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# Montana 10 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            | 10 (High)                                                 |
| Subject          | 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 — Designing an Artefact

### Unit 3: Building Something · Month 3 · Quarter 1 · Semester 1 · Instructional Days 41–45

|                    |                                                                                                                                                                                                                                                       |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Essential question | What are you actually building, and who for?                                                                                                                                                                                                          |
| Standards          | <b>Programming and Development (1) -&gt; CS.AP.9-12.6 Montana Computer Science Content Standards / Algorithms And Programming</b> — use lists to simplify solutions, generalizing computational problems instead of repeatedly using simple variables |
| Learning target    | "I can design and iteratively develop an artefact with a stated purpose."                                                                                                                                                                             |
| Local dates        | _____ (enter your school dates)                                                                                                                                                                                                                       |

#### Measurable objectives

- Students will design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue by using current events.

#### Success criteria (student-friendly)

- "I state the artefact's purpose and audience."
- "I design before building."
- "I develop iteratively rather than in one pass."

#### Academic vocabulary

computational artifact, purpose, audience, iteration, increment, specification, scope

#### Materials and technology

- Paper
- Machines if available
- Unplugged design route

#### 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.                                                                                 |
| 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.                                                                    |

| Support area | This week's plan                                                                 |
|--------------|----------------------------------------------------------------------------------|
| Enrichment   | Extend into an open-ended centre or project connected to the essential question. |

**Assessment and evidence**

An artefact designed with a stated purpose and a first increment built.

**Family communication**

Ask your child what they are building and who it is for.

## Day 41 — The Three Purposes the Standard Names

Week 9, Day 1 · Unit 3 · Standards: CS.AP.9-12.6

|                   |                                                                                       |
|-------------------|---------------------------------------------------------------------------------------|
| Focus             | Choosing.                                                                             |
| Learning target   | "I can design and iteratively develop an artefact with a stated purpose."             |
| Vocabulary in use | computational artifact, purpose, audience, iteration, increment, specification, scope |
| Local date        | _____                                                                                 |

### Learning sequence

TEACHER NOTE: the standard names PRACTICAL INTENT, PERSONAL EXPRESSION, or ADDRESSING A SOCIETAL ISSUE USING CURRENT EVENTS. All three are equal routes and students choose. WHERE A STUDENT CHOOSES THE SOCIETAL ROUTE, the topic is theirs and NO STUDENT IS REQUIRED TO WORK ON ANYTHING PERSONAL, DISTRESSING OR POLITICAL; a practical or expressive artefact meets the standard identically, and that alternative is announced to the whole class. Connect: algorithms. Teach: the three purposes and what each implies. Try: shared discussion. Apply: students choose a purpose. Reflect: the purpose decides everything downstream.

### Check for understanding

Student chooses and states an artefact's purpose.

### 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 — Who Is It For

Week 9, Day 2 · Unit 3 · Standards: CS.AP.9-12.6

|                   |                                                                                       |
|-------------------|---------------------------------------------------------------------------------------|
| Focus             | Audience.                                                                             |
| Learning target   | "I can design and iteratively develop an artefact with a stated purpose."             |
| Vocabulary in use | computational artifact, purpose, audience, iteration, increment, specification, scope |
| Local date        | _____                                                                                 |

### Learning sequence

Connect: purpose. Teach: naming the user, and that 'anyone' produces something for nobody - which is the same lesson every design subject teaches. Try: shared naming. Apply: students name their user and what that user needs. Reflect: one named user beats an imagined crowd.

### Check for understanding

Student names a user and their needs.

### 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 — Designing Before Building

Week 9, Day 3 · Unit 3 · Standards: CS.AP.9-12.6

|                   |                                                                                       |
|-------------------|---------------------------------------------------------------------------------------|
| Focus             | The standard's first verb.                                                            |
| Learning target   | "I can design and iteratively develop an artefact with a stated purpose."             |
| Vocabulary in use | computational artifact, purpose, audience, iteration, increment, specification, scope |
| Local date        | _____                                                                                 |

### Learning sequence

Connect: audience. Teach: designing on paper first - what it does, its parts from Unit 1's decomposition, the algorithms from Unit 2, and what it will NOT do - and that scoping out is the decision that makes a project finishable. Try: shared design. Apply: students design their artefact on paper. UNPLUGGED ROUTE: the design is a full deliverable in its own right. Reflect: what you cut is what lets you finish.

### Check for understanding

Student produces a paper design for an artefact.

### 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 — The Smallest Thing That Works

Week 9, Day 4 · Unit 3 · Standards: CS.AP.9-12.6

|                   |                                                                                       |
|-------------------|---------------------------------------------------------------------------------------|
| Focus             | Iteration.                                                                            |
| Learning target   | "I can design and iteratively develop an artefact with a stated purpose."             |
| Vocabulary in use | computational artifact, purpose, audience, iteration, increment, specification, scope |
| Local date        | _____                                                                                 |

### Learning sequence

Connect: design. Teach: ITERATIVELY DEVELOP as the standard words it - build the smallest version that does something real, get it working, then extend - rather than building all the parts and joining them at the end. Try: shared identification of a minimal first version. Apply: students define and begin their first increment. Reflect: something small that runs beats something large that does not.

### Check for understanding

Student defines and begins a minimal first increment.

### 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 — Building the First Increment

Week 9, Day 5 · Unit 3 · Standards: CS.AP.9-12.6

|                   |                                                                                       |
|-------------------|---------------------------------------------------------------------------------------|
| Focus             | Execution.                                                                            |
| Learning target   | "I can design and iteratively develop an artefact with a stated purpose."             |
| Vocabulary in use | computational artifact, purpose, audience, iteration, increment, specification, scope |
| Local date        | _____                                                                                 |

### Learning sequence

Connect: the increment. Teach: building it, with the paper design beside the work. Try: shared session. Apply: students complete a working first increment. WHERE THERE ARE NO MACHINES, the increment is a fully specified traced design. Reflect: you have something that works, in week nine.

### Check for understanding

Student completes a working first increment.

### 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

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- 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. THIS STATE WRITES COMPUTER SCIENCE AS ONE BAND FOR GRADES 9-12, fifty-seven standards in five domains -- twenty-six in algorithms and programming, twelve in impacts of computing, seven each in data and analysis and in networks and the internet, and five in computing systems -- and it assigns none of them to a grade. THIS ROW REGISTERS ALL FIFTY-SEVEN, so the year is complete against the state's computer science standards rather than a selection from them, and the grade 10, 11 and 12 computer science planners in this series cite the same band: what changes from year to year is what pupils build, not which standards they are held to. ONE STANDARD NAMES THIS STATE INSIDE ITSELF -- CS.IC.9-12.2, evaluate the ways computing technologies impact American Indian communities in Montana -- so Indian Education for All is part of the computer science requirement here. THE STATE WRITES THIS SUBJECT AS ONE BAND FOR GRADES 9-12 and assigns no standard to a grade, so this grade 10 planner cites the same standards as the grade 9 planner in this series. WHAT DIFFERS IS THE YEAR'S

WORK, NOT THE STANDARDS THE SCHOOL IS HELD TO. If you already own the grade 9 product in this subject, the standards page will look familiar; buy this one for the grade 10 listing, not for a different standard set. 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>