PLTW Engineering Standards Connection Principles of Engineering



Connections to Standards in Engineering

PLTW curriculum is designed to empower students to thrive in an evolving world. As a part of the design process when developing and updating our curriculum, we focus on connections to a variety of standards. PLTW Principles of Engineering connects to standards in the following:

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Common Core State Standards for English Language Arts Anchor Standards



Key Ideas and details

CCSS.ELA-LITERACY.CCRA.R.1

Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

0.1 0.2 0.3 0.4	1.1 1.2 1.3	2.1 2.2 2.3 2.4	3.1 3.2 3.3 3.4	4.1 4.2 4.3 4.4

CCSS.ELA-LITERACY.CCRA.R.2

Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

0.1	0.2 0.3 0.4	1.1 1.2 1.3	2.1 2.2 2.3 2.4	3.1 3.2 3.3 3.4	4.1 4.2 4.3 4.4
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Integration of Knowledge and Ideas

CCSS.ELA-LITERACY.CCRA.R.7

Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.

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CCSS.ELA-LITERACY.CCRA.R.8

Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.

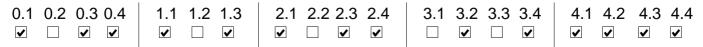
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Writing

Text Types and Purposes

CCSS.ELA-LITERACY.CCRA.W.1

Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.



Common Core State Standards for English Language Arts Anchor Standards



Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

0.1	0.2	0.3	0.4	1.1	1.2	1.3	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4
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Production and Distribution of Writing

CCSS.ELA-LITERACY.CCRA.W.4

Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

0.1 0.2 0.3 0.4	1.1 1.2 1.3	2.1 2.2 2.3 2.4	3.1 3.2 3.3 3.4	4.1 4.2 4.3 4.4
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CCSS.ELA-LITERACY.CCRA.W.5

Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.

0.1 0.2 0.3 0.4	1.1 1.2 1.3	2.1 2.2 2.3 2.4	3.1 3.2 3.3 3.4	4.1 4.2 4.3 4.4
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CCSS.ELA-LITERACY.CCRA.W.6

Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

0.1 0.2 0.3 0.4	1.1 1.2 1.3	2.1 2.2 2.3 2.4	3.1 3.2 3.3 3.4	4.1 4.2 4.3 4.4

Research to Build and Present Knowledge

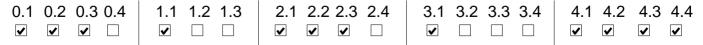
CCSS.ELA-LITERACY.CCRA.W.7

Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

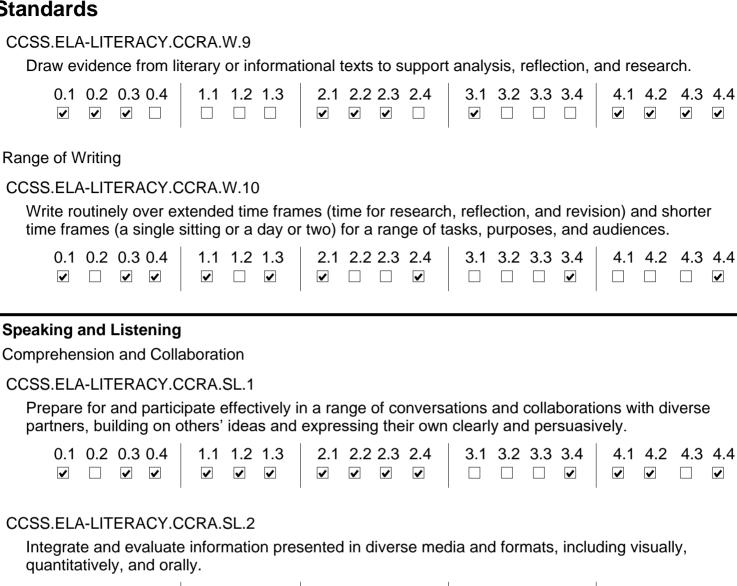
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CCSS.ELA-LITERACY.CCRA.W.8

Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.



Common Core State Standards for English Language Arts Anchor Standards



0.1 0.2 0.3 0.4	1.1 1.2 1.3	2.1 2.2 2.3 2.4	3.1 3.2 3.3 3.4	4.1 4.2 4.3 4.4

CCSS.ELA-LITERACY.CCRA.SL.3

Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

0.1	0.2 0.3 0.4	1.1 1.2 1.3	2.1 2.2 2.3 2.4	3.1 3.2 3.3 3.4	4.1 4.2 4.3 4.4

Common Core State Standards for English Language Arts Anchor Standards

Presentation of Knowledge and Ideas

CCSS.ELA-LITERACY.CCRA.SL.4

Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

0.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 **✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓**

CCSS.ELA-LITERACY.CCRA.SL.5

Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

CCSS.ELA-LITERACY.CCRA.SL.6

Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

0.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 **✓ ✓ ✓ ✓** ✓ **✓**

Language

Convention of Standard English

CCSS.ELA-LITERACY.CCRA.L.1

Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

0.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 **✓ v ✓ ✓** ✓ ✓ ✓ ✓ **✓ ✓** ✓ **✓** ✓ **✓**

CCSS.ELA-LITERACY.CCRA.L.2

Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

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Common Core State Standards for English Language Arts Anchor Standards

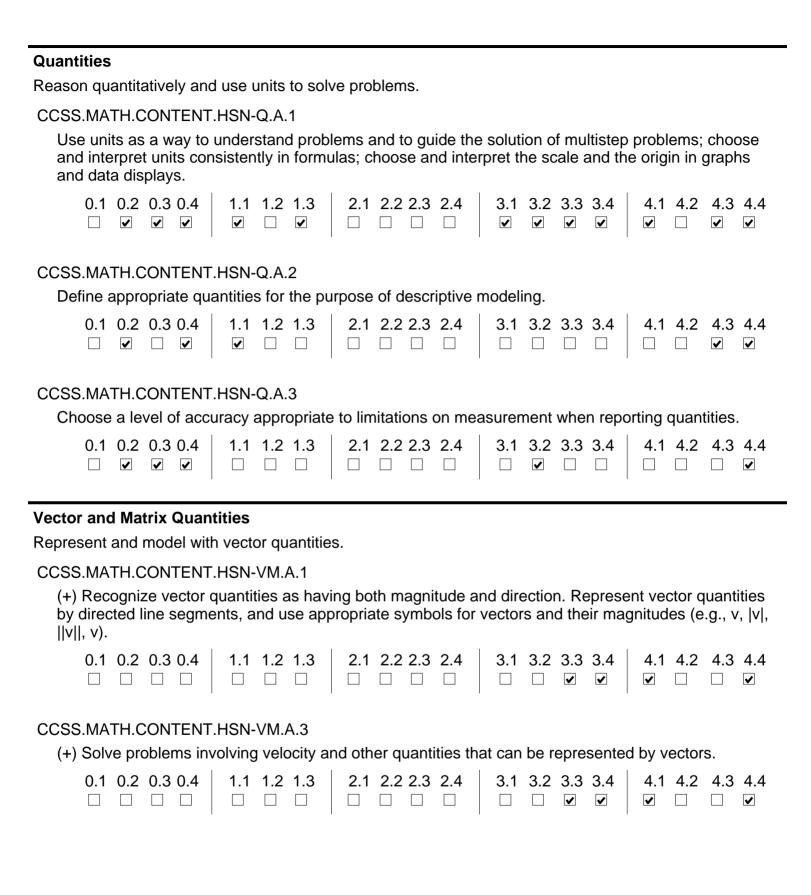
Vocabulary Acquisition and Use

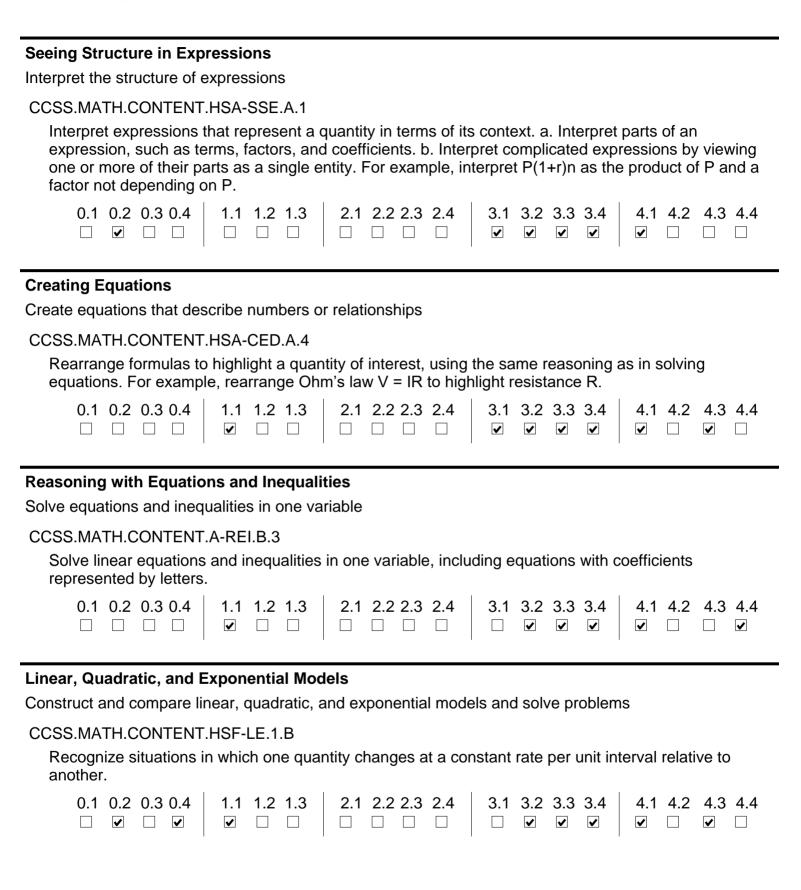
CCSS.ELA-LITERACY.CCRA.L.6

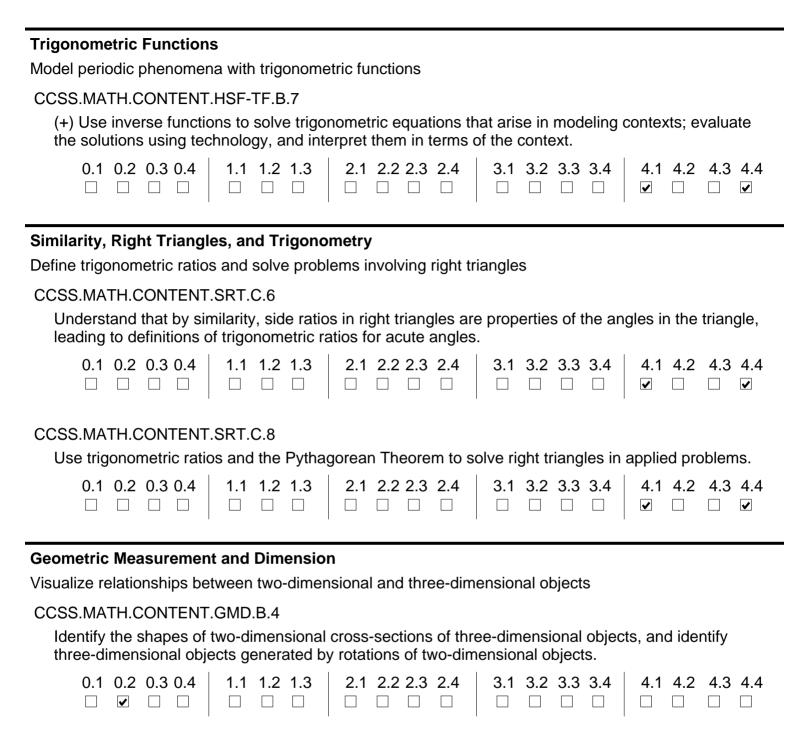
Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

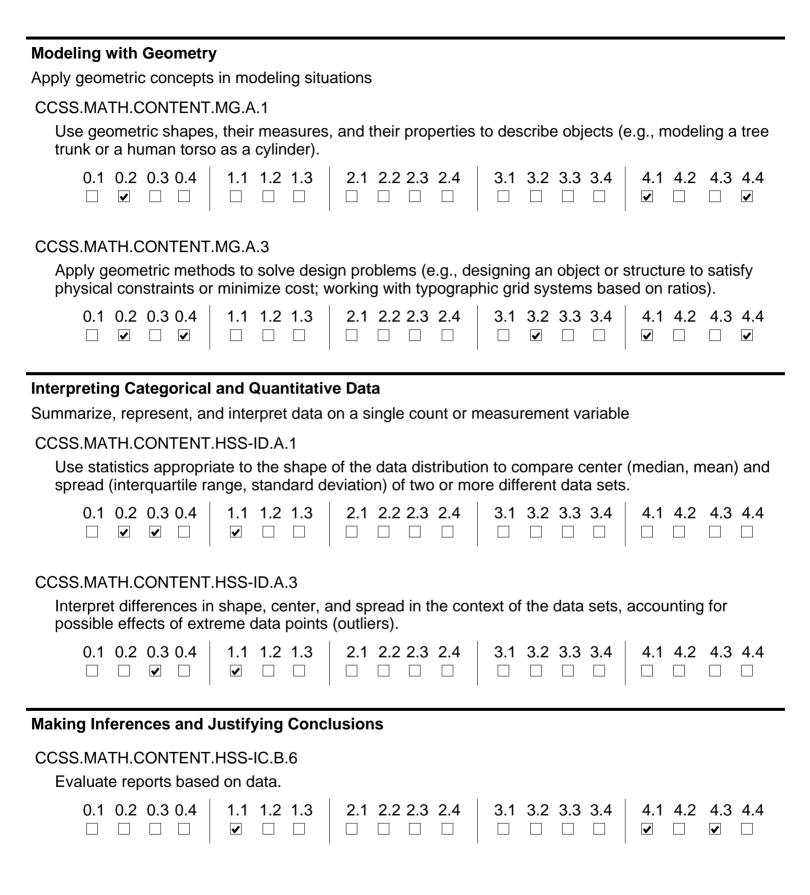
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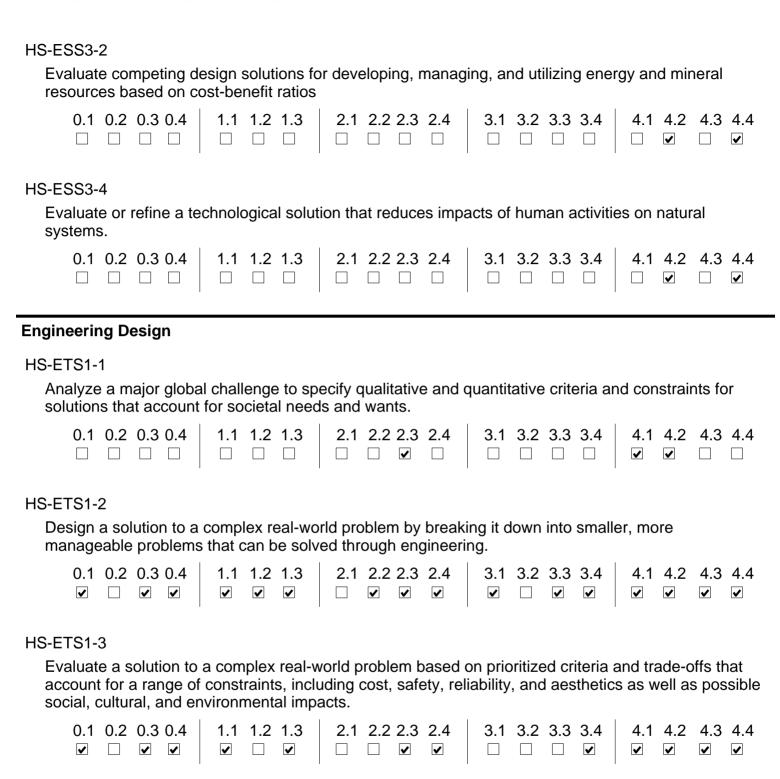


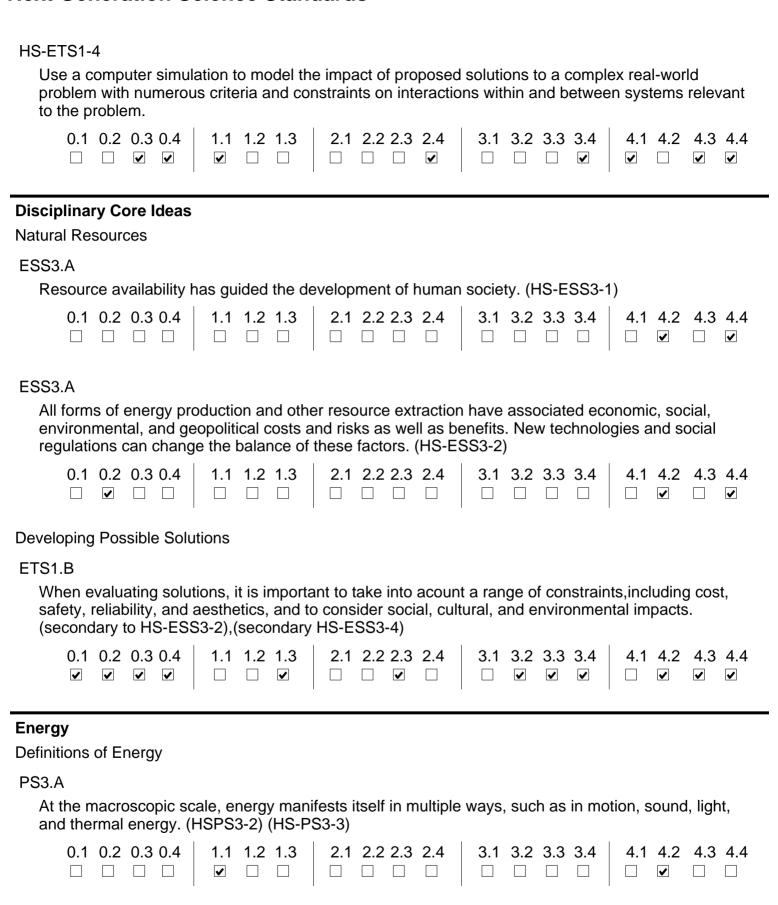
Using Probability to Make Decisions

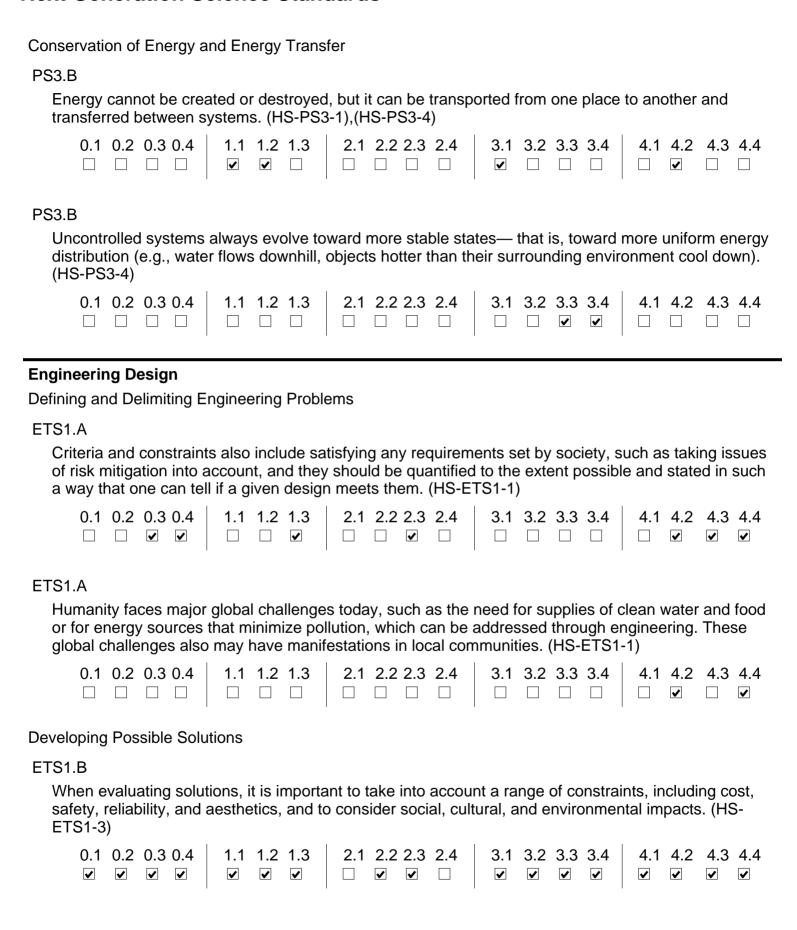
Use probability to evaluate outcomes of decisions CCSS.MATH.CONTENT.MD.B.7 (+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game). 0.1 0.2 0.3 0.4 | 1.1 1.2 1.3 | 2.1 2.2 2.3 2.4 | 3.1 3.2 3.3 3.4 | 4.1 4.2 4.3 4.4

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Motion and Stability: Forces and Interactions														
HS-PS2-1														
Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.														
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HS-PS2-2														
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. O.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4														
Energy														
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HS-PS3-3														
Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.														
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Earth and Human Activity														
HS-ESS3-1														
Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.														
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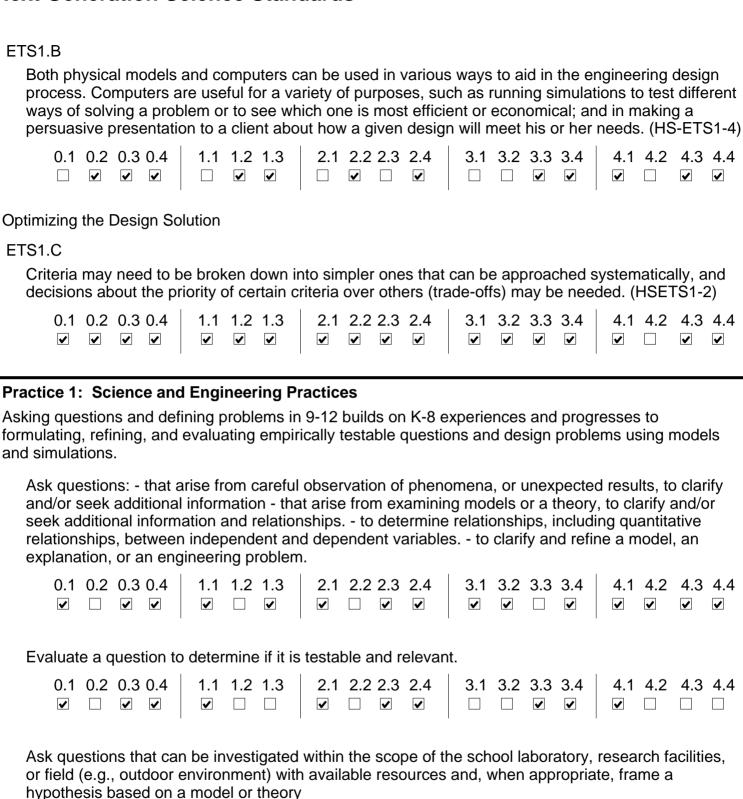




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bas	Plan an investigation or test a design individually and collaboratively to produce data to serve as the basis for evidence as part of building and revising models, supporting explanations for phenomena, or testing solutions to problems. O.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 V V V V V V V V V V																						
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	Analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution. 0.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 □ • • • □ □ □ □ □ □ □ □ □ □ □ □ □ □ □																					
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	Apply techniques of algebra and functions to represent and solve scientific and engineering problems. O.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 OOD OF THE PROPERTY OF THE PROPE																					
	Apply ratios, rates, percentages, and unit conversions in the context of complicated measurement problems involving quantities with derived or compound units (such as mg/mL, kg/m3, acre-feet, etc.) 0.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4																					
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designing	Practice 6 Constructing Explanations and Designing Solutions Constructing explanations and lesigning solutions in 9-12 builds on K-8 experiences and progresses to explanations and lesigns that are supported by multiple and independent student-generated so Make a quantitative and/or qualitative claim regarding the relationship between dependent and															d						
	designing solutions in 9-12 builds on K-8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated so																					
0.1	lesigning solutions in 9-12 builds on K-8 experiences and progresses to explanations and lesigns that are supported by multiple and independent student-generated so Make a quantitative and/or qualitative claim regarding the relationship between dependent and																					
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0.1 •	0.2	0.3 •	0.4		.1 •	1.2	1.3		2.1 •	2.2	2.3	2.4		3.1 ✓	3.2	3.3 ✓	3.4		4.1 ✓	4.2 ✓	4.3	4.4 •

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	0.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.1 3.2 3.3 3.4 4.1 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.1 3.2 3.3 3.4 4.1 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.1 3.2 3.3 3.4 4.1 4.1 4.2 4.3 4.4 2 2.1 2.2 2.3 2.4 3.1 3.1 3.2 3.3 3.4 4.1 4.1 4.2 4.3 4.4 4.1 4.2 4.3 4.1 4.1 4.2 4.3 4.1 4.1 4.2 4.3 4.1 4.1 4.2 4.3 4.1 4.1 4.2 4.3 4.1 4.1 4.2 4.3 4.1 4.1 4.2 4.3 4.1 4.1 4.2 4.3 4.1 4.1 4.2 4.3 4.1 4.1 4.1 4.2 4.3 4.1 4.1 4.2 4.3 4.1 4.1 4.1 4.2 4.3 4.1 4.1 4.1 4.2 4.3 4.1 4.1 4.1 4.2 4.3 4.1 4.1 4.1 4.1 4.1 4.2 4.3 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1																						
builds	on l	<-8 e	xpe	rien	ces	and	d pro	ogres	sse	s to	usi	ng a	ppro	pria	ate a	nd s	suffi	cient					2
	Compare and evaluate competing arguments or design solutions in light of currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and ethical issues 0.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4																						
	explanations, new evidence, limitations (e.g., trade-offs), constraints, and ethical issues 0.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4																						
	0.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 Evaluate the claims, evidence, and/or reasoning behind currently accepted explanations or solutions to determine the merits of arguments.																						
(0.1	0.2	0.3	0.4		1.1	1.2	1.3		2.1	2.2 □	2.3 ▼	2.4		3.1 ☑	3.2	3.3	3.4		4.1	4.2 ✓	4.3	4.4
evid	enc	e, ch	alle	ngin	g id	eas	and	conc	lusi	ons	, res	pond	tific a ding tl conti	hou	ıghtf	ully t							nd
	0.1	0.2	0.3	0.4		1.1	1.2	1.3 •		2.1	2.2 □	2.3	2.4		3.1	3.2	3.3	3.4		4.1 ✓	4.2 ✓	4.3	4.4
		ct, u		and/d	or p	rese	ent ai	n ora	l ar	nd w	ritter	n arg	umer	nt o	r co	unter	-arg	umer	nts k	oase	ed or	data	a
1	0.1 ✓	0.2	0.3	0.4		1.1	1.2	1.3 ✓		2.1	2.2	2.3 ✓	2.4		3.1	3.2	3.3	3.4		4.1	4.2 ✓	4.3 □	4.4 ✓
													e nat -gene					effe	ctive	enes	ss of	a de	sign
1	0.1 •	0.2	0.3	0.4		1.1	1.2 ✓	1.3 •		2.1	2.2	2.3	2.4		3.1	3.2	3.3 •	3.4		4.1 ✓	4.2 ✓	4.3	4.4 ✓

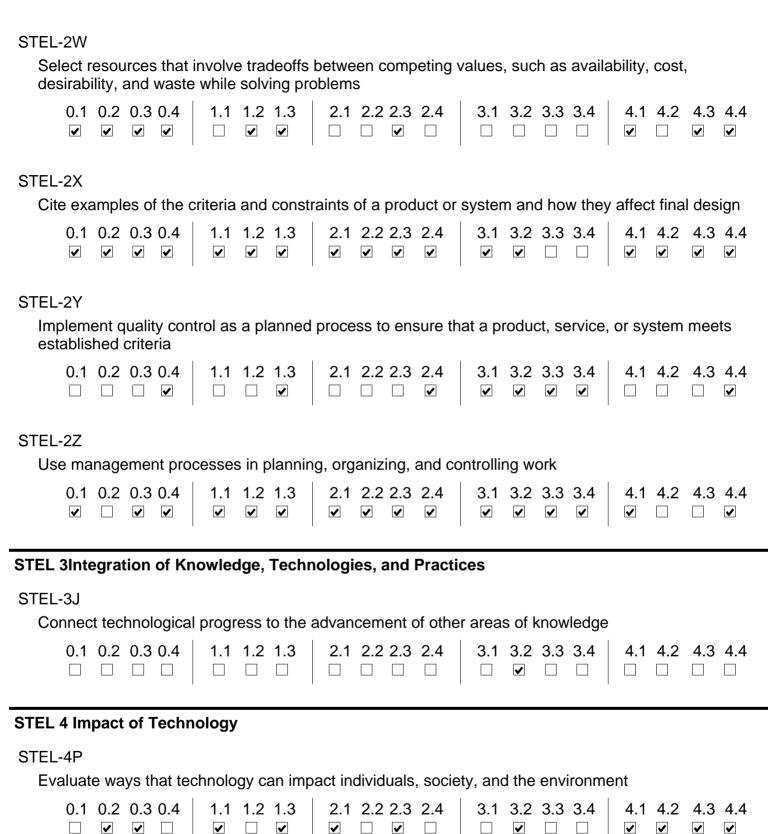
empirical evidence, and/or logical arguments regarding relevant factors (e.g. economic, societal, environmental, ethical considerations). 0.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 2 2 2 2 3 2 4 3 1 3 2 3 3 3 4 4 1 4 2 4 3 4 4 1 4 4 5 4 5 4 5 4 5 4 5 4 5 4 5 4 5														s (e.ç	g. ec	onc	omic	, soci	etal,	
	ng inf	ormati	ion ii	n 9-1	2 bui	ilds	on	K-8	exp	erien	ce				•			•		
Compare, integrate and evaluate sources of information presented in different media or formats (e.g. visually, quantitatively) as well as in words in order to address a scientific question or solve a problem.															e.g.,					
problem. 0.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4																				
	devel	opmen	t and	I the	desig	gn a	nd p	perfo	rma	nce c	of a	prop	ose							
0.1 0.: □		0.4		1.2	1.3 •		2.1		2.3	2.4			3.2		3.4		4.1 ✓	4.2	4.3	4.4 ✓
Crosscutting	Conc	epts																		
Crosscutting Patterns – Ob relationships a	serve	d patte					e org	ganiz	zatio	n and	l cla	assif	icatio	on ar	nd pr	om	pt q	uesti	ons a	bout
Patterns – Ob	served and ca f perfo	d patte uses u rmanc	nder	lying	them	۱.														
Patterns – Ob relationships a	served and ca f perfo e syst	d patter uses u rmance em.	nder e of c	lying desig	them	n. syst	ems	s car	n be	analy	ze(d and	d inte	erpre	eted 1	to r	een		r and	l
Patterns – Ob relationships a Patterns of improve th	served and ca f perfo e syst 2 0.3	d patteruses urmanceem.	nder e of c 1.1	lying desig 1.2	themned s	n. syst	ems 2.1 √	2.2	n be 2.3 ☑	analy 2.4 □	ze(d and 3.1 □	d inte 3.2 □	erpre	eted 1	to r	een	ginee	r and	l
Patterns – Ob relationships a Patterns of improve th	served and ca f perfo e syst 2 0.3 ————————————————————————————————————	d patteruses un rmanceem. 0.4	nderindering of the state of th	lying desig 1.2	themned s 1.3 nee nee 1.3	n. syst	ems 2.1 ✓	2.2	n be 2.3 ✓ tify s	analy 2.4 □	zec	d and	3.2	3.3	3.4	to re	eenç 4.1	ginee	r and 4.3 □	I 4.4 □
Patterns – Obrelationships a Patterns of improve th 0.1 0.5 Mathematic	served and cand cand cand cand cand cand cand	d patteruses un manceem. 0.4 Dresent	nderindering 1.1 tation 1.1 1.1	lying desig 1.2 ns are 1.2	themned s 1.3 e nee 1.3	systensis (ems 2.1 ✓ 1 to i	ident	2.3 ✓ tify s 2.3	analy 2.4 □ ome	zec	d and	3.2	3.3	3.4	to re	een@4.1	ginee 4.2 □ 4.2	r and 4.3 □	I 4.4 □

Cause and Effect: Mechanism and Prediction – Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.

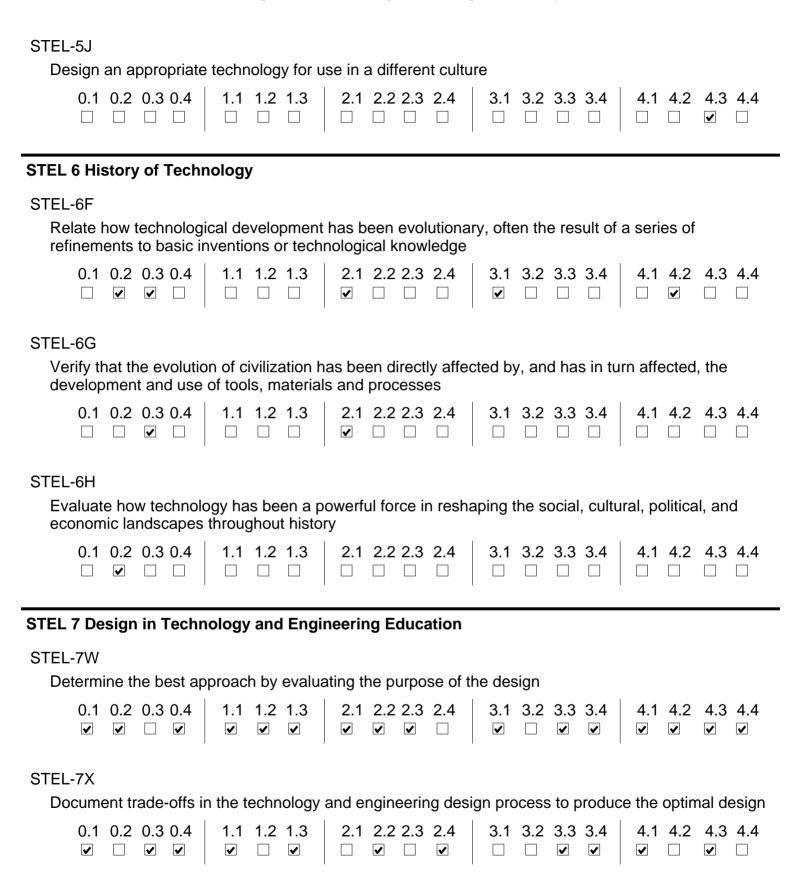
	mpiric pecific					•	ed to	diffe	eren	ntiate	e bet	weeı	n cau	ıse	and	corre	elatio	on an	d ma	ke	claiı	ns al	bout
	0.1	0.2	0.3	0.4		1.1 •	1.2	1.3		2.1	2.2	2.3	2.4		3.1	3.2	3.3	3.4	4		4.2 ✓	4.3	4.4
	Cause a lesigne						•						•				•						m.
	0.1	0.2	0.3	0.4		1.1	1.2	1.3		2.1		2.3	2.4		3.1	3.2	3.3	3.4	4		4.2	4.3 ✓	4.4
5	System	s car	n be	desi	igne	ed to	cau	se a	des	sired	effe	ect.											
	0.1	0.2	0.3	0.4		1.1 ✓	1.2	1.3 ✓		2.1 •	2.2 ▼		2.4		3.1 ✓	3.2 ✓	3.3 ✓	3.4 ✓	4		4.2 ✓	4.3 ✓	4.4 •
C	Change	s in	syst	ems	ma	ıy ha	ıve v	ariou	IS C	ause	es th	at m	ay n	ot h	ave	equa	al eff	ects					
	0.1	0.2	0.3	0.4		1.1 •	1.2	1.3		2.1	2.2 □	2.3	2.4		3.1 ✓	3.2	3.3	3.4	4	. 1	4.2 ✓	4.3	4.4 □
	ems ar els car																		r con	np	onen	ts;	
8	System	s car	n be	desi	igne	ed to	do	speci	ific	task	S.												
	0.1	0.2	0.3	0.4		1.1 •	1.2 ✓	1.3 ✓		2.1 ✓	2.2 ✓	2.3 ✓	2.4 □		3.1 ✓	3.2 ✓	3.3	3.4 ✓	4		4.2 ✓	4.3 ✓	4.4 ✓
ii	Models nteracti lifferen	ons-	—inc																				
	0.1	0.2 ✓	0.3			1.1 •		1.3 ✓				2.3	2.4		3.1		3.3	3.4	4		4.2	4.3	4.4 •
	Models and relia																		ave l	imi	ited p	orecis	sion
	0.1	0.2 ▼	0.3 •			1.1 •	1.2	1.3 ✓		2.1	2.2	2.3	2.4		3.1		3.3 ✓	3.4	4		4.2	4.3	4.4 ✓

Energy and Matter: Flows, Cycles, and Conservation – Tracking energy and matter flows, into, out of, and within systems helps one understand their system's behavior														
Energy cannot be created or destroyed—only moves between one place and another place, betwee objects and/or fields, or between systems	n													
0.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 4.1 4.2 4.3 4.1 4.2	4													
Structure and Function – The way an object is shaped or structured determines many of its properties and functions														
Investigating or designing new systems or structures requires a detailed examination of the properties of different materials, the structures of different components, and connections of components to reveal its function and/or solve a problem. O.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 Output Description:														
The functions and properties of natural and designed objects and systems can be inferred from their overall structure, the way their components are shaped and used, and the molecular substructures of its various materials.														
0.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 4.1 4.2 4.3 4.1 4.2 4.3 4.1 4.2	4													
Stability and Change – For both designed and natural systems, conditions that affect stability and factor that control rates of change are critical elements to consider and understand	rs													
Much of science deals with constructing explanations of how things change and how they remain stable.														
0.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4	4													
Systems can be designed for greater or lesser stability.														
0.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4	4													

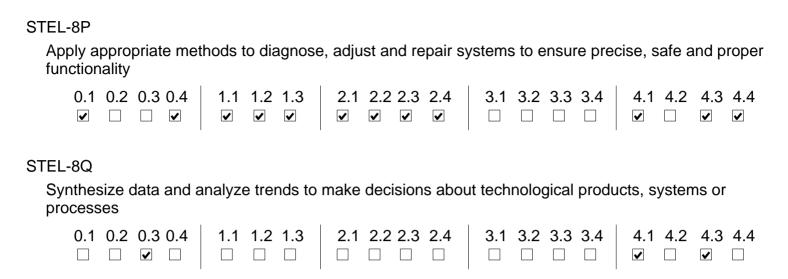
STEL 1 Nature and Characteristics of Technology and Engineering STEL-1N Explain how the world around them guides technological development and engineering design. 2.1 2.2 2.3 2.4 0.1 0.2 0.3 0.4 1.1 1.2 1.3 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 **✓ ✓ ✓ ✓** ✓ ✓ **✓** STEL-1Q Conduct research to inform intentional inventions and innovations that address specific needs and wants 0.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 **✓** ✓ **✓ ✓** ✓ **✓** STEL-1R Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system 0.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 **✓ ✓ ✓ V** ✓ **✓ ✓ ✓ ✓ ✓ ✓** STEL 2 Core Concepts of Technology and Engineering STEL-2T Demonstrate the use of conceptual, graphical, virtual, mathematical, and physical modeling to identify conflicting considerations before the entire system is developed and to aid in design decision making 0.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4 **✓ ✓ y ✓** ✓ **✓** ✓ **✓ ✓ ✓** ✓ ✓ ✓ **✓** STEL-2U Diagnose a flawed system embedded within a larger technological, social, or environmental system 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 0.1 0.2 0.3 0.4 1.1 1.2 1.3 4.1 4.2 4.3 4.4 **✓** ✓ STEL-2V Analyze the stability of a technological system and how it is influenced by all of the components in the system, especially those in the feedback loop 0.1 0.2 0.3 0.4 1.1 1.2 1.3 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4 4.1 4.2 4.3 4.4



STEL-4Q Critiqu	e whe	ether	exis	ting	g and	d pro	pose	ed t	echn	olog	jies ι	use re	eso	urce	s su:	stain	ably					
0.1 □	0.2 ✓	0.3	0.4		1.1	1.2	1.3		2.1	2.2	2.3	2.4		3.1	3.2	3.3	3.4		4.1	4.2 ✓	4.3 □	4.4
STEL-4R																						
Assess	a te	chno	logy	tha	t mi	nimi	zes re	eso	urce	use	and	l resu	ıltin	ig wa	iste t	o ac	hiev	e a	goa			
0.1	Develop a solution to a technological problem that has the least negative environmental and social																					
STEL-4S	STEL-4S																					
	STEL-4S																					
0.1 □	0.2	0.3	0.4 ✓		1.1	1.2	1.3		2.1	2.2 □	2.3 •	2.4 □		3.1	3.2	3.3	3.4		4.1	4.2 ✓	4.3	4.4
STEL-4T																						
Evalua	te ho	w te	chno	log	ies a	alter	huma	an h	nealt	h an	d ca	pabili	ities	S								
0.1	0.2	0.3	0.4 ✓		1.1	1.2	1.3 ✓		2.1	2.2	2.3	2.4		3.1	3.2 ✓	3.3	3.4		4.1 ✓	4.2	4.3 ✓	4.4
STEL 5 In	fluen	ce c	f So	cie	ty o	n Te	chno	olo	gica	l De	velo	pmeı	nt									
STEL-5H Evalua	te a t	echr	nolog	jica	l inn	ovati	on th	nat :	aros	e fro	m a	spec	ific	soci	ety's	unic	jue n	need	d or	want		
0.1	0.2 •	0.3	0.4		1.1 •	1.2	1.3 ✓			2.2		2.4		3.1	3.2	3.3	3.4		4.1	4.2 ✓	4.3 ✓	4.4 •
STEL-5I Evalua	te a t	echr	olog	iica	l inn	ovati	on th	nat i	was	met	with	socie	atal	l resi	stanı	ce im	nnac	tino	ı ite i	deve	lonm	ent
	0.2		_			1.2		.at		2.2			ا ا	3.1			-				-	
U. I	U.Z	U.S	U.4			_			∠. I □		∠.3 ✓	_ _		J. I	J.Z	J.S	J.4		-+ . I	4.2 □	4.3 □	4



STEL-7Y		J : .			ماراما		ادماد			. 1:4:	:41	L:	:4		ممام		-:				
Optimiz	ze a c	gesig	in by	ad	ares	ssing	aesi	rec	ı qua	uities	S WITI	nın cr	itei	rıa ar	na cc	nstr	aints				
0.1 ✓	0.2 ✓	0.3 ✓	0.4 ✓		1.1 ✓	1.2	1.3 ✓		2.1	2.2 ✓	2.3	2.4 □		3.1 ✓	3.2 ✓	3.3 ✓	3.4 ✓	4.1 ✓	4.2 ✓	4.3 ✓	4.4 ✓
STEL-7Z																					
Apply p	rincip	oles	of hu	ıma	an-ce	enter	ed de	esi	gn												
0.1	0.2	0.3	0.4 •		1.1	1.2 ✓	1.3 ✓		2.1	2.2	2.3 ✓	2.4		3.1 ✓	3.2	3.3	3.4	4.1	4.2	4.3 ✓	4.4 •
STEL-7A	7																				
Illustra		ncipl	es, e	len	nent	s and	d fact	ors	of c	desig	jn										
0.1	0.2	0.3	0.4		1.1	1.2	1.3		2.1	2.2	2.3	2.4		3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4
•	✓	✓	✓																	✓	
STEL-7BI		L - L			. 11- 1 -		4: 4														
Implem			•	oss				:O 2		•			ı				1				
0.1 ✓	0.2	0.3	0.4 ✓		1.1 ☑	1.2	1.3 ✓		2.1 ✓	2.2 ✓	2.3 ✓	2.4 ✓		3.1	3.2 ✓	3.3 ✓	3.4 ✓	4.1 ✓	4.2 ✓	4.3 ✓	4.4 ✓
STEL-7C	2																				
Apply a	a broa	ad ra	nge (of c	desig	gn sk	ills to	th	eir d	lesig	n pro	ocess	;								
0.1	0.2	0.3	0.4		1.1	1.2	1.3		2.1	2.2	2.3	2.4		3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4
		✓	✓		✓	✓	✓			✓	✓	✓		•	✓			✓	✓	✓	✓
STEL-7DI)																				
Apply a		ad ra	nge (of r	naki	ng s	kills t	o tl	neir (desig	gn pr	oces	s								
0.1	0.2	0.3	0.4		1.1	1.2	1.3		2.1	2.2	2.3	2.4		3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4
			✓		✓	✓	✓			✓	✓	✓		✓	✓		•	✓	✓	✓	
STEL 8 A	 plyi	ng, I	Main	taiı	ning	, and	d Ass	ses	sing	ј Те	chno	ologic	cal	Pro	duct	s an	d Sys	tems			
STEL-8O																					
Develo	pad	evice	e or s	sys	tem	for th	ne ma	ark	etpla	ace											
	0.2					1.2			•		2.3	2.4		3.1	3.2	3.3	3.4	4.1	4.2	4.3	4.4
			✓				✓													✓	



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