



Ivy Waters International Standards

Middle

Grades 6 to 8 · Ages 11–14

The middle stage moves from learning the tools to using them through abstraction in mathematics, real investigation in science, and independent work that culminates in the Grade 8 Capstone.

The Ivy Waters Way

Ivy Waters exists for families who educate in freedom: homeschoolers, worldschoolers, and internationally mobile families whose classrooms are kitchens, markets, trains, and shorelines. These Standards are written for that life, not adapted to it afterward. Six principles run through every page:

1 The world is the classroom

Learning is not confined to a desk or a schedule. Every standard can be met and noticed in ordinary life: a market stall, a border crossing, a tide pool, or a dinner table.

3 Capabilities, not curricula

A standard names something observable your child *can do*, never a textbook, a program, or a method. How your family gets there is entirely yours: any resource, any pace, any order.

5 Freedom is structural

A learning moment with no standard attached is a complete, valid family record. Alignment is an optional lens you may apply, never a gate, a grade, or a judgment. Gaps are simply what lies ahead.

2 Moments before metrics

The unit of learning is the real moment a guardian witnesses. Records and coverage views are projections of captured evidence, never the other way around.

4 The guardian is the first observer

Standards are addressed to you in plain language, because the person who sees the learning happen is the person best placed to recognize it.

6 Permanent meaning, open evolution

Every identifier keeps its meaning; records keep the meaning of the version they cite. The catalog itself evolves in the open, through versioned governance and a public changelog.

Ivy Waters International Standards are written and owned by Ivy Waters International, independent of any other framework, standing on their own educational judgment, and published for families.

How to read this guide

Ivy Waters International Standards describe what your child can **do**, not what they have been taught, tested on, or exposed to. Every standard is written to you, the guardian, in plain language, because you are the one who sees the learning happen.

Every standard has three parts

- A **permanent identifier**, like **G5.M-01**, that never changes meaning. Records aligned to a standard keep the meaning that standard had when the record was made.
- A **capability**: one clear sentence beginning “Your child can...” describing something observable.
- A **real-life example**: the capability as you might actually meet it at a market, on a train, at the kitchen table.

The five domains

Every grade covers the same five domains: **Mathematics**, **Science**, **English**, **Language Acquisition** (a second language), and **Good Citizenship/Humanities**. The domain names you see on section headings are the grade’s own pedagogical labels; the underlying five domains never change.

Learning moments come first

A recorded learning moment is a valid family record whether or not it is matched to a standard. Alignment is a lens you may choose to apply. It is never a gate, a grade, or a judgment. Coverage gaps are simply ahead.

This guide

This Benchmark Guide covers the **Middle** stage (Grades 6 to 8 · Ages 11–14). The full framework spans Early Years through Grade 8 across three stage guides and one Comprehensive Guide.

In this guide

Grade 6 (Ages 11–12)	6
Mathematics & Algebraic Reasoning	6
Integrated Sciences (Biology, Chemistry, Physics)	6
Language & Literature	7
Language Acquisition (Second Language)	8
Societies & Systems (Humanities)	8
Grade 7 (Ages 12–13)	9
Mathematics & Algebraic Reasoning	9
Integrated Sciences (Biology, Chemistry, Physics)	9
Language & Literature	10
Language Acquisition (Second Language)	11
Societies & Systems (Humanities)	11
Grade 8 (Ages 13–14)	12
Mathematics & Algebraic Reasoning	12
Integrated Sciences (Biology, Chemistry, Physics)	12
Language & Literature	13
Language Acquisition (Second Language)	14
Societies & Systems (Humanities)	14
The Grade 8 Capstone: Impact Venture Pitch & Defense	15

The Middle stage in one view

Standards per domain. Every grade covers the same five domains. The count is how many distinct capabilities this guide describes for that year, not a workload or a checklist.

	Mathematics	Science	English	Language Acquisition	Good Citizenship/ Humanities	Total
Grade 6 Ages 11–12	3	3	2	1	2	11
Grade 7 Ages 12–13	3	3	2	1	2	11
Grade 8 Ages 13–14	3	3	2	2	5	15

The Grade 8 total includes its 3-standard Capstone, carried in the Good Citizenship/Humanities domain.

Grade 6 (Ages 11–12)

Mathematics & Algebraic Reasoning

G6.M-01 Integers, Rational Numbers & Coordinate Planes

Your child can confidently add, subtract, multiply, and divide positive and negative integers, plotting coordinates across all four quadrants (positive and negative) of a grid system.

IN REAL LIFE

Your child handles negative numbers in the wild: “It was -3° this morning and it’s 8° now, so it warmed up 11 degrees.” They can also plot the family’s route on a map grid, including the quadrants west and south of the origin.

G6.M-02 Introduction to Algebra & Variable Equations

Your child understands that a letter (like x or y) can represent an unknown number, and they can perform inverse operations to solve for that variable.

IN REAL LIFE

The scooter rental costs a flat \$5 plus \$2 per hour, and you paid \$13. Your child writes it as $5 + 2x = 13$ and works out you rode for exactly 4 hours.

G6.M-03 Proportional Reasoning, Ratios & Scale

Your child can interpret and simplify ratios (like 2:1) and apply scale factors to real travel maps or technical architectural blueprints.

IN REAL LIFE

Reading the trail map’s 1:25,000 scale, your child measures 6 cm and announces the waterfall is a 1.5 km walk. At the potluck, they scale a recipe for 4 up to feed 10.

Integrated Sciences (Biology, Chemistry, Physics)

G6.S-01 Cellular Biology & Microscopic Structures

Your child can identify the distinct parts of plant and animal cells (nucleus, cell wall, cell membrane, cytoplasm, chloroplasts) and explain their structural differences.

IN REAL LIFE

Looking at pond water or an onion skin under a field microscope, your child spots the rigid cell walls and says, “That’s how you know it’s a plant. Animal cells would just have the membrane.”

G6.S-02 Matter at the Atomic Level & Periodic Table Basics

Your child understands that all matter is constructed from tiny atoms, can define the difference between elements, compounds, and mixtures, and can read basic periodic table symbols.

IN REAL LIFE

Reading a mineral-water label or sunscreen bottle, your child decodes the symbols: “Na is sodium, Zn is zinc.” They explain that salt is a compound of two elements while trail mix is just a mixture.

G6.S-03 Kinematics (Calculating Speed & Velocity)

Your child understands the mathematical formula for speed ($\text{Speed} = \text{Distance} \div \text{Time}$) and can calculate the velocity of moving objects using standard metric variables.

IN REAL LIFE

On a long bus ride, your child clocks that you covered 180 km in 3 hours and calculates the average speed at 60 km/h. Then they time their own 100 m sprint on the beach and work out their speed.

Language & Literature

G6.E-01 Thesis Formulation & Argumentative Structure

Your child can write a cohesive, structural 5-paragraph essay centered around a single, debatable thesis statement, supporting it with multiple structured body paragraphs.

IN REAL LIFE

Your child writes a five-paragraph essay arguing that the best city your family visited this year was Oaxaca, with a clear thesis up front and a separate supporting reason anchoring each body paragraph.

G6.E-02 Textual Analysis & Structural Literary Critiques

Your child reads classic or contemporary literature and writes an analysis detailing how an author utilizes tone, setting, and imagery to highlight core themes.

IN REAL LIFE

After finishing a novel, your child writes about how the author’s storm-battered island setting mirrors the main character’s loneliness, pointing to specific passages as evidence.

Language Acquisition (Second Language)

G6.L-01 Expanded Text Architecture & Complex Syntax

Your child can construct full, multi-paragraph written journals or business emails in the target language using proper transitional phrases and introductory markers.

IN REAL LIFE

Your child writes a full journal entry or a proper email to their language tutor in the target language, complete with connectors like “however,” “afterwards,” and “in my opinion.”

Societies & Systems (Humanities)

G6.C-01 Historiography & Source Verification

Your child can evaluate historical data using basic source analysis, identifying if an account is potentially biased based on who wrote it and when.

IN REAL LIFE

At a historical site, your child compares the plaque’s triumphant version of events with what your guidebook says and asks the sharpest question in history class: “Who wrote this one, the winners?”

G6.C-02 Physical Geography & Tectonic Geology

Your child can explain how plate tectonics, continental drift, magma currents, and faults structurally cause volcanic activity, mountain building, and seismic earthquakes.

IN REAL LIFE

Standing at a volcano viewpoint or feeling a small tremor in the night, your child explains what is happening underneath: two plates grinding past each other and magma finding the weak point. Then they explain why the whole island chain lines up in a row.

Grade 7 (Ages 12–13)

Mathematics & Algebraic Reasoning

G7.M-01 Linear Functions & Slope Intercept Calculations

Your child can graph a linear equation on an (x, y) grid, calculate the slope of a line, and interpret the algebraic equation $y = mx + b$.

IN REAL LIFE

Your child decodes the taxi meter as a living equation: a \$3 flag-fall plus \$1.50 per kilometre is $y = 1.5x + 3$. They predict the fare home before the driver does.

G7.M-02 Multi-Step Equation Inversion & Distribution

Your child can solve complex algebraic equations requiring multiple operational steps, including distributing values across parentheses (e.g., $2(x + 4) = 16$).

IN REAL LIFE

Comparing two SIM-card plans, your child sets up the equation for when they cost the same. They distribute across the parentheses to solve it and tell you which one wins for a one-month stay.

G7.M-03 Theoretical vs. Experimental Probability

Your child can calculate the mathematical likelihood of an event occurring and compare it to real experimental sample tracking metrics.

IN REAL LIFE

Your child calculates that rolling a six should happen 1-in-6 times, then actually rolls the die 60 times on a rainy afternoon, tallies 13 sixes, and puzzles over why the experiment beat the theory.

Integrated Sciences (Biology, Chemistry, Physics)

G7.S-01 Nutritional Physiology & Enzyme Digestion

Your child can chart how food moves through the human digestive tract, tracking mechanical versus chemical breakdown of macronutrients (carbohydrates, lipids, proteins).

IN REAL LIFE

Chewing a plain cracker until it turns sweet, your child explains that the enzyme in saliva is already breaking the starch into sugar. They can trace tonight's dinner through every stage of the digestive tract.

G7.S-02 Chemical Reactions & Indicators

Your child can identify signs of a chemical reaction (temperature change, gas production, color shifts) and read pH levels using indicators.

IN REAL LIFE

Your child makes red-cabbage indicator in the guesthouse kitchen and tests everything in reach. Lime juice turns it pink (acid), baking soda turns it blue-green (base), and the fizz when they meet is a real chemical reaction.

G7.S-03 Wave Mechanics (Frequency & Amplitude)

Your child can chart a wave profile, mathematically defining its wavelength, frequency, and amplitude, and explaining how sound pitch changes.

IN REAL LIFE

Watching sets roll in at the beach, your child times the swell and estimates its frequency. Later, they tighten a guitar string and explain that shorter, faster waves are exactly why the pitch climbs.

Language & Literature

G7.E-01 Advanced Textual Synthesis & Quote Integration

Your child can weave direct quotations seamlessly into their analytical essays using signal phrases and formatting, rather than simply dropping standalone sentences.

IN REAL LIFE

In their essay on a novel, your child writes: “As the narrator admits, ‘I was never brave, only stubborn,’ a distinction that drives every choice she makes.” The quote is woven into the analysis rather than left alone.

G7.E-02 Societal/Historical Literary Analysis

Your child evaluates how the socio-political climate of the era a book was written in directly influenced the characters, plotting, and perspective of the text.

IN REAL LIFE

Reading a book written in the 1940s, your child connects its anxious, rationed world to the war it was written during and argues the villain would be written completely differently today.

Language Acquisition (Second Language)

G7.L-01 Spontaneous Fluid Dialogue

Your child can hold a continuous, unscripted five-minute conversation with a native speaker without relying on translation apps.

IN REAL LIFE

At the market, your child chats with the fruit vendor for five unbroken minutes, haggling, joking about the rain, and asking how to pick a ripe mango. They never once reach for your phone.

Societies & Systems (Humanities)

G7.C-01 Feudalism, Geopolitical Empires & Expansion

Your child can map and analyze how feudal social pyramids functioned and track how medieval and early modern maritime trade routes expanded global power dynamics.

IN REAL LIFE

Exploring a castle or old trading port, your child maps the pyramid on the spot: “The lord owned this, the peasants worked that.” Then they trace on the harbour map how spice ships turned this small town into a power.

G7.C-02 Meteorological Systems & Atmospheric Dynamics

Your child can interpret isobar air pressure readouts, explain how ocean currents move global temperatures, and detail how weather fronts are formed.

IN REAL LIFE

Planning tomorrow’s hike, your child reads the pressure map like a pro: “Isobars are tight, so it’ll be windy, and that cold front means rain by afternoon.” They explain why the coast stays milder than the hills.

Grade 8 (Ages 13–14)

Mathematics & Algebraic Reasoning

G8.M-01 Systems of Linear Equations & Matrices

Your child can find the single intersection point (x, y) that satisfies two distinct linear equations at the same time using substitution or elimination methods.

IN REAL LIFE

Two market receipts, one mystery: 3 mangoes and 2 papayas cost \$9, while 1 mango and 2 papayas cost \$5. With no prices displayed, your child sets up both equations, eliminates, and announces that mangoes are \$2 each.

G8.M-02 Spatial Trigonometry (Pythagorean Principles)

Your child can calculate unknown side lengths or hypotenuse dimensions of right-angled triangles using the Pythagorean Theorem ($a^2 + b^2 = c^2$).

IN REAL LIFE

Your child checks whether the diagonal shortcut across the 30 m $\times$ 40 m field is worth it. The equation $a^2 + b^2$ says the diagonal is exactly 50 m, saving 20. They also verify a “55-inch” TV by measuring its sides.

G8.M-03 Quadratic Formulations & Factoring Polynomials

Your child can factor simple quadratic trinomials (e.g., expanding or simplifying $x^2 + 5x + 6$ into $(x + 2)(x + 3)$) and recognize non-linear parabolic graphs.

IN REAL LIFE

Your child factors $x^2 + 5x + 6$ into $(x + 2)(x + 3)$ on paper. Then they spot the same parabola in real life, tracing the arc of a thrown ball or a fountain and noting that it is anything but a straight line.

Integrated Sciences (Biology, Chemistry, Physics)

G8.S-01 Genetics, Mendelian Inheritance & DNA Modeling

Your child understands how DNA traits are passed down, can define genotype vs. phenotype, and can draw a Punnett square to predict genetic probability outcomes.

IN REAL LIFE

Curious why they have blue eyes when both parents are brown-eyed, your child draws the Punnett square, works out both parents must carry a recessive allele, and calculates the 1-in-4 odds they beat.

G8.S-02 Stoichiometry & Balancing Chemical Equations

Your child applies the Law of Conservation of Mass to balance basic chemical equations on paper, ensuring that the number of reactant atoms matches the product atoms.

IN REAL LIFE

Noticing moisture above a gas hob, your child asks where the water came from. They balance $\text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$ on paper and explain that burning methane makes water vapour as well as carbon dioxide and heat.

G8.S-03 Thermodynamics & Kinetic Energy Equations

Your child can define and calculate gravitational potential energy and kinetic energy ($\text{KE} = \frac{1}{2}mv^2$), explaining how heat transfers through conduction, convection, and radiation.

IN REAL LIFE

Around a campfire, your child gives the full tour: the metal poker burns by conduction, the rising smoke is convection, and the glow warming your face is radiation. Then they calculate the kinetic energy of their cliff-jump into the lake.

Language & Literature

G8.E-01 Advanced Analytical Compositions & Literary Device Critiques

Your child writes structural, multi-page analytical papers that break down how an author utilizes extended allegories or historical commentary to send a deeper message.

IN REAL LIFE

Your child writes a multi-page essay on *Animal Farm*, arguing that the barnyard is a scaffold for the Russian Revolution. They track how each animal maps to a historical figure and what Orwell is really warning about.

G8.E-02 Academic Referencing & Parenthetical Citations

Your child accurately credits external ideas within their writing using proper parenthetical academic citations (such as MLA, APA, or Harvard formats) alongside a finalized reference page.

IN REAL LIFE

Their research paper now reads like the real thing, with claims followed by (Author, Year) citations and a properly formatted reference list that would pass a university's first glance.

Language Acquisition (Second Language)

G8.L-01 Analytical Writing & Conceptual Exposition

Your child can write full opinion essays, travel logs, or formal reviews in the target language using complex sentence connectors and sub-clauses.

IN REAL LIFE

Your child writes a full restaurant review or an opinion piece on whether tourism helps the town, entirely in the target language, complete with “although,” “which meant that,” and a firm concluding stance.

G8.L-02 Complex Navigation & Emergency Resolution

Your child can resolve an unexpected issue or real-world emergency smoothly in the target language, such as reporting lost items, describing illness symptoms to a doctor, or rearranging travel logistics.

IN REAL LIFE

When the bus is cancelled, your child handles it. They explain the situation at the counter in the target language, rebook for the morning, and ask the pharmacist for the right medicine by describing the symptoms, all without you stepping in.

Societies & Systems (Humanities)

G8.C-01 The Industrial Revolution & Modern Historical Conflicts

Your child can map out how industrial specialization transformed human manufacturing and trace the complex, underlying geopolitical causes behind major modern conflicts.

IN REAL LIFE

Walking through an old textile mill or industrial museum, your child traces the chain: machines replaced hands, cities swelled, and empires raced for raw materials. They connect those pressures to the causes of the world wars.

G8.C-02 Macro-Economics: Constraints, Value Creation & Stewardship

Your child understands how inflation metrics work, can trace gross domestic product (GDP) parameters, and can evaluate how currency fluctuations influence international trade markets.

IN REAL LIFE

Watching the exchange rate shift during a long stay, your child explains why your money buys more this month, why imported goods just got pricier for locals, and what that means for the shopkeepers you know by name.

The Grade 8 Capstone: Impact Venture Pitch & Defense

CP-08-01 Root-Cause Analysis & Systems Mapping

Your child can look at a massive problem (like supply chain waste, water scarcity, or digital misinformation) and map out the entire system, identifying the hidden root causes rather than just treating the surface symptoms.

IN REAL LIFE

Bothered by plastic on the beach, your child refuses the easy answer (“people litter”) and maps the whole system: no refill stations, bottled-water dependence, and no collection infrastructure. They find the root causes worth actually attacking.

CP-08-02 Scalable Operational Modeling & Stakeholder Alignment

Your child maps out a multi-layered business canvas. They must detail their value proposition, identify key stakeholders, outline a marketing/acquisition strategy, and draft a 3-Year Financial Forecast (including variable costs, fixed scaling assets, and projected revenue streams).

IN REAL LIFE

Your child builds the full canvas for their refill-station venture: startup costs, per-unit costs, who the stakeholders are (hostels, shops, the town council), how they’d win customers, and a 3-year forecast that shows the break-even point in month 14.

CP-08-03 The Executive Venture Pitch & Academic Defense

The grand finale. Your child compiles a high-level executive slide deck or data dashboard to pitch and defend their venture’s operational, financial, and sociological integrity.

IN REAL LIFE

Your child presents the executive deck to the camera: problem, system map, model, and forecast. Then they stand for live Q&A at the ceremony, defending their numbers to an international audience like a founder at a real pitch night.

Beyond Grade 8

The Grade 8 Capstone completes Ivy Waters International Standards. Every moment and approved alignment your family captured along the way carries forward into the records your child takes into whatever comes next.

FROM MOMENTS TO RECORDS

1 · Capture

Note the real moment as it happens in your words and photos. The original entry is always kept.

2 · Align

Optionally connect a moment to a standard from this guide. You approve every alignment or leave it unaligned. Both are complete records.

3 · Project

Journeys, portfolios, and records are built from what you captured and approved. The keepsake and the record are the same moment.

