

7TH 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, and recognize equivalent representations of positive powers of 10.
- _____ Read, write, recognize, model, and interpret integers, including translating numerical expressions.
- _____ Recognize, translate between, and apply multiple representations of rational numbers (decimals, fractions, mixed numbers, and percents less than 100%).
- _____ Represent repeated factors using exponents.
- _____ Order and compare integers, terminating decimals, fractions, and mixed numbers.
- _____ Identify and locate integers, decimals, and fractions/mixed numbers on a number line, and estimate the locations of square roots.
- _____ Solve problems involving descriptions of numbers, including characteristics and relationships (e.g., square numbers, prime/composite, prime factorization, greatest common factor, least common multiple).

COMPUTATIONS, OPERATIONS, ESTIMATIONS, AND PROPERTIES

- _____ Solve problems and number sentences involving addition, subtraction, multiplication, and division using integers, fractions, and decimals.
- _____ Identify and apply order of operations to simplify numeric expressions involving whole numbers (including exponents), fractions, and decimals.
- _____ Identify and apply the following properties of operations with rational numbers:
 - _____ The commutative and associative properties for addition and multiplication;
 - _____ The distributive property;
 - _____ The additive and multiplicative identity properties;
 - _____ The additive and multiplicative inverse properties; and the multiplicative property of zero.
- _____ Demonstrate and apply the relationships between addition/subtraction and multiplication/division with rational numbers.

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

_____ Estimate the square root of a number less than 1,000 between two whole numbers (e.g., $\sqrt{41}$ is between 6 and 7)

RATIOS, PROPORTIONS, AND PERCENTS

_____ Create and explain ratios that represent a given situation.

_____ Use proportional reasoning to model and solve problems.

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

_____ Solve number sentences and problems involving fractions, decimals, and percents (e.g., 50% of 10 is the same as $\frac{1}{2}$ of 10 is the same as 0.5×10 , sales tax, tips, interest, discounts).

UNITS, TOOLS, ESTIMATIONS, AND APPLICATIONS

_____ Select and use appropriate standard units and tools to measure length, mass/weight, capacity, and angles. Sketch, with given specifications, line segments, angles, triangles, and quadrilaterals.

_____ Solve problems involving the perimeter and area of polygons and composite figures 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 and surface area of a right rectangular prism using an appropriate formula or strategy.

_____ Solve problems involving unit conversions within the same measurement system for length, weight/mass, capacity, and square units (e.g., $1 \text{ ft}^2 = 144 \text{ in}^2$).

_____ 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 an arithmetic or geometric sequence.

_____ Write an expression using variables to represent unknown quantities.

_____ Simplify algebraic expressions by identifying and combining like terms.

_____ Recognize equivalent forms of algebraic expressions.

_____ Evaluate or simplify algebraic expressions with one or more integer variable values (e.g., $a^2 + b$ for $a = 3$ and $b = -4$).

CONNECTIONS USING TABLES, GRAPHS, AND SYMBOLS

_____ Determine how a change in one variable relates to a change in a second variable.

_____ Represent linear equations and quantitative relationships on a rectangular coordinate system, and interpret the meaning of a specific part of a graph.

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

_____ Identify, graph, and interpret inequalities on a number line.

WRITING, INTERPRETING, AND SOLVING EQUATIONS

_____ Represent and analyze problems with linear equations and inequalities.

_____ Solve linear equations in one variable (e.g., $2x + 3 = 13$) and inequalities involving $<$ or $>$ (e.g., $2x < 6$, $x + 7 > 10$).

_____ 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.

_____ Solve problems involving two- and three-dimensional shapes.

_____ Solve problems using properties of triangles and quadrilaterals (e.g., opposite sides of a parallelogram are congruent).

_____ Identify, describe, and determine the radius and diameter of a circle.

_____ Graph points and identify coordinates of points on the Cartesian coordinate plane (all four quadrants).

_____ Represent and identify geometric figures using coordinate geometry.

_____ Analyze the results of a combination of transformations.

_____ Identify or analyze relationships of angles formed by intersecting lines.

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

_____ Solve problems involving complementary and supplementary 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.
- _____ Describe the difference between congruence and similarity.
- _____ 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, scatterplot, circle graph, or histogram.
- _____ Compare different representations of the same data.
- _____ Create a bar graph, chart/table, line graph, or circle graph for a given set of data.
- _____ Identify a reasonable approximation of the line of best fit from a set of data or a scatter plot.
- _____ Determine and use the mode, range, median, and mean to interpret data.

PROBABILITY

- _____ Solve problems involving the probability of a simple or compound event, including representing the probability as a fraction, decimal, or percent.
- _____ Represent all possible outcomes for simple events.
- _____ Solve simple problems involving the number of ways objects can be arranged (permutations and combinations).