

# P R O J E C T O V E R V I E W

<b>Name of Project:</b>						<b>Duration:</b>						
<b>Subject/Course:</b>						<b>Grade Level:</b>						
<b>Other Subject Areas to Be Included:</b>												
<b>Project Idea</b> Summary of the challenge, investigation, scenario, problem, or issue:												
<b>Driving Question</b>												
<b>Content and Skills Standards</b> to be addressed:												
					T+A	E				T+A	E	
<b>21st Century Skills</b> explicitly taught and assessed (T+A) or encouraged (E) by project work, but not taught or assessed:		Collaboration			<input type="checkbox"/>	<input type="checkbox"/>	Other:			<input type="checkbox"/>	<input type="checkbox"/>	
		Presentation			<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	
		Critical Thinking:			<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	
<b>Culminating Products &amp; Performances</b>		<b>Group:</b>									<b>Presentation Audience:</b>	
		<b>Individual:</b>									<input type="checkbox"/> Class <input type="checkbox"/> School <input type="checkbox"/> Community <input type="checkbox"/> Experts <input type="checkbox"/> Web <input type="checkbox"/> Other: _____	

# P R O J E C T O V E R V I E W

<b>Entry Event to launch inquiry and engage students:</b>					
<b>Assessments</b>	<b>Formative Assessments (During Project)</b>	Quizzes/Tests	<input type="checkbox"/>	Practice Presentations	<input type="checkbox"/>
		Journal/Learning Log	<input type="checkbox"/>	Notes	<input type="checkbox"/>
		Preliminary Plans/Outlines/Prototypes	<input type="checkbox"/>	Checklists	<input type="checkbox"/>
		Rough Drafts	<input type="checkbox"/>	Concept Maps	<input type="checkbox"/>
		Online Tests/Exams	<input type="checkbox"/>	Other:	<input type="checkbox"/>
	<b>Summative Assessments (End of Project)</b>	Written Product(s), with rubric: _____	<input type="checkbox"/>	Other Product(s) or Performance(s), with rubric: _____	<input type="checkbox"/>
		Oral Presentation, with rubric	<input type="checkbox"/>	Peer Evaluation	<input type="checkbox"/>
		Multiple Choice/Short Answer Test	<input type="checkbox"/>	Self-Evaluation	<input type="checkbox"/>
		Essay Test	<input type="checkbox"/>	Other:	<input type="checkbox"/>
<b>Resources Needed</b>	<b>On-site people, facilities:</b>				
	<b>Equipment:</b>				
	<b>Materials:</b>				
	<b>Community resources:</b>				
<b>Reflection Methods</b>	<i>(check all that will be used)</i>	Journal/Learning Log	<input type="checkbox"/>	Focus Group	<input type="checkbox"/>
		Whole-Class Discussion	<input type="checkbox"/>	Fishbowl Discussion	<input type="checkbox"/>
		Survey	<input type="checkbox"/>	Other:	<input type="checkbox"/>

# Spotlight Project: Projectile Motion

## P R O J E C T O V E R V I E W

<b>Name of Project:</b>	Projectile motion	<b>Duration:</b>	2 weeks
<b>Subject/Course:</b>	math (Algebra II/Trigonometry)	<b>Grade Level:</b>	11
<b>Other Subject Areas to Be Included:</b>	Physics		

<b>Project Idea</b> Summary of the challenge, investigation, scenario, problem, or issue:	Students work in teams to design and construct a ballistic device that launches an object in a flight path that follows a parabola. They use low cost materials (PVC pipe, plywood, rubber bands, etc.) to build the device, which must be capable of repeated firings. Students use knowledge of quadratic functions in order to hit a target. Each team conducts multiple tests and use the data they record to redesign their device if needed. Students make an oral presentation using PowerPoint slides to summarize their findings.
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<b>Driving Question</b>	How can we build a device to launch a projectile, and calculate its motion in order to hit a target?
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<b>Content and Skills Standards to be addressed:</b>	<p><u>Students will be able to:</u></p> <ul style="list-style-type: none"> <li>• use two-dimensional equations of motion for projectile motion to calculate initial velocity, time in the air, horizontal distance and maximum height.</li> <li>• use trigonometry to resolve two-dimensional vectors into its vertical and horizontal components</li> </ul> <ul style="list-style-type: none"> <li>• Graph quadratic equation and find x-intercepts, y-intercepts and vertex</li> <li>• Apply factoring, quadratic formula and graphing calculator to find x-intercepts of a quadratic graph</li> </ul> <p><u>CA Content Standards</u> - Algebra II: 8.0, 10.0; Trigonometry: 12.0, 19.0; Physics: 1i, 1j</p>
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		T+A	E		T+A	E
<b>21st Century Skills</b> explicitly taught and assessed (T+A) or encouraged (E) by project work, but not taught or assessed:	Collaboration	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Other: Critical and Creative Thinking; Problem Solving	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Presentation	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	Critical Thinking:	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

<b>Culminating Products &amp; Performances</b>	<b>Group:</b>	Design Proposal Complete Ballistic Device main Test Report	Angles of Elevation Report Oral Presentation	<b>Presentation Audience:</b> <input checked="" type="checkbox"/> Class <input checked="" type="checkbox"/> School <input type="checkbox"/> Community <input type="checkbox"/> Experts <input type="checkbox"/> Web <input type="checkbox"/> Other: _____
	<b>Individual:</b>	(no major individual products)		

# P R O J E C T O V E R V I E W

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<b>Entry Event to launch inquiry and engage students:</b>	Activity: Paper wad tossing contest (try to hit wastebasket, tossing over students of varying heights) and discussion of parabolas Video: Scenes from last year's project (final tests of projectile launch devices)
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<b>Assessments</b>	<b>Formative Assessments (During Project)</b>	Quizzes/Tests	<input checked="" type="checkbox"/>	Practice Presentations	<input checked="" type="checkbox"/>
		Journal/Learning Log	<input type="checkbox"/>	Notes	<input type="checkbox"/>
		Preliminary Plans/Outlines/Prototypes	<input checked="" type="checkbox"/>	Checklists	<input type="checkbox"/>
		Rough Drafts	<input type="checkbox"/>	Concept Maps	<input type="checkbox"/>
		Online Tests/Exams	<input type="checkbox"/>	Other:	<input type="checkbox"/>
	<b>Summative Assessments (End of Project)</b>	Written Product(s), with rubric: _____	<input type="checkbox"/>	Other Product(s) or Performance(s), with rubric: _____	<input type="checkbox"/>
		Oral Presentation, with rubric	<input checked="" type="checkbox"/>	Peer Evaluation	<input checked="" type="checkbox"/>
		Multiple Choice/Short Answer Test	<input checked="" type="checkbox"/>	Self-Evaluation	<input checked="" type="checkbox"/>
		Essay Test	<input type="checkbox"/>	Other:	<input type="checkbox"/>

<b>Resources Needed</b>	<b>On-site people, facilities:</b>	large open area for constructing and firing ballistic devices; other teachers and aides as available to help with construction
	<b>Equipment:</b>	measuring tape, LCD projector
	<b>Materials:</b>	low cost materials (PVC pipe, plywood, rubber bands, etc.) which may be provided or that students may collect
	<b>Community resources:</b>	none

<b>Reflection Methods</b>	<i>(check all that will be used)</i>	Journal/Learning Log	<input type="checkbox"/>	Focus Group	<input type="checkbox"/>
		Whole-Class Discussion	<input type="checkbox"/>	Fishbowl Discussion	<input type="checkbox"/>
		Survey	<input checked="" type="checkbox"/>	Other:	<input type="checkbox"/>

**Spotlight Project: Projectile Motion**