Montana 10 Chemistry

FREE PREVIEW

Full-Year Teacher Planner, Blank Editable Planner & School-Submission Binder

This preview shows the real structure and a genuine sample of the completed planner. The full product contains 9 units, 36 weekly plans and 180 daily plans, plus blank editable versions of every form.

State	Montana
Grade	10 (High)
Subject	Chemistry
Course category	Science
Standards family	Science
Framework	Montana Science Content Standards (2016), codified at ARM 10.53 subchapter 8
Issuing agency	Montana Office of Public Instruction
Scope	36 instructional weeks · 180 instructional days · 9 units

This is a statewide standards index, not a local course catalog. Course names, grade placement, electives, and graduation sequences vary by district.

What you get

Folder	Contents
01 START HERE	Read-me, contents, printing and digital instructions, standards verification guide, this preview
02 FILLED FULL YEAR	Completed planner in colour and ink-friendly PDF, plus editable DOCX
03 BLANK EDITABLE	Blank planner in colour, ink-friendly and fillable PDF, plus editable DOCX
04 ASSESSMENTS AND DATA	Baseline observation, quarterly rubrics, anecdotal forms, portfolio checklist
05 SCHOOL SUBMISSION	Submission covers, alignment summary, evidence checklist, observation, reflection, signature page
06 LICENSE AND CREDITS	Terms of use, credits and licences, copyright notice

The pages that follow are reproduced **exactly** as they appear in the full completed planner.

Week 9 — Ionic Bonding

Unit 3: Forces Within Molecules · Month 3 · Quarter 1 · Semester 1 · Instructional Days 41–45

Essential question	What happens when an atom that wants to lose meets one that wants to gain?
Standards	**Forces Within and Between Molecules** -> **ARM 10.53.810(1)(b) Physical Science** — plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles **ARM 10.53.810(1)(d) Physical Science** — communicate through scientific and technical information roles of molecular-level structure in the functioning of designed materials
Learning target	“I can construct an explanation of how ionic bonds form and what they produce.”
Local dates	_____ (enter your school dates)

Measurable objectives

- Students will construct explanations of the formation of intramolecular and intermolecular forces and their effects on atomic and molecular interactions.

Success criteria (student-friendly)

- “I explain ionic bond formation from electron transfer.”
- “I predict formulae from ion charges.”
- “I explain ionic compounds' properties from their structure.”

Academic vocabulary

ionic bond, electron transfer, cation, anion, lattice, electrostatic attraction, formula unit, brittle

Materials and technology

- Notebooks
- Periodic tables
- Whatever lattice models the school holds

Differentiation and supports

Support area	This week's plan
Special education / IEP	Reduce group size; pair visual cue cards with all verbal directions; allow gesture or picture response in place of speech; pre-teach the week's target in a 1:1 warm-up.
Section 504	Provide the child's documented accommodations throughout; permit movement breaks and alternative seating at any point in the sequence.
Multilingual learners	Introduce each vocabulary word with an object or image; accept home-language responses; send the vocabulary list home where a translation is available; pair with a peer who shares the home language.
Advanced / extension	Ask the learner to teach the skill to a peer, extend the task, or record a demonstration for the class reference wall.

Support area	This week's plan
Intervention / reteach	Reteach the target in a short small group using the same materials; split the day's check for understanding into two smaller steps.
Enrichment	Extend into an open-ended centre or project connected to the essential question.

Assessment and evidence

Student explains ionic bonding and derives properties from structure.

Family communication

Ask your child why salt is brittle rather than bendy.

Day 41 — The Standard Says CONSTRUCT EXPLANATIONS

Week 9, Day 1 · Unit 3 · Standards: ARM 10.53.810(1)(b), ARM 10.53.810(1)(d)

Focus	The practice.
Learning target	“I can construct an explanation of how ionic bonds form and what they produce.”
Vocabulary in use	ionic bond, electron transfer, cation, anion, lattice, electrostatic attraction, formula unit, brittle
Local date	_____

Learning sequence

Teach: its verb is CONSTRUCT EXPLANATIONS of how forces FORM and their EFFECTS - so the target throughout is a causal chain from electron behaviour to observable property, not a set of definitions. INTRAMOLECULAR forces are within a particle and are this unit; INTERMOLECULAR forces are between particles and are Unit 4, and confusing them is the commonest error in the topic. Try: shared reading of the standard and its two halves. Apply: students state the difference in their own words with an example. Reflect: intra means within; inter means between.

Check for understanding

Student distinguishes intramolecular from intermolecular forces.

Differentiation in the moment

If the learner...	Then...
needs more support	Model the step again with guided support, then fade to a gesture cue.
is ready for more	Invite the learner to demonstrate for a peer or add a second example.
is dysregulated	Pause instruction, move to co-regulation, and return to the target later.

Closure and reflection

Gather the group. Restate the learning target. Ask one learner to demonstrate. Name one specific thing the group did well, then preview tomorrow.

Teacher reflection (fictional example)

Fictional Example — Customize and Verify Before School Submission.

Most learners met the target. Two needed the visual cue repeated during guided practice; I will pre-teach with them tomorrow. The extension held attention longer than planned, so I shortened closure.

Day 42 — Transfer, and Why It Happens

Week 9, Day 2 · Unit 3 · Standards: ARM 10.53.810(1)(b), ARM 10.53.810(1)(d)

Focus	Formation.
Learning target	“I can construct an explanation of how ionic bonds form and what they produce.”
Vocabulary in use	ionic bond, electron transfer, cation, anion, lattice, electrostatic attraction, formula unit, brittle
Local date	_____

Learning sequence

Connect: Week 6's electronegativity. Teach: when the difference in electronegativity is large, the more electronegative atom takes the electron outright - both particles reach a stable arrangement, and the resulting opposite charges attract electrostatically. That attraction IS the ionic bond; nothing is shared. Try: shared construction of the explanation for one pair. Apply: students construct explanations for three pairs. Reflect: the bond is a consequence of the transfer, not a thing added to it.

Check for understanding

Student constructs a causal explanation of ionic bond formation.

Differentiation in the moment

If the learner...	Then...
needs more support	Model the step again with guided support, then fade to a gesture cue.
is ready for more	Invite the learner to demonstrate for a peer or add a second example.
is dysregulated	Pause instruction, move to co-regulation, and return to the target later.

Closure and reflection

Gather the group. Restate the learning target. Ask one learner to demonstrate. Name one specific thing the group did well, then preview tomorrow.

Teacher reflection (fictional example)

Fictional Example — Customize and Verify Before School Submission.

Most learners met the target. Two needed the visual cue repeated during guided practice; I will pre-teach with them tomorrow. The extension held attention longer than planned, so I shortened closure.

Day 43 — Predicting Formulae

Week 9, Day 3 · Unit 3 · Standards: ARM 10.53.810(1)(b), ARM 10.53.810(1)(d)

Focus	Ratios from charges.
Learning target	“I can construct an explanation of how ionic bonds form and what they produce.”
Vocabulary in use	ionic bond, electron transfer, cation, anion, lattice, electrostatic attraction, formula unit, brittle
Local date	_____

Learning sequence

Connect: Week 2 predicted charges. Teach: an ionic compound is electrically neutral overall, so the ions combine in whatever ratio cancels the charges - which means the formula is PREDICTABLE from position on the table alone. Try: shared derivation for supplied pairs. Apply: students predict formulae for eight pairs from position. Reflect: the table predicted a formula, which is a satisfying amount of leverage.

Check for understanding

Student predicts ionic formulae from periodic position.

Differentiation in the moment

If the learner...	Then...
needs more support	Model the step again with guided support, then fade to a gesture cue.
is ready for more	Invite the learner to demonstrate for a peer or add a second example.
is dysregulated	Pause instruction, move to co-regulation, and return to the target later.

Closure and reflection

Gather the group. Restate the learning target. Ask one learner to demonstrate. Name one specific thing the group did well, then preview tomorrow.

Teacher reflection (fictional example)

Fictional Example — Customize and Verify Before School Submission.

Most learners met the target. Two needed the visual cue repeated during guided practice; I will pre-teach with them tomorrow. The extension held attention longer than planned, so I shortened closure.

Day 44 — A Lattice, Not a Molecule

Week 9, Day 4 · Unit 3 · Standards: ARM 10.53.810(1)(b), ARM 10.53.810(1)(d)

Focus	Structure.
Learning target	“I can construct an explanation of how ionic bonds form and what they produce.”
Vocabulary in use	ionic bond, electron transfer, cation, anion, lattice, electrostatic attraction, formula unit, brittle
Local date	_____

Learning sequence

Connect: what is a 'molecule' of salt? Teach: there is none - ionic compounds form a continuous LATTICE in which each ion is surrounded by oppositely charged neighbours, so the formula gives the RATIO rather than counting a particle. This distinction matters for everything that follows. Try: shared examination of whatever lattice models the school holds. Apply: students explain why the formula is a ratio and not a count. Reflect: 'formula unit' rather than 'molecule', and the words are doing work.

Check for understanding

Student explains ionic structure as a lattice with a ratio formula.

Differentiation in the moment

If the learner...	Then...
needs more support	Model the step again with guided support, then fade to a gesture cue.
is ready for more	Invite the learner to demonstrate for a peer or add a second example.
is dysregulated	Pause instruction, move to co-regulation, and return to the target later.

Closure and reflection

Gather the group. Restate the learning target. Ask one learner to demonstrate. Name one specific thing the group did well, then preview tomorrow.

Teacher reflection (fictional example)

Fictional Example — Customize and Verify Before School Submission.

Most learners met the target. Two needed the visual cue repeated during guided practice; I will pre-teach with them tomorrow. The extension held attention longer than planned, so I shortened closure.

Day 45 — Explaining the Properties

Week 9, Day 5 · Unit 3 · Standards: ARM 10.53.810(1)(b), ARM 10.53.810(1)(d)

Focus	The week's product.
Learning target	“I can construct an explanation of how ionic bonds form and what they produce.”
Vocabulary in use	ionic bond, electron transfer, cation, anion, lattice, electrostatic attraction, formula unit, brittle
Local date	_____

Learning sequence

Teach: build the chain - strong electrostatic attraction throughout a lattice gives high melting points; ions fixed in place give poor conduction when solid but good conduction when molten or dissolved; and displacing a layer brings like charges together, which is why ionic solids shatter rather than bend. Try: shared construction of one chain. Apply: students explain four properties from structure and file the work. Reflect: brittleness follows from charge arrangement, which is a genuinely satisfying explanation.

Check for understanding

Student explains ionic properties by causal chains from structure.

Differentiation in the moment

If the learner...	Then...
needs more support	Model the step again with guided support, then fade to a gesture cue.
is ready for more	Invite the learner to demonstrate for a peer or add a second example.
is dysregulated	Pause instruction, move to co-regulation, and return to the target later.

Closure and reflection

Gather the group. Restate the learning target. Ask one learner to demonstrate. Name one specific thing the group did well, then preview tomorrow.

Teacher reflection (fictional example)

Fictional Example — Customize and Verify Before School Submission.

Most learners met the target. Two needed the visual cue repeated during guided practice; I will pre-teach with them tomorrow. The extension held attention longer than planned, so I shortened closure.

Important before you buy

- This is a **digital download**. Nothing is shipped.
- The planner is **calendar-neutral**: Month 1–9, Week 1–36, Day 1–180, so it fits any school calendar. You add your own dates.
- Standards were transcribed from the official source.
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Source citation

Montana Office of Public Instruction. Montana Science Content Standards (2016), codified at ARM 10.53 subchapter 8. Statements are transcribed from the MONTANA SCIENCE CONTENT STANDARDS, whose own cover reads "Adopted September 16, 2016 by the Montana Board of Public Education". THAT DOCUMENT PRINTS NO CODES. Each grade is a set of discipline headings -- physical science, life science, earth and space science -- followed by unnumbered bullets, so there is nothing in it that can be printed in a code column. The same standards are codified in the ADMINISTRATIVE RULES OF MONTANA, CHAPTER 10.53 SUBCHAPTER 8, one rule per grade, and the rule's structure is exactly the document's: a numbered subsection per discipline heading, a lettered item per bullet, same order and same count. THE ARM SUBSECTION IS REGISTERED AS THE CODE. This is an existing official citation rather than an invented identifier, and it is the citation a Montana reviewer can actually look up; the alternative would have been to ship science products with no codes at all. Bullets are separated in the PDF by a Symbol-font character in the Unicode Private Use Area rather than by a literal dot; splitting on the indent instead merges a whole discipline into one run, and splitting per line fragments every standard mid-sentence, so the glyph is what the transcription splits on and the item count is checked against the counts the document's headings imply. THIS STATE PUBLISHES NO CHEMISTRY COURSE. It writes ONE SCIENCE RULE FOR THE WHOLE OF GRADES 9-12, ARM 10.53.810, holding sixty-one standards in three disciplines -- twenty-three physical science, twenty life science and eighteen earth and space science -- and it assigns none of them to a grade or to a course. The chemistry content sits inside the physical science discipline, so a chemistry year here is a district's selection from subsection (1) rather than a course the state defines. THIS ROW REGISTERS NINE OF THE TWENTY-THREE PHYSICAL SCIENCE STANDARDS, which is what a chemistry year genuinely teaches: the periodic table as a predictive model, bulk-scale structure and intermolecular forces, molecular-level structure in designed materials, the outcomes and energetics of reactions, reaction conditions and equilibrium, conservation of mass, and thermal energy transfer. THE FOURTEEN IT DOES NOT REGISTER ARE THE PHYSICS ONES -- nuclear processes, Newton's second law,

momentum, collisions, gravitation and Coulomb's law, fields, energy and waves -- and they belong to the physics and physical science courses in this series. This row does not touch life science or earth and space science. Retrieved 2026-07-27 from https://opifiles.mt.gov/Portals/182/Page%20Files/K-12%20Content%20Standards%20%26%20Revision/Science/Montana-Science-Content-Standards-2016.pdf