

Mathematics Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

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Source Documents:

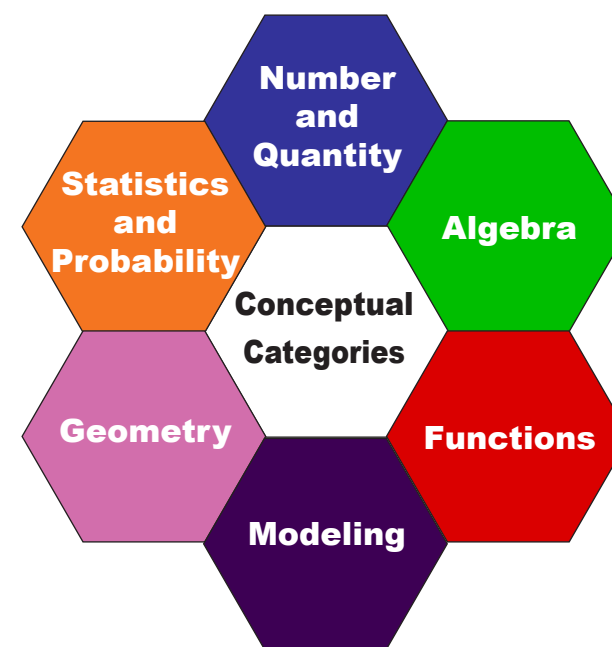
Based on Common Core Standards for Mathematics

Adapted from Escondido Union High School District: "I Can" Statements

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Common Core Integrated Math I Grade 9 Expectations Checklist



Geometry

Congruence (G-CO)

Experiment with transformations in the plane (1, 2, 3, 4, 5)

- know precise definitions of angle circle, and other terms based on undefined notions of point, line, distance along line and circular arc
- represent transformations in the plane using technology; describe transformations as functions and compare types of transformations that preserve or do not preserve aspects of shape
- given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it on to itself
- develop definitions of rotations, reflections, and translations in terms of angles, circles, parallel and perpendicular lines, and line segments
- given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using paper or technology; specify a sequence of transformations that will carry a given figure onto another

Understand congruence in terms of rigid motions (6, 7, 8)

- use geometric descriptions of rigid motions to transform figures and predict the effect of a given transformation; use definition of congruence to determine if figures are congruent
- use the definitions of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding sides and angles are congruent
- explain how the criteria for triangle congruence (ASA, SAS, SSS) follow from the definition of congruence in terms of rigid motions

Make geometric constructions (12, 13)

- make formal geometric constructions with a variety of tools and methods (including technology)
- construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle

Expressing Geometric Properties with Equations (G-GPE)

Use coordinates to prove simple geometric theorems algebraically (4, 5, 7)

- use coordinates to prove simple geometric theorems algebraically
- prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems
- use coordinates to compute perimeters of polygons and areas of triangles and rectangles



My checklist of what I can do in Integrated Mathematics I – Grade 9

I understand that it is important to apply the mathematical practices (listed on fold-out section) on a regular basis.

Number and Quantity

Quantities★(N-Q)

Reason quantitatively and use units to solve problems (1, 2, 3).

- use and interpret units and scales on multi-step problems
- define appropriate quantities for modeling
- choose an appropriate level of accuracy when reporting quantities

Algebra

Seeing Structure in Expressions (A-SSE)

Interpret the structure of expressions (1a-b).

- interpret parts of an expression such as terms, factors, and coefficients
- interpret expressions by viewing one part as a single entity

Creating Equations★ (A-CED)

Create equations that describe numbers or relationships (1, 2, 3, 4).

- create equations and inequalities in one variable including ones with absolute value and use them to solve problems in and out of context
- create equations in two or more variables to represent relationships between quantities; graph equations with appropriate labels and scales on the coordinate plane
- represent constraints by equations or inequalities, systems of equations or inequalities, and interpret solutions as viable or nonviable in context
- solve for a particular variable in a formula

Reasoning with Equations and Inequalities (A-REI)

Understand solving equations as a process of reasoning and explain the reasoning (1)

- explain each step in solving a simple equation and construct a viable argument to justify solution method

Solve equations and inequalities in one variable (3)

- solve linear equations and inequalities in one variable, including equations with coefficients represented by letters

Solve systems of equations (5, 6).

- prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions
- solve system of equations

Represent and solve equations and inequalities graphically (10, 11, 12)

- understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane
- explain why the x-coordinates of the points where the graphs of two functions, $f(x)$ and $g(x)$, intersect is the solution to $f(x)=g(x)$; find the approximate solutions using technology and varying methods (tables, graphs, etc.)
- graph the solutions to a linear inequality in two variables
- graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes

Functions

Interpreting Functions (F-IF)

Understand the concept of a function and use function notation (1, 2, 3)

- use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context
- recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers

Interpret functions that arise in applications in terms of the context (4, 5, 6)

- for a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship
- relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes
- calculate and interpret the average rate of change of a function over a specified interval. Estimate the rate of change from a graph

Analyze functions using different representations (7a, 7e, 9)

- graph linear and quadratic functions and show intercepts, maxima, and minima
- graph exponential and logarithmic functions, showing intercepts and end behavior
- compare properties of two functions given different representations

Building Functions (F-BF)

Build a function that models a relationship between two quantities (1a-b, 2)

- determine an explicit expression, a recursive process, or steps for calculation from a context
- build new functions by combining standard function types using arithmetic operations
- write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms

Build new functions from existing functions (3)

- identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs
- experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them

Linear, Quadratic, and Exponential Models★ (F-LE)

Construct and compare linear, quadratic, and exponential models and solve problems (1a-c, 2, 3)

- prove that linear functions grow by equal differences and exponential by equal factors over equal intervals
- recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another
- recognize situations in which one quantity changes at a constant rate per unit interval relative to another
- construct linear and exponential functions given graphs, descriptions, or two coordinate pairs
- observe using graphs and tables that an exponential function eventually exceeds linear, quadratic, or polynomial functions

Interpret expressions for functions in terms of the situation they model (5)

- interpret the parameters in a linear or exponential function in terms of a context

Statistics and Probability

Interpreting categorical and quantitative data (S-ID)

Summarize, represent, and interpret data on a single count or measurement variable (1, 2, 3,)

- represent data with plots (box plots, histograms, etc.) on the real number line
- use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets
- Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers)

Summarize, represent, and interpret data on two categorical and quantitative variables (5, 6a-c)

- summarize categorical data in two-way frequency tables and interpret relative frequencies in context of data recognizing possible trends
- represent data on a scatter plot, describe the relationship, and fit a function to the data; use functions fitted to data to solve problems in context
- informally assess the fit of a function by plotting and analyzing residuals
- fit a linear function for a scatter plot that suggests a linear association

Interpret linear models (7, 8, 9)

- interpret slope and y-intercept of a linear model in the context of the data
- compute (using technology) and interpret the correlation coefficient of a linear fit
- distinguish between correlation and causation.

Geometry

(Continued on fold-out section of this bookmark)

How to use checklist:

- Show the date of when you were able to do the math expectation.
- Show an example of what you did in a journal.