Pennsylvania 12 Physics / Advanced 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	Pennsylvania
Grade	12 (High)
Subject	Physics / Advanced Science
Course category	Science
Standards family	Science
Framework	Science (STEELS)
Issuing agency	Pennsylvania Department of Education
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 — Going Round in Circles

Unit 3: Turning, and the Muscles That Do It · Month 3 · Quarter 1 · Semester 1 · Instructional Days 41–45

Essential question	Why does turning require a force, when the speed is not changing?
Standards	**Circular Motion** -> **3.2.9-12.H Physical Sciences** — Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay **3.2.9-12.J Physical Sciences** — Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system
Learning target	“I can analyse circular motion and identify the centripetal force.”
Local dates	_____ (enter your school dates)

Measurable objectives

- Students will analyze and interpret data to support claims regarding circular motion.

Success criteria (student-friendly)

- “I explain why circular motion is accelerated motion.”
- “I identify what provides the centripetal force in a given case.”
- “I relate speed, radius and the force required.”

Academic vocabulary

centripetal force, centripetal acceleration, angular velocity, period, radius, tangential velocity

Materials and technology

- Apparatus or supplied data
- Squared paper
- Notebooks

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

Circular motion analysed with the centripetal force correctly identified.

Family communication

Ask your child what pushes a car around a corner.

Day 41 — Accelerating Without Speeding Up

Week 9, Day 1 · Unit 3 · Standards: 3.2.9-12.H, 3.2.9-12.J

Focus	The conceptual hurdle.
Learning target	“I can analyse circular motion and identify the centripetal force.”
Vocabulary in use	centripetal force, centripetal acceleration, angular velocity, period, radius, tangential velocity
Local date	_____

Learning sequence

Connect: velocity is a vector. Teach: that changing DIRECTION changes velocity even at constant speed, so circular motion is accelerated motion, and that by Newton's second law an acceleration requires a resultant force - which must point toward the centre. Teach why this feels wrong: the sensation of being thrown outward is the body continuing straight while the vehicle turns. Try: shared reasoning. Apply: students explain the direction of the acceleration in two cases. Reflect: what would happen if the force vanished?

Check for understanding

Student explains why circular motion requires a centre-directed force.

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 — What Provides the Force

Week 9, Day 2 · Unit 3 · Standards: 3.2.9-12.H, 3.2.9-12.J

Focus	Centripetal force is a role, not a source.
Learning target	“I can analyse circular motion and identify the centripetal force.”
Vocabulary in use	centripetal force, centripetal acceleration, angular velocity, period, radius, tangential velocity
Local date	_____

Learning sequence

Connect: a force toward the centre. Teach: THE POINT STUDENTS MOST OFTEN MISS - 'centripetal' names a ROLE rather than a kind of force, so in every case some ordinary force is playing it: friction, tension, gravity, a normal force - and that adding a separate 'centripetal force' to a free-body diagram double-counts. Teach the diagnostic question: what would have to stop for the object to fly off? Try: shared identification across four supplied cases. Apply: students identify the provider in three. Reflect: did you add an extra arrow?

Check for understanding

Student identifies which real force provides the centripetal force.

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 — Speed, Radius and Force

Week 9, Day 3 · Unit 3 · Standards: 3.2.9-12.H, 3.2.9-12.J

Focus	The relationship.
Learning target	“I can analyse circular motion and identify the centripetal force.”
Vocabulary in use	centripetal force, centripetal acceleration, angular velocity, period, radius, tangential velocity
Local date	_____

Learning sequence

Connect: a force requirement. Teach: how the required force depends on speed and radius - rising with the square of speed and falling with radius - and what that means practically: doubling speed quadruples the force needed, which is why a tighter, faster turn fails first. Teach the reasoning from the relationship rather than from a memorised formula. Try: shared computation. Apply: students compute the effect of doubling speed and of halving radius. Reflect: which change mattered more?

Check for understanding

Student predicts how required force changes with speed and radius.

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 — Angular Quantities

Week 9, Day 4 · Unit 3 · Standards: 3.2.9-12.H, 3.2.9-12.J

Focus	A second description.
Learning target	“I can analyse circular motion and identify the centripetal force.”
Vocabulary in use	centripetal force, centripetal acceleration, angular velocity, period, radius, tangential velocity
Local date	_____

Learning sequence

Connect: linear description. Teach: angular velocity and period as an alternative and often simpler description of the same motion, and the relationship between angular and tangential quantities - noting that points at different radii on one rotating body share an angular velocity but not a speed, which is the key to the muscular unit next week. Try: shared conversion. Apply: students compute tangential speeds at two radii. Reflect: which point moves fastest, and why?

Check for understanding

Student relates angular velocity to tangential speed at different radii.

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 — Testing It With Data

Week 9, Day 5 · Unit 3 · Standards: 3.2.9-12.H, 3.2.9-12.J

Focus	The standard's verb.
Learning target	“I can analyse circular motion and identify the centripetal force.”
Vocabulary in use	centripetal force, centripetal acceleration, angular velocity, period, radius, tangential velocity
Local date	_____

Learning sequence

TEACHER NOTE. APPARATUS AND PROCEDURE ARE YOUR DEPARTMENT'S DECISION UNDER ITS OWN RISK ASSESSMENT. Anything swung, spun or released carries risk that only your own policy can assess; A SUPPLIED DATA SET MEETS THIS DAY IN FULL. Connect: a predicted relationship. Teach: how to test a proportionality from data - vary one quantity, plot in a form that straightens the relationship, and check the gradient - which is the linearisation idea in a physics setting. Try: shared plotting. Apply: students test the speed dependence from supplied or measured data. Reflect: did the data support the square relationship?

Check for understanding

Student tests a proportionality in circular motion against data.

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

Pennsylvania Department of Education. Science (STEELS). STEELS took effect 1 July 2025; the 2002 science standards in Appendix B were struck from the Code and sunset 30 June 2025. Retrieved 2026-07-27 from https://www.pacodeandbulletin.gov/Display/pacode?file=%2Fsecure%2Fpacode%2Fdata%2F022%2Fchapter4%2Fchap4toc.html