distance between two points on a horizontal or vertical number line.

DATA ANALYSIS AND STATISTICS

_____ Read, interpret, and make predictions from data represented in a bar graph, line (dot) plot, Venn diagram (with two circles), chart/table, line graph, or circle graph.

_____ Compare different representations of the same data.

_____ Create a bar graph, chart/table, line graph, or circle graph with common referents ($\frac{1}{4}$, 50%, .75) for a given set of data.

_____ Determine the mode, range, median, and mean, given a set of data or a graph.

PROBABILITY

_____ Solve problems involving the probability of a simple event, including representing the probability as a fraction, decimal, or percent.

_____ Apply the fundamental counting principle in a simple problem (e.g., How many different 3-digit numbers can be made with the digits 1, 2, and 2?).