
Montana 8 Technology / Computer Science

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	8 (Middle)
Subject	Technology / Computer Science
Course category	Technology
Standards family	Science
Framework	Montana Content Standards for Computer Science (2021)
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 — Two Variables That Change

Unit 3: Programs, Efficiency and Iteration · Month 3 · Quarter 1 · Semester 1 · Instructional Days 41–45

Essential question	How does a program remember and update what it is doing?
Standards	A Program With Two Variables Updating -> CS.AP.6-8.2 Montana Computer Science K-12 / algorithms and programming — create clearly named variables that represent different data types and perform operations on their values
Learning target	"I can write a program that initialises and updates at least two variables."
Local dates	_____ (enter your school dates)

Measurable objectives

- Students will create a program including selection, iteration or abstraction.
- Students will initialise and update at least two variables.

Success criteria (student-friendly)

- "I initialise before I use."
- "I update both variables correctly."
- "I trace the program and both hold what I expect."

Academic vocabulary

variable, initialise, update, state, accumulator

Materials and technology

- Devices if available, or paper
- Trace tables
- Paper and pencils
- Board or large paper
- Storage for work in progress

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

A program with two variables initialised and updated, traced.

Family communication

Ask your child what their program is keeping track of.

Day 41 — A Variable Is a Named Box

Week 9, Day 1 · Unit 3 · Standards: CS.AP.6-8.2

Focus	The concept.
Learning target	"I can write a program that initialises and updates at least two variables."
Vocabulary in use	variable, initialise, update
Local date	_____

Learning sequence

Connect: algorithms. Teach: a variable holds a value that can change, with a name chosen so a reader knows what it holds. Try: shared naming exercise. Apply: students name two variables for a task. Reflect: a bad variable name costs more than a bad function name.

Check for understanding

Student names variables that describe what they hold.

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 — Initialise Before You Use

Week 9, Day 2 · Unit 3 · Standards: CS.AP.6-8.2

Focus	The commonest bug.
Learning target	"I can write a program that initialises and updates at least two variables."
Vocabulary in use	variable, initialise, update
Local date	_____

Learning sequence

Connect: variables. Teach: that a variable used before it is given a starting value produces the most confusing class of bug, because the program may work by accident, and that setting the start value deliberately is part of the design. Try: shared identification of the bug. Apply: students initialise both variables and say why those values. Reflect: 'start at zero' is a decision, not a default.

Check for understanding

Student initialises variables with a justified starting value.

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 — Two Variables Doing Different Jobs

Week 9, Day 3 · Unit 3 · Standards: CS.AP.6-8.2

Focus	The standard's own requirement.
Learning target	"I can write a program that initialises and updates at least two variables."
Vocabulary in use	variable, initialise, update
Local date	_____

Learning sequence

Connect: initialisation. Teach: that two variables earn their place when they hold different KINDS of thing - a running total and a count, a current value and the best so far - and that two variables holding the same thing is a design fault. Try: shared design of a running-total-and-count task. Apply: students design theirs. Reflect: the pair together is what makes an average possible.

Check for understanding

Student designs two variables holding genuinely different things.

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.

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Day 44 — Updating Inside a Loop

Week 9, Day 4 · Unit 3 · Standards: CS.AP.6-8.2

Focus	Where it goes wrong.
Learning target	"I can write a program that initialises and updates at least two variables."
Vocabulary in use	variable, initialise, update
Local date	_____

Learning sequence

Connect: two variables. Teach: that updating inside a loop is where the ordering matters - update before or after the test, inside or outside the branch - and that a trace table is the only reliable way to check. Try: shared trace of a mis-ordered update. Apply: students trace their own. Reflect: THE TRACE IS THE UNPLUGGED ROUTE and it is the assessment.

Check for understanding

Student traces variable updates through a loop correctly.

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.

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Day 45 — The Program Traced and Explained

Week 9, Day 5 • Unit 3 • Standards: CS.AP.6-8.2

Focus	CS.AP.6-8.2 assessed.
Learning target	"I can write a program that initialises and updates at least two variables."
Vocabulary in use	variable, initialise, update
Local date	_____

Learning sequence

Connect: tracing. Teach: presenting the program with its trace and an explanation of what each variable holds at the end, which is the evidence the standard actually asks for. Try: shared presentation. Apply: students present. Reflect: this week's standard assessed on the program AND the trace; a class with no devices meets it in full.

Check for understanding

Student presents a traced program with two variables explained.

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.
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Source citation

Montana Office of Public Instruction. Montana Content Standards for Computer Science (2021). Codes and statements are transcribed from the MONTANA CONTENT STANDARDS FOR COMPUTER SCIENCE FOR K-12, which records on every page "Document Created April 5, 2021 | Standards Effective date July 1, 2021". It was produced on the same day, in the same template and with the same coding scheme as the social studies standards: SUBJECT.STANDARD.GradeLevel SUBSTANDARD.sub-substandard, with CS computer science and the content areas AP algorithms and programming, CS computing systems, DA data and analysis, IC impacts of computing and NI networks and the internet. THE SAME SINGLE-STANDARD RULE APPLIES: an area with one standard at a grade states it on the area line and its code ends at the grade, with no final number. NOT EVERY CONTENT AREA APPEARS AT EVERY GRADE -- networks and the internet has no standards in the earliest grades -- and no standard is invented to fill the gap. A TYPOGRAPHICAL ERROR IN THE SOURCE IS RECORDED RATHER THAN CORRECTED IN SILENCE: the kindergarten data and analysis stem reads "standards TO kindergarten" where every other stem reads "for". It affects a stem line rather than a standard, so no registered statement is changed by it. MONTANA WRITES COMPUTER SCIENCE AS ONE BAND FOR GRADES 6, 7 AND 8, not as three grades. The band holds TWENTY-THREE standards and this year registers ALL TWENTY-THREE, as the grade 6 and grade 7 products in this series do -- the years differ in what pupils build, not in which standards they are held to. THIS IS THE MOST DEMANDING OF THE THREE: designing a function and reading someone else's abstraction, judging whether an algorithm could be done better, encrypting and decrypting, building a model of something real and then a simulation that TESTS the model, fixing a misleading graphic, critiquing who cannot use what you built, and arguing both sides of artificial intelligence. ONE WEEK IS REGISTERED AGAINST NO STANDARD AND THAT IS DELIBERATE: the keyboarding-fluency week has no counterpart in this state's computer science standards. NO ACCOUNT IS CREATED AND NOTHING IS PUBLISHED OUTSIDE SCHOOL. Retrieved 2026-07-27 from <https://opifiles.mt.gov/Portals/182/Page%20Files/K-12%20Content%20Standards%20%26%20Revision/Computer%20Science/CS%20K12.pdf>