Reporting Category	Explaining Solutions, Reasoning, and Communicating
Content Connector	**3-5.CD.2.a.1:** Understand the pervasiveness of computers and computing in daily life (e.g., voicemail, downloading videos and audio files, microwave ovens, thermostats, wireless Internet, mobile computing devices, GPS systems).
IAS Standard	**3-5.CD.2**: Understand the pervasiveness of computers and computing in daily life (e.g., voicemail, downloading videos and audio files, microwave ovens, thermostats, wireless Internet, mobile computing devices, GPS systems).
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Limit technology to: computer, microwave, downloading video/audio files.
Allowable Stimulus Material	N/A
Context	Required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	Wi-Fi, cell phone, email, voicemail, download, upload, computing, computer, microwave oven, file (digital), audio, video, pervasive
Cognitive Complexity	2

Evidence Statements	
Evidence Statements	**Tier 1** Student can identify a computer from a visual cue.
	Tier 2 Student can select and match the technology to the device.
	Tier 3 Student can identify and/or match the technology to its everyday use.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

| Sample Item	
Tier 3	Which technology would be used to complete a research project? A. microwave B. game console C. **DVD about animals**

Reporting Category	Analyzing, Interpreting, and Computational Thinking
Content Connector	**3-5.CD.3.a.1:** Apply troubleshooting strategies for identifying simple hardware and software problems that may occur during use.
IAS Standard	**3-5.CD.3:** Apply troubleshooting strategies for identifying simple hardware and software problems that may occur during use.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Limit to desktops, laptops, phones, tablets.
Allowable Stimulus Material	graphics of applicable accessories
Context	No context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	mouse, computer monitor, keyboard, printer, charger, stylus, touch screens, desktop, laptop, phones, tablets, troubleshooting, hardware, software
Cognitive Complexity	3

Evidence Statements	
Evidence Statements	**Tier 1** Student will identify a piece of hardware.
	Tier 2 Students identify a problem with power sources or internet connection sources.
	Tier 3 Student will identify solutions to the problem in a given scenario.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

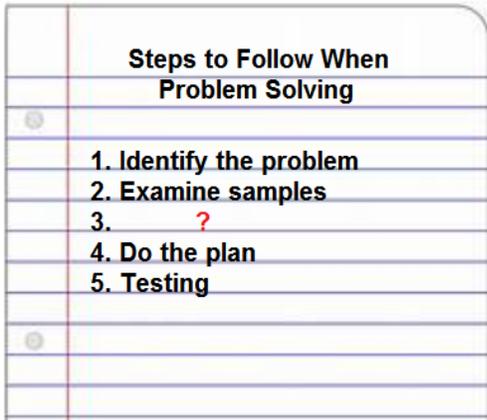|	Sample Item

Tier 2	Here is a cell phone. The cell phone will not work.
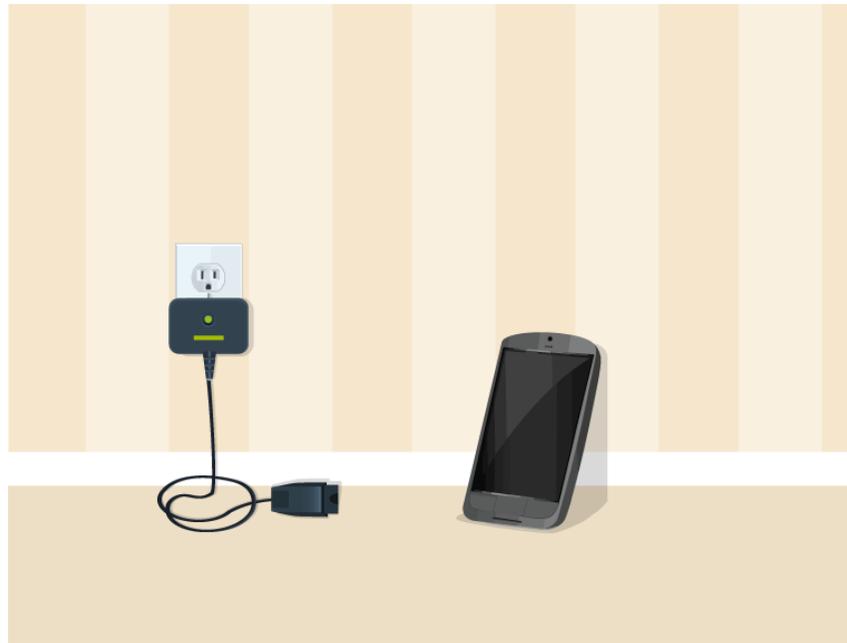	
	What is a solution to this problem?
	
	   A. place the plug into the wall
	
	   B. **plug the charger into the cell phone**
	
	   C. remove the charger from the cell phone

Reporting Category	Questioning and Modeling
Content Connector	**3-5.DI.1.a.1:** Understand and use the basic steps in algorithmic problem solving (e.g., problem statement and exploration, examination of sample instances, design, implementation, and testing).
IAS Standard	**3-5.DI.1:** Understand and use the basic steps in algorithmic problem solving (e.g., problem statement and exploration, examination of sample instances, design, implementation, and testing).
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	No mathematical algorithms.
	Limit algorithms to two or three steps.
Allowable Stimulus Material	graphics; instructions; directions
Context	No context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	problem solving, exploration, algorithm, design, implementation, testing (design/program/algorithm)
Cognitive Complexity	3
Evidence Statements	
Evidence Statements	**Tier 1** Student can recognize a missing step from a list or series.
	Tier 2 Student can put steps of a list or series in order.
	Tier 3 Student can identify the outcome of a series of events.

Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 2	Here are some of the steps in problem solving. Which problem-solving step is missing in the list? A. **Design the plan** B. Solve the problem C. Compare answers

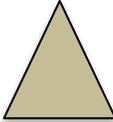| Reporting Category	Questioning and Modeling
Content Connector	**3-5.DI.2.a.1:** Develop a simple understanding of an algorithm (e.g., search, sequence of events, or sorting) using computer-free exercises.
IAS Standard	**3-5.DI.2:** Develop a simple understanding of an algorithm (e.g., search, sequence of events, or sorting) using computer-free exercises.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Limit to scenarios involving everyday experiences (e.g., simple objects).
Allowable Stimulus Material	graphics; instructions; directions
Context	No context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	sorting, sequence, directions, instructions, algorithm
Cognitive Complexity	3

Evidence Statements		
Evidence Statements	**Tier 1**	
	Student can identify which objects have been sorted (e.g., size, shape, etc.).	
	Student can recognize missing steps from a simple algorithm.	
	Tier 2	
	Student can classify objects by a single attribute.	
	Student can put steps of a simple algorithm in order.	
	Tier 3	
	Student can classify objects by more than one attribute.	
	Student can identify the outcome of series of event.	
Accessibility and Accommodation Considerations		
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.	
Linguistic Complexity	To be determined after IDOE review	
Reference Tools	N/A	

Sample Item	
Tier 2	Lisa sorts shapes. She looks for shapes with four sides. Which shape should Lisa select? A. B. C. A. **shape A** B. shape B C. shape C

Reporting Category	Explaining Solutions, Reasoning, and Communicating
Content Connector	**3-5.DI.5.a.1:** Understand the connections between computer science and other fields.
IAS Standard	**3-5.DI.5:** Understand the connections between computer science and other fields.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Limit technology to: computer, downloading video/audio files, online games, communication.
	Provide a definition of computer science with examples.
Allowable Stimulus Material	N/A
Context	Requires stimulus or scenario
Recommended Response Mechanisms	Multiple Choice (MC)
	Multiple Select (MS)
	Table Match (TM)
Construct-Relevant Vocabulary	profession, careers, jobs, technology, connection (in relation to tech and job), computer science
Cognitive Complexity	2

Evidence Statements		
Evidence Statements	**Tier 1**	
	Student can identify the use of technology in a specific profession.	
	Tier 2	
	Student can identify multiple examples of computer science technology.	
	Tier 3	
	Student can select how a profession relies on technology.	
Accessibility and Accommodation Considerations		
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.	
Linguistic Complexity	To be determined after IDOE review	
Reference Tools	N/A	

Sample Item	
Tier 3	Which physician is using technology? A. sewing up a cut (audio: while sewing up a cut) **B.** taking an x-ray **(audio: while taking an x-ray)** C. talking with medical students (audio: while talking with medical students)

Reporting Category	Questioning and Modeling
Content Connector	**3-5.E.1.a.1:** Identify a simple problem with the design of an object that reflects a need or a want. Include criteria for success and constraints on materials, time, or cost.
IAS Standard	**3-5.E.1:** Identify a simple problem with the design of an object that reflects a need or a want. Include criteria for success and constraints on materials, time, or cost.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Limit to two variables.
	Use simple machine as the model or prototype.
	Limit to one failure point per item.
	Identify variables.
Allowable Stimulus Material	graphics; tables
Context	Give a common everyday scenario (e.g., a car needs to cross a river, what will it require).
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	design, object, success, constraints, criteria, problem, failure
Cognitive Complexity	5

Evidence Statements	
Evidence Statements	**Tier 1** Student can identify a missing component (e.g., car without tires, empty gas tank).
	Tier 2 Student can identify the correct amount of time needed. Student can identify missing components.
	Tier 3 Student can identify the function of a component. Student can determine whether they have enough money or time to meet the criteria.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	Calculators

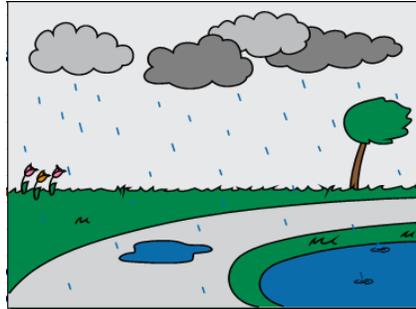| Sample Item	
Tier 3	Tony needs to purchase foam balls for his moon project. He has $10.00. Each foam ball costs $2.00. What is the most foam balls he can purchase? A. 3 **B. 5** C. 7

Updated: 07/19

Reporting Category	Analyzing, Interpreting, and Computational Thinking
Content Connector	**3-5.E.2.a.1:** Given multiple reasonable solutions to a problem, determine which solution best meets the criteria and constraints of the problem.
IAS Standard	**3-5.E.2:** Construct and compare multiple plausible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
Allowable Stimulus Material	graphics; tables; graphs; diagrams
Context	No context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	solution/best solution, possible outcomes, reasonable, problem, criteria, constraints
Cognitive Complexity	5

Evidence Statements	
Evidence Statements	**Tier 1** Student can identify the best solution of a problem with three possible options.
	Tier 2 Student can identify the best solution of a problem with three possible options.
	Tier 3 Student can identify the two best solutions to a problem.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

	Sample Item
Tier 1	It is raining outside. **Rainy Day** Which option would best keep the person dry? A. a walking cane B. **an umbrella** C. a plastic cup

Updated: 10/2020

Reporting Category	Investigating
Content Connector	**3-5.E.3.a.1:** Consider results of an investigation, including failure points, and determine which variables affected the outcome.
IAS Standard	**3-5.E.3:** Construct and perform fair investigations in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Limit to two variables.
	Use simple machine as the model or prototype.
	Limit to one failure point per item.
	Identify variables.
Allowable Stimulus Material	N/A
Context	Requires a scenario that gives context, including easily identifiable variables.
Recommended Response Mechanisms	Multiple Choice (MC)
	Multiple Select (MS)
	Table Match (TM)
Construct-Relevant Vocabulary	results, impact, failure point, simple machines, variables, solution, investigations, model, prototype, engineering, cause and effect; outcome
Cognitive Complexity	4

Evidence Statements		
Evidence Statements	**Tier 1**	
	Student will select the result of the investigation.	
	Tier 2	
	Student will select the failure point of the investigation.	
	Tier 3	
	Student will select which variable impacted the investigation.	
Accessibility and Accommodation Considerations		
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.	
Linguistic Complexity	To be determined after IDOE review	
Reference Tools	N/A	

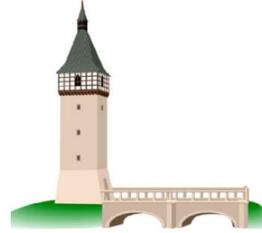| Sample Item	
Tier 2	Joe needs to water his garden. The water sprinkler will not work. What is **most likely** the problem? A. The hose is too long. B. The sprinkler is too tall. **C. The faucet needs to be turned on.**

Reporting Category	Investigating
Content Connector	**3-5.E.3.a.2:** Based on the results of investigations, determine whether aspect(s) of a model or prototype have or can be improved.
IAS Standard	**3-5.E.3:** Construct and perform fair investigations in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem. Any necessary stimulus should be written with clear language following the rules for "plain language." Any necessary stimulus text complexity should increase as the tiers increase. Tier 1 items should contain picture support in answer choices when possible to aid comprehension. Tier 2 items can contain picture support in answer choices. Tier 3 items should not contain picture support unless necessary. Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill. Tier 2 distractors should be possible misunderstandings of the concept or skill. Limit to two variables. Use simple machine as the model or prototype. Limit to one failure point per item. Identify variables. Provide results of the investigation.
Allowable Stimulus Material	N/A
Context	Required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	results, impact, failure point, simple machines, variables, solution, investigations, model, prototype, engineering, cause and effect, improvement
Cognitive Complexity	4

Evidence Statements		
Evidence Statements	**Tier 1**	
	Student can select which model could be improved.	
	Tier 2	
	Student can select one improvement to the model.	
	Tier 3	
	Student can select from multiple improvements to the model.	
Accessibility and Accommodation Considerations		
Stimulus Graphic limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.	
Linguistic Complexity	To be determined after IDOE review	
Reference Tools	N/A	

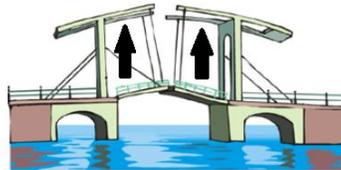| Sample Item	
Tier 2	The picture shows the bridge model that Michelle built. How can Michelle can improve her model for river transportation? A. toll booth (audio: Add a toll booth so people pay money to use the road.) **B.** draw bridge **(audio: Add a draw bridge to raise up when large boats are on the river.)** C. cover to bridge (audio: Add a cover to the bridge so the cars will stay dry during rainy weather.)

Reporting Category	Questioning and Modeling
Content Connector	**3-5.IC.1.a.1:** Discuss basic issues related to responsible use of technology and information, and the consequences of inappropriate use.
IAS Standard	**3-5.IC.1:** Discuss basic issues related to responsible use of technology and information, and the consequences of inappropriate use.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
Allowable Stimulus Material	graphics; instructions; directions
Context	No context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	appropriate, inappropriate, technology, information, consequences
Cognitive Complexity	2

Evidence Statements	
Evidence Statements	**Tier 1** Student can identify appropriate physical behaviors with technology.
	Tier 2 Student can identify appropriate times to use technology.
	Tier 3 Student can identify appropriate online behaviors (e.g., not sharing passwords, not touching other's keyboards, etc.).
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

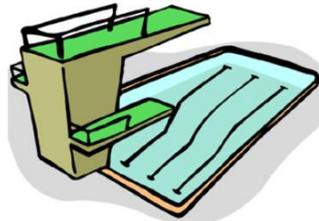|	Sample Item
Tier 2	Bob goes to the pool. He has an electronic tablet with him. electronic tablet When should Bob use his device? A. swimming pool (audio: while swimming in the pool) B. diving board (audio: while standing on the diving board) C. lounge chair **(audio: while sitting in the lounge chair)**

Reporting Category	Analyzing, Interpreting, and Computational Thinking
Content Connector	**3-5.IC.2.a.1:** Identify the impact of technology (e.g., social networking, cyber bullying, mobile computing and communication, web technologies, cyber security, and virtualization) on personal life and society.
IAS Standard	**3-5.IC.2:** Identify the impact of technology (e.g., social networking, cyber bullying, mobile computing and communication, web technologies, cyber security, and virtualization) on personal life and society.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem. Any necessary stimulus should be written with clear language following the rules for "plain language." Any necessary stimulus text complexity should increase as the tiers increase. Tier 1 items should contain picture support in answer choices when possible to aid comprehension. Tier 2 items can contain picture support in answer choices. Tier 3 items should not contain picture support unless necessary. Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill. Tier 2 distractors should be possible misunderstandings of the concept or skill.
Allowable Stimulus Material	graphics; diagrams; tables; graphs
Context	No context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	technology, simplify, function, device, multiple, society, impact, mobile computing, social networking, cyber bullying, web technology, cyber security, virtualization (virtual reality)
Cognitive Complexity	2

Evidence Statements	
Evidence Statements	**Tier 1** Student can identify a form of technology used on a daily basis (e.g., computer, tablet, phone, etc.).
	Tier 2 Student can match a technology device with its function.
	Tier 3 Student can identify functions for a given device. Student can identify the form of technology used to simplify a task.

Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 2	How can a cell phone be used? A. bake a cake B. water a plant **C. find a location**

Updated: 07/19

Reporting Category	Explaining Solutions, Reasoning, and Communicating
Content Connector	**3-5.IC.3.a.1:** Evaluate the accuracy, relevance, appropriateness, comprehensiveness, and biases that occur in electronic information sources.
IAS Standard	**3-5.IC.3***:* Evaluate the accuracy, relevance, appropriateness, comprehensiveness, and biases that occur in electronic information sources.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Do not address bias.
	Give examples of electronic information sources.
Allowable Stimulus Material	N/A
Context	Required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	accuracy (e.g., .org, .com, and .gov), online resources, electronic information, technology, appropriate, website, relevance, social media, web page, URL, sources, device, apps, comprehensive
Cognitive Complexity	4

Evidence Statements	
Evidence Statements	**Tier 1** Student can identify when to use technology.
	Tier 2 Student can identify where to find electronic information sources.
	Tier 3 Student can select an appropriate online resource to find electronic information.

Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 3	Students want to research to compare objects that revolve around our sun. Which the **best** source for the students to use? A. **A NASA website on planets** B. A poster about types of rockets C. An email from a science student

Reporting Category	Explaining Solutions, Reasoning, and Communicating
Content Connector	**3-5.IC.4.a.1:** Understand ethical issues that relate to computers and networks (e.g., equity of access, security, privacy, copyright, plagiarism and intellectual property).
IAS Standard	**3-5.IC.4:** Understand ethical issues that relate to computers and networks (e.g., equity of access, security, privacy, copyright, and intellectual property).
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem. Any necessary stimulus should be written with clear language following the rules for "plain language." Any necessary stimulus text complexity should increase as the tiers increase. Tier 1 items should contain picture support in answer choices when possible to aid comprehension. Tier 2 items can contain picture support in answer choices. Tier 3 items should not contain picture support unless necessary. Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill. Tier 2 distractors should be possible misunderstandings of the concept or skill. Do not assess equity of access, copyright, or intellectual property. Focus on security and privacy. Do not use the words "ethics" or "ethical" in items.
Allowable Stimulus Material	N/A
Context	Required for Tier 2 and Tier 3
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	password, passphrase, appropriate, behaviors, access, device, technology, account (online), accountability, responsibility, digital citizenship, security (online), privacy (online)
Cognitive Complexity	3

Evidence Statements	
Evidence Statements	**Tier 1** Student will demonstrate behaviors that are appropriate for technology use.
	Tier 2 Student will demonstrate behaviors that are appropriate for technology use.
	Tier 3 Student will demonstrate behaviors that are appropriate for technology use.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 2	Which is an appropriate behavior when using technology at school? **A. Protecting your passwords** B. Changing settings on the monitor C. Eating over the computer keyboard

Reporting Category	Questioning and Modeling
Content Connector	**3-5.PA.1.a.1:** Use technology resources (e.g., calculators, data collection probes, mobile devices, videos, educational software, and web tools) for problem solving and self-directed learning.
IAS Standard	**3-5.PA.1:** Use technology resources (e.g., calculators, data collection probes, mobile devices, videos, educational software, and web tools) for problem-solving and self-directed learning, and general-purpose productivity tools and peripherals to support personal productivity, remediate skill deficits, facilitate learning, and individual/collaborative writing, communication, and publishing activities.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
Allowable Stimulus Material	graphics
Context	No context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	technology resources, calculators, devices, educational software, web tools, productivity (tools), peripherals (technology)
Cognitive Complexity	3

Evidence Statements	
Evidence Statements	**Tier 1** Student can identify a technology resource that can be used for problem solving.
	Tier 2 Student can identify which resource is most appropriate to use to solve a problem.
	Tier 3 Using the appropriate tool, student can obtain information to solve a problem.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

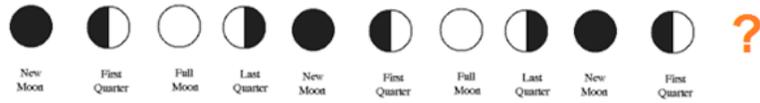| Sample Item	
Tier 1	Here is a problem. 29 + 86 = ? What technology could be used to solve this problem? A. metric ruler (audio: a metric ruler) B. calculator **(audio: a calculator)** C. thermometer (audio: a thermometer)

Reporting Category	Questioning and Modeling
Content Connector	**4.ESS.1.a.1:** Investigate how the moon appears to move through the sky and changes day to day, emphasizing the importance of how the moon impacts the Earth, the rising and setting times, and solar and lunar eclipses.
IAS Standard	**4.ESS.1:** Investigate how the moon appears to move through the sky and it changes day to day, emphasizing the importance of how the moon impacts the Earth, the rising and setting times, and solar and lunar eclipses.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
Allowable Stimulus Material	graphics; instructions; directions
Context	No context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	impact, eclipse, solar eclipse, lunar eclipse, moon, Earth, rising (objects in sky), setting (objects in sky)
Cognitive Complexity	3

Evidence Statements	
Evidence Statements	**Tier 1** Student can recognize the appearance of the moon phases. Student can identify the moon. Student can identify an eclipse.
	Tier 2 Student can recognize that the appearance of the moon changes in a pattern. Student can identify that, at certain times, the sun and moon can be in the sky at the same time.
	Tier 3 Given a set pattern, student can identify the missing phase of the moon. Student can recognize how the moon impacts Earth's tides.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 3	Here is the full cycle of the moon. ● ◑ ○ ◐ ● ◑ ○ ◐ ● ◑ **?** New Moon · First Quarter · Full Moon · Last Quarter · New Moon · First Quarter · Full Moon · Last Quarter · New Moon · First Quarter Which picture is missing from the cycle? ● New Moon A. (audio: New Moon) ○ Full Moon B. **(audio: Full Moon)** ◐ Last Quarter C. (audio: Last Quarter Moon)

Reporting Category	Analyzing, Interpreting, and Computational Thinking
Content Connector	**4.ESS.2.a.1:** Identify forms of energy and fuels that are derived from natural resources and describe how their uses affect the environment.
IAS Standard	**4.ESS.2:** Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Only assess renewable and nonrenewable resources.
Allowable Stimulus Material	graphics; table; graphs; diagrams
Context	No context required
Recommended Response Mechanisms	Multiple Choice (MC)
	Multiple Select (MS)
	Table Match (TM)
Construct-Relevant Vocabulary	renewable resource, nonrenewable resource, fuel, energy
Cognitive Complexity	3

Evidence Statements		
Evidence Statements	**Tier 1**	
	Student can identify a renewable resource.	
	Tier 2	
	Student can distinguish between the terms renewable and nonrenewable.	
	Tier 3	
	Given a list of resources, student can identify the type of resource (renewable/nonrenewable).	
Accessibility and Accommodation Considerations		
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.	
Linguistic Complexity	To be determined after IDOE review	
Reference Tools	N/A	

Sample Item	
Tier 3	Which of these resources is nonrenewable? A. sun B. tree C. **coal**

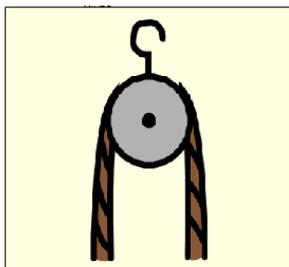| Reporting Category	Investigating
Content Connector	**4.ESS.3.a.1:** Describe how geological forces change the shape of the land suddenly and over time.
IAS Standard	**4.ESS.3:** Describe how geological forces change the shape of the land suddenly and over time.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Limit number of geological forces to one per item.
	Visual necessary for each force (STEM).
	Limit geological forces to: landslide, earthquake, volcano, erosion, weathering, rocks, rock cycle, glaciers, wind, and water.
Allowable Stimulus Material	N/A
Context	Required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	geological, geologic time, geological forces**,** landslide, earthquake, volcano, erosion, weathering, rocks, rock cycle, glaciers, wind, water
Cognitive Complexity	4

Evidence Statements		
Evidence Statements	**Tier 1**	
	Student will identify a geological force.	
	Tier 2	
	Student will select which geological force changed the shape of the land suddenly.	
	Tier 3	
	Given a scenario, student will describe how a specific geological force changed the land.	
Accessibility and Accommodation Considerations		
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.	
Linguistic Complexity	To be determined after IDOE review	
Reference Tools	N/A	

Sample Item	
Tier 1	Which is a geological force? A. **earthquake** **(audio: An earthquake shaking the ground.)** B. **pulley** (audio: A girl using a pulley to lift a heavy object.) C. **pulling wagon** (audio: A girl pulling a wagon.)

Reporting Category	Explaining Solutions, Reasoning, and Communicating
Content Connector	**4.ESS.4.a.1:** Develop solutions that could be implemented to reduce the impact of humans on the natural environment.
IAS Standard	**4.ESS.4:** Develop solutions that could be implemented to reduce the impact of humans on the natural environment and the natural environment on humans.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Do assess reduce, reuse, recycle.
	Provide examples of the natural environment used as context, if necessary.
Allowable Stimulus Material	N/A
Context	Required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	reduce, reuse, recycle, renewable, nonrenewable, action, method, impact, resources, natural, environmental, environment, solution
Cognitive Complexity	4

Evidence Statements	
Evidence Statements	**Tier 1** Student will choose which activity would help the environment.
	Tier 2 Student will match an action with the environmental impact of the action.
	Tier 3 Student will identify a method for reducing the use of resources (e.g., turning off water, lights, etc.).
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 2	What could littering do to the environment? A. **make the water dirty** B. put more cars on the road C. cause trees to grow bigger

Reporting Category	Explaining Solutions, Reasoning, and Communicating
Content Connector	**4.ESS.4.a.2:** Develop solutions that could be implemented to reduce the impact of the natural environment on humans.
IAS Standard	**4.ESS.4:** Develop solutions that could be implemented to reduce the impact of humans on the natural environment and the natural environment on humans.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem. Any necessary stimulus should be written with clear language following the rules for "plain language." Any necessary stimulus text complexity should increase as the tiers increase. Tier 1 items should contain picture support in answer choices when possible to aid comprehension. Tier 2 items can contain picture support in answer choices. Tier 3 items should not contain picture support unless necessary. Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill. Tier 2 distractors should be possible misunderstandings of the concept or skill. Only assess natural disasters.
Allowable Stimulus Material	N/A
Context	Required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	natural disaster, solution, impact, environment, prevent, preparedness, disaster plan, evacuation route, escape route, support, aid, help, alternate route, supplies, relief, rescue efforts, implement
Cognitive Complexity	4

Evidence Statements	
Evidence Statements	**Tier 1** Student can identify a natural disaster.
	Tier 2 Student can recognize the impact a natural disaster has on the environment.
	Tier 3 Student can choose a solution that would reduce the impact of the natural disaster on humans.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 1	What can people do to help keep the environment clean?

A.

pick up litter

(audio: pick up litter)

B.

wash cars often

(audio: wash cars often)

C.

cut down trees

(audio: cut down trees)

Reporting Category	Explaining Solutions, Reasoning, and Communicating
Content Connector	**4.ESS.4.a.2:** Develop solutions that could be implemented to reduce the impact of the natural environment on humans.
IAS Standard	**4.ESS.4:** Develop solutions that could be implemented to reduce the impact of humans on the natural environment and the natural environment on humans.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem. Any necessary stimulus should be written with clear language following the rules for "plain language." Any necessary stimulus text complexity should increase as the tiers increase. Tier 1 items should contain picture support in answer choices when possible to aid comprehension. Tier 2 items can contain picture support in answer choices. Tier 3 items should not contain picture support unless necessary. Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill. Tier 2 distractors should be possible misunderstandings of the concept or skill.
Allowable Stimulus Material	N/A
Context	Required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	natural disaster, solution, impact, environment, prevent, preparedness, disaster plan, evacuation route, escape route, support, aid, help, alternate route, supplies, relief, rescue efforts, implement
Cognitive Complexity	4

Evidence Statements	
Evidence Statements	**Tier 1** Student can identify a natural disaster.
	Tier 2 Student can recognize the impact a natural disaster has on the environment.
	Tier 3 Student can choose a solution that would reduce the impact of the natural disaster on humans.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 1	What can people do to help keep the environment clean? A. pick up litter **(audio: pick up litter)** B. wash cars often (audio: wash cars often) C. cut down trees (audio: cut down trees)

Updated: 10/2020

Reporting Category	Investigating
Content Connector	**4.LS.1.a.1:** Observe, analyze, and interpret how offspring are very much, but not exactly, like their parents or one another.
IAS Standard	**4.LS.1:** Observe, analyze, and interpret how offspring are very much, but not exactly, like their parents or one another. Describe how these differences in physical characteristics among individuals in a population may be advantageous for survival and reproduction.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Base items on inherited, not acquired, traits.
	Humans should be excluded from example organisms.
	Offspring limited to no more than four.
	Must include pictures of parents and offspring.
Allowable Stimulus Material	graphics of adult and infant animals
Context	No context required
Recommended Response Mechanisms	Multiple Choice (MC)
	Multiple Select (MS)
	Table Match (TM)
Construct-Relevant Vocabulary	trait, offspring, parents, inherited
Cognitive Complexity	4

Evidence Statements	
Evidence Statements	**Tier 1** Student will select a parent when given the offspring.
	Tier 2 Student will match a picture of a trait inherited by an offspring from a parent (e.g., stripes).
	Tier 3 Given a set of parents with differing traits, student will identify which trait was inherited from those parents.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 3	A pair of cats have four kittens. The mother has blue eyes. The father has brown eyes.

Parents

Kittens

Kitten 1	Kitten 2
?	
Kitten 3	**Kitten 4**

What color are the eyes of the first kitten?

A. Blue
B. **Brown**
C. Green |

Reporting Category	Investigating
Content Connector	**4.LS.1.a.2:** Describe how differences in physical characteristics among individuals in a population may be advantageous for survival and reproduction.
IAS Standard	**4.LS.1:** Observe, analyze, and interpret how offspring are very much, but not exactly, like their parents or one another. Describe how these differences in physical characteristics among individuals in a population may be advantageous for survival and reproduction.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Base items on inherited, not acquired, traits.
	Humans should be excluded from example organisms.
	Make images clear and simple.
	Focus on survival (not reproduction).
	Assess animals only (no plants).
Allowable Stimulus Material	N/A
Context	Required
Recommended Response Mechanisms	Multiple Choice (MC)
	Multiple Select (MS)
	Table Match (TM)
Construct-Relevant Vocabulary	trait, offspring, parents, inherited, characteristic, environment, food source, organism, survival
Cognitive Complexity	4

Evidence Statements		
Evidence Statements	**Tier 1**	
	Student will select the organism that could survive in a given environment.	
	Tier 2	
	Student will select the organism that could access a food source according to its physical characteristic(s).	
	Tier 3	
	Given an animal as an example, student will select the characteristic that enables the animal to survive in the given environment.	

Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 1	A certain habitat has very tall trees. They have long trunks with leaves at the top. Which animal could reach the leaves from these trees? A. **lion** (audio: a lion) B. **horse** (audio: a horse) C. **giraffe** **(audio: a giraffe)**
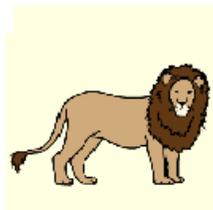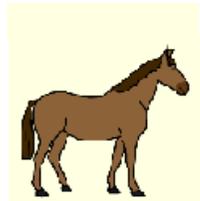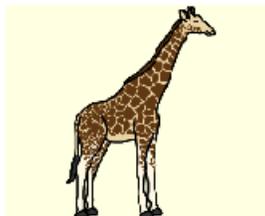
Reporting Category	Explaining Solutions, Reasoning, and Communicating
Content Connector	**4.LS.2.a.1:** Use evidence to explain how a change in the environment can affect a plant or animal's: survival, reproduction, and habitat/relocation.
IAS Standard	**4.LS.2:** Use evidence to support the explanation that a change in the environment may result in a plant or animal will survive and reproduce, move to a new location, or die.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Use organisms that are common to Indiana.
	Do not use invasive species.
Allowable Stimulus Material	graphic; graph; chart; table
Context	Provide context of the organism and environment they live and survive in (scenario).
Recommended Response Mechanisms	Multiple Choice (MC)
Construct-Relevant Vocabulary	environment, predict, species, habitat, survival, resource (food or shelter), life cycle, change, impact, climate, relocation, reproduction
Cognitive Complexity	5

Evidence Statements	
Evidence Statements	**Tier 1** Student will identify an environmental change that might affect animals.
	Tier 2 Student will determine how an environmental change might affect an animal.
	Tier 3 Student will make a prediction of an affect an environmental change might have on an animal.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 2	Here is a picture of a forest before a fire and after a fire. before forest fire · after forest fire How might a forest fire affect a bird? **A. The bird has less food to eat.** B. The bird has better air to breathe. C. The bird has more places for nests.

Reporting Category	Analyzing, Interpreting, and Computational Thinking
Content Connector	**4.LS.3.a.1:** Construct an argument that plants have internal and external structures that function to support survival, growth, behavior, and reproduction in different ecosystems.
IAS Standard	**4.LS.3:** Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction in different ecosystems.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Limit reproduction to seed, sprout, young plant, mature plant, death.
	Limit to external structures.
Allowable Stimulus Material	graphics; tables; graphs; diagrams
Context	No context required
Recommended Response Mechanisms	Multiple Choice (MC)
Construct-Relevant Vocabulary	ecosystem, external structures, survival, behavior, reproduction, growth, roots, leaves, stems, petals, life stage
Cognitive Complexity	4

Evidence Statements	
Evidence Statements	**Tier 1** Student will identify the beginning life cycle stage of a plant. Student will identify basic plant structures (roots, stems, leaves, petals).
	Tier 2 Student will identify the function of a given plant structure within a specific ecosystem.
	Tier 3 Student will match the functions (survival, growth, behavior, reproduction) with a given structure within a specific ecosystem.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 1	Here is a sunflower seed, a sunflower, and a sprout. sunflower sprout sunflower seed What is the beginning of this plant's life cycle? A. sunflower (audio: the mature plant) B. sprout (audio: the sprout) C. sunflower seed **(audio: the seed)**
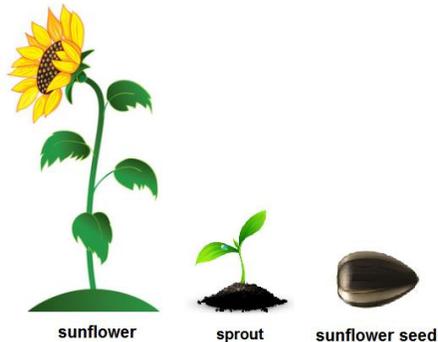
Reporting Category	Questioning and Modeling
Content Connector	**4.PS.1.a.1:** Investigate transportation systems and devices that operate on/in land, water, air, and space.
IAS Standard	**4.PS.1:** Investigate transportation systems and devices that operate on or in land, water, air and space and recognize the forces (lift, drag, friction, thrust and gravity) that affect their motion.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem. Any necessary stimulus should be written with clear language following the rules for "plain language." Any necessary stimulus text complexity should increase as the tiers increase. Tier 1 items should contain picture support in answer choices when possible to aid comprehension. Tier 2 items can contain picture support in answer choices. Tier 3 items should not contain picture support unless necessary. Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill. Tier 2 distractors should be possible misunderstandings of the concept or skill.
Allowable Stimulus Material	graphics; instructions; directions
Context	N/A
Recommended Response Mechanisms	Multiple Choice (MC) Multi-Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	transportation system, devices, operate, forces, lift, drag, friction, thrust, gravity, motion
Cognitive Complexity	2

Evidence Statements	
Evidence Statements	**Tier 1** Given a specific system, student will identify the appropriate environment for operation.
	Tier 2 Given a specific system, student will identify more than one appropriate environment for operation.
	Tier 3 Given a specific environment, student will identify the most appropriate transportation system.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 2	Here is a picture of a tunnel. Which is the appropriate transportation system for this tunnel? A. Boat B. **Train** C. Airplane

Reporting Category	Questioning and Modeling
Content Connector	**4.PS.1.a.2:** Recognize the forces (lift, drag, friction, thrust, and gravity) that affect the motion of transportation systems and devices.
IAS Standard	**4.PS.1:** Investigate transportation systems and devices that operate on or in land, water, air and space and recognize the forces (lift, drag, friction, thrust and gravity) that affect their motion.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Limit to one transportation system (land, water, or air).
	Limit to one or two forces per item.
	Limit to a real-world application.
	Limit to vehicles.
Allowable Stimulus Material	simple diagrams; graphics
Context	Use a one or two step (simple) scenario
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	transportation, transportation systems, forces (lift, drag, friction, thrust and gravity), push, pull
Cognitive Complexity	2

Evidence Statements		
Evidence Statements	**Tier 1**	
	Student can identify force vocabulary (push/pull).	
	Student can identify that a force makes an object move.	
	Tier 2	
	Student can recognize a transportation system.	
	Student can recognize a force.	
	Student can recognize which force which makes a given transportation system move.	
	Tier 3	
	Student can recognize the forces which makes a given transportation system move.	
	Student can select appropriate forces for a given transportation system.	
Accessibility and Accommodation Considerations		
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.	
Linguistic Complexity	To be determined after IDOE review	
Reference Tools	N/A	

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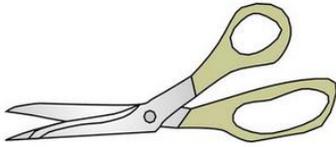| Sample Item	
Tier 1	Which person is using a push to move an object? A. going up hill **(audio: a boy going uphill with a tricycle)** B. leaning back (audio: a girl and boy leaning back on a rope) C. holding ball (audio: a boy holding a ball)

Reporting Category	Investigating
Content Connector	**4.PS.2.a.1:** Investigate the relationship of the speed of an object to the energy of that object.
IAS Standard	**4.PS.2:** Investigate the relationship of the speed of an object to the energy of that object.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Must provide actual speed, if necessary.
	Limit items to kinetic energy.
	Do not assess energy related to mass of objects.
	Provide graphics required to solve STEM.
Allowable Stimulus Material	graphs; pictures
Context	Required
Recommended Response Mechanisms	Multiple Choice (MC) Multi-Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	motion, speed, energy, mass, kinetic, gravity
Cognitive Complexity	4

Evidence Statements	
Evidence Statements	**Tier 1** Student will identify which object is in motion.
	Tier 2 Given two objects of the same mass, student will identify which moving object has more energy.
	Tier 3 Student will select the statement that represents the correct relationship between speed and energy.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 2	Jake has two balls of the same mass. He gives ball 1 a hard push. He gives ball 2 a soft push. Which statement describes the moving balls? A. **Ball 1 has more energy when moving than ball 2.** B. Ball 2 has more energy when moving than ball 1. C. Ball 1 and ball 2 have the same amount of energy when moving.

Reporting Category	Investigating
Content Connector	**4.PS.3.a.1:** Investigate how multiple simple machines work together to perform everyday tasks.
IAS Standard	**4.PS.3:** Investigate how multiple simple machines work together to perform everyday tasks.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Limit simple machines to: pulley, lever, wedge, wheel-and-axle, screw, inclined plane.
	Ensure that picture/symbols are clear and appropriate.
Allowable Stimulus Material	graphics
Context	No context required
Recommended Response Mechanisms	Multiple Choice (MC)
	Multiple Select (MS)
	Table Match (TM)
Construct-Relevant Vocabulary	pulley, lever (switch), wedge, wheel-and-axle, screw, inclined plane, simple machine
Cognitive Complexity	3

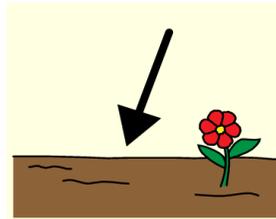| Evidence Statements	
Evidence Statements	**Tier 1** Student will select an object that represents a simple machine.
	Tier 2 Student will select the simple machine that would be used to perform in an everyday task.
	Tier 3 Student will identify which two simple machines work together to perform an everyday task.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

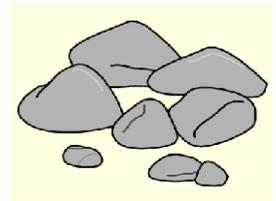| Sample Item	
Tier 3	Scissors are a tool used for cutting. scissors Which two simple machines work together to make this tool? A. lever and pulley B. **lever and wedge** C. pulley and wedge

Reporting Category	Explaining Solutions, Reasoning, and Communicating
Content Connector	**4.PS.4.a.1:** Describe and investigate the different ways in which energy can be generated and/or converted from one form of energy to another form of energy.
IAS Standard	**4.PS.4:** Describe and investigate the different ways in which energy can be generated and/or converted from one form of energy to another form of energy.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.

Any necessary stimulus should be written with clear language following the rules for "plain language."

Any necessary stimulus text complexity should increase as the tiers increase.

Tier 1 items should contain picture support in answer choices when possible to aid comprehension.

Tier 2 items can contain picture support in answer choices.

Tier 3 items should not contain picture support unless necessary.

Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.

Tier 2 distractors should be possible misunderstandings of the concept or skill.

Do not assess Laws of Conservation.

Use only sound, light, heat, and electric currents as energy sources. |
| Allowable Stimulus Material | N/A |
| Context | Required |
| Recommended Response Mechanisms | Multiple Choice (MC)

Multiple Select (MS)

Table Match (TM) |
| Construct-Relevant Vocabulary | generate, forms of energy, conversion, energy, source(s), sound, light, heat, electric current |
| Cognitive Complexity | 4 |

Evidence Statements		
Evidence Statements	**Tier 1**	
	Student can identify a form of energy.	
	Tier 2	
	Student can identify an example of how energy is generated.	
	Tier 3	
	Student can explain how one form of energy is converted into another form of energy.	
Accessibility and Accommodation Considerations		
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.	
Linguistic Complexity	To be determined after IDOE review	
Reference Tools	N/A	

Sample Item

	Which of the following is a form of energy?
Tier 1
sun
A.
(audio: the sun)

soil
B.
(audio: soil)
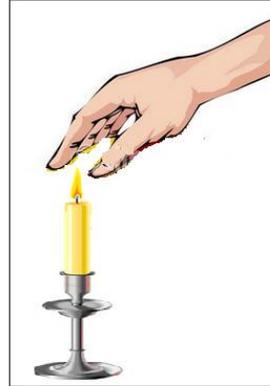

rocks
C.
(audio: rocks) |

Reporting Category	Analyzing, Interpreting, and Computational Thinking
Content Connector	**4.PS.5.a.1:** Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.
IAS Standard	**4.PS.5:** Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
Allowable Stimulus Material	graphics; graphs; tables; diagrams
Context	No context required
Recommended Response Mechanisms	Multiple Choice (MC)
	Multiple Select (MS)
	Table Match (TM)
Construct-Relevant Vocabulary	source of energy, heat, light, electric currents, evidence, transferred, sound, energy
Cognitive Complexity	4

Evidence Statements		
Evidence Statements	**Tier 1**	
	Student will identify a form of energy (e.g., shining light bulb, melting ice cube, lightning, static electricity, etc.).	
	Tier 2	
	Student will identify when energy is transferred from one object to another (e.g., hand over lit candle, ice cube under heat lamp).	
	Tier 3	
	Student will classify the type of energy transferred (e.g., heat from sun, light from sun, sound from an amplifier, sound from a drum, etc.).	
Accessibility and Accommodation Considerations		
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.	
Linguistic Complexity	To be determined after IDOE review	
Reference Tools	N/A	

Sample Item	
Tier 2	Here is a hand over a candle. What type of energy is being transferred to the hand? A. **Heat** B. Sound C. Electricity

Reporting Category	Questioning and Modeling
Content Connector	**SEPS.1:** Asking questions and defining problems: A practice of science is posing and refining questions that lead to descriptions and explanations of how the natural and designed world(s) work and these questions can be scientifically tested. Engineering questions clarify problems to determine criteria for possible solutions and identify constraints to solve problems about the designed world.
IAS Standard	**SEPS.1:** Posing questions (for science) and defining problems (for engineering): A practice of science is posing and refining questions that lead to descriptions and explanations of how the natural and designed world(s) work and these questions can be scientifically tested. Engineering questions clarify problems to determine criteria for possible solutions and identify constraints to solve problems about the designed world.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Students must be given short scenarios (no more than 2–3 sentences) to select a related question.
Allowable Stimulus Material	N/A
Context	No context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	natural world, design world, criteria, posing (question), description, explanation, solution, constraint, solve, problem (design)

Cognitive Complexity	3
Evidence Statements	
Evidence Statements	**Tier 1** Student can match the question to a single scenario.
	Tier 2 From a set of questions, student can identify the correct question for a given scenario. Given a scenario, student can identify the one correct question.
	Tier 3 Given a chart or table, student can match two questions to a given scenario. Given a question, student can identify the scenario that matches the question.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 3	Here is a question: "Why is the sidewalk wet?" What event **most likely** caused the sidewalk to be wet? A. Wind blew newspapers. B. **A thunderstorm occurred.** C. Some leaves fell from the trees.

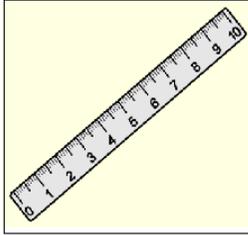| Reporting Category	Questioning and Modeling
Content Connector	**SEPS.2:** Developing and using models that illustrate ideas and explanations. Identify and correctly use tools to construct, obtain, and evaluate questions and problems. A practice of both science and engineering is to use and construct conceptual models that illustrate ideas and explanations. Models are used to develop questions, predictions and explanations; analyze and identify flaws in systems; build and revise scientific explanations and proposed engineered systems; and communicate ideas. Measurements and observations are used to revise and improve models and designs. Models include, but are not limited to: diagrams, drawings, physical replicas, mathematical representations, analogies, and other technological models. Another practice of both science and engineering is to identify and correctly use tools to construct, obtain, and evaluate questions and problems. Utilize appropriate tools while identifying their limitations. Tools include, but are not limited to: pencil and paper, models, ruler, a protractor, a calculator, laboratory equipment, safety gear, a spreadsheet, experiment data collection software, and other technological tools.
IAS Standard	**SEPS.2:** Developing and using models and tools: A practice of both science and engineering is to use and construct conceptual models that illustrate ideas and explanations. Models are used to develop questions, predictions and explanations; analyze and identify flaws in systems; build and revise scientific explanations and proposed engineered systems; and communicate ideas. Measurements and observations are used to revise and improve models and designs. Models include, but are not limited to: diagrams, drawings, physical replicas, mathematical representations, analogies, and other technological models. Another practice of both science and engineering is to identify and correctly use tools to construct, obtain, and evaluate questions and problems. Utilize appropriate tools while identifying their limitations. Tools include, but are not limited to: pencil and paper, models, ruler, a protractor, a calculator, laboratory equipment, safety gear, a spreadsheet, experiment data collection software, and other technological tools.

Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Limit to simple diagrams, pictures, or graphs.
Allowable Stimulus Material	Use pictures of given tools
	Use tactile stimulus for visually impaired
	Use simple graphics that can be rendered for tactile stimulus
Context	No context required
Recommended Response Mechanisms	Multiple Choice (MC)
	Multiple Select (MS)
	Table Match (TM)
Construct-Relevant Vocabulary	thermometer, degrees, ruler, measurement, measuring cup, scale, thermometer, calculator, stopwatch,
Cognitive Complexity	3

Evidence Statements	
Evidence Statements	**Tier 1** Student will select the correct tool in a given scenario. Student will select the correct model using a scenario.
	Tier 2 Student will identify the correct measurements in a given scenario. Student will identify which missing step is in a model (e.g., water cycle, life cycle, etc.).
	Tier 3 Student will identify appropriate units given a tool. Student will identify which two steps are missing in a model (e.g., water cycle, life cycle, etc.).
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

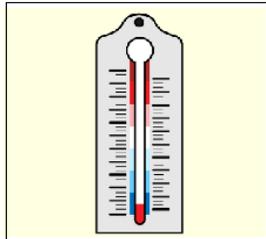| Tier 1 | Which tool is used to measure the air temperature? |

Which tool is used to measure the air temperature?

A.
metric ruler
(audio: a metric ruler)

B.
balance
(audio: a balance)

C.
thermometer
(audio: a thermometer)

Reporting Category	Investigating
Content Connector	**SEPS.3:** Planning and conducting investigations: Scientists and engineers are constructing and performing investigations in the field or laboratory, working collaboratively as well as individually. Researching analogous problems in order to gain insight into possible solutions allows them to make conjectures about the form and meaning of the solution. A plan to a solution pathway is developed prior to constructing and performing investigations. Constructing investigations systematically encompasses identified variables and parameters generating quality data. While performing, scientists and engineers monitor and record progress. After performing, they evaluate to make changes to modify and repeat the investigation if necessary**.**
IAS Standard	**SEPS.3:** Constructing and performing investigations: Scientists and engineers are constructing and performing investigations in the field or laboratory, working collaboratively as well as individually. Researching analogous problems in order to gain insight into possible solutions allows them to make conjectures about the form and meaning of the solution. A plan to a solution pathway is developed prior to constructing and performing investigations. Constructing investigations systematically encompasses identified variables and parameters generating quality data. While performing, scientists and engineers monitor and record progress. After performing, they evaluate to make changes to modify and repeat the investigation if necessary.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.

	Give steps to the Scientific Method (using simple language), if necessary.
Allowable Stimulus Material	charts; diagrams; pictures
Context	No context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	scientific method, experiment, investigation, data, hypothesis, conclusion, supporting data (evidence), evidence, evaluate, variable
Cognitive Complexity	4
Evidence Statements	
Evidence Statements	**Tier 1** Student will identify an experiment.
	Tier 2 Student will select the correct order of the scientific method.
	Tier 3 Student will identify the missing component of an experiment.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

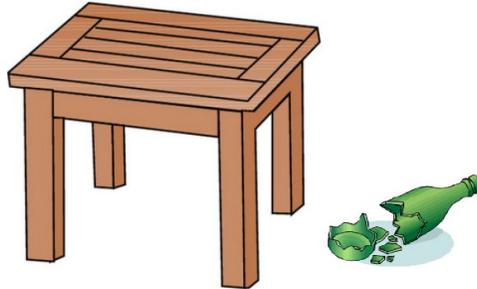| Sample Item	
Tier 2	Karissa wants to investigate how long it takes for ice cubes to melt. She uses different sizes of ice cubes. small ice cube large ice cube What should she do first in this investigation? A. **Make a hypothesis.** B. Record the data in a table. C. Make a graph of the results.

Reporting Category	Analyzing, Interpreting, and Computational Thinking
Content Connector	**SEPS.4:** Analyzing and interpreting data: Investigations produce data that must be analyzed in order to derive meaning. Because data patterns and trends are not always obvious, scientists and engineers use a range of tools to identify the significant features in the data. They identify sources of error in the investigations and calculate the degree of certainty in the results. Advances in science and engineering makes analysis of proposed solutions more efficient and effective. They analyze their results by continually asking themselves questions; possible questions may be, but are not limited to: "Does this make sense?" "Could my results be duplicated?" and/or "Does the design solve the problem with the given constraints?"
IAS Standard	**SEPS.4:** Analyzing and interpreting data: Investigations produce data that must be analyzed in order to derive meaning. Because data patterns and trends are not always obvious, scientists and engineers use a range of tools to identify the significant features in the data. They identify sources of error in the investigations and calculate the degree of certainty in the results. Advances in science and engineering makes analysis of proposed solutions more efficient and effective. They analyze their results by continually asking themselves questions; possible questions may be, but are not limited to: "Does this make sense?" "Could my results be duplicated?" and/or "Does the design solve the problem with the given constraints?"
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.

Allowable Stimulus Material	graphics; graphs; tables; diagrams
Context	No context required
Recommended Response Mechanisms	Multiple Choice (MC)
Construct-Relevant Vocabulary	duplicate, constraint, investigate, significant, range, data patterns, analyze, interpret, propose, effective, certainty, criteria, data, error
Cognitive Complexity	5

Evidence Statements	
Evidence Statements	**Tier 1** Using a given picture, student will identify the cause or effect. Student will identify a missing point on the graph based on a pattern.
	Tier 2 Using a given picture, student will identify the cause and effect. Student will identify missing points on a graph.
	Tier 3 Student will identify more than one effect of a given cause. Student will predict the next data point on a given graph.

Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

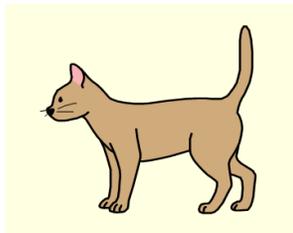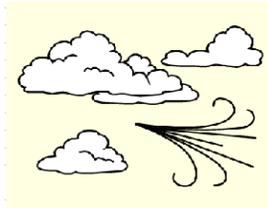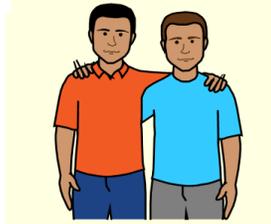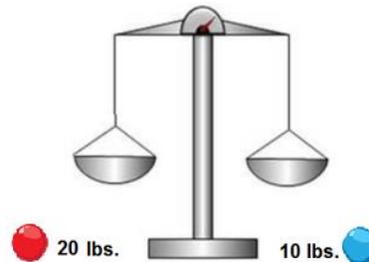| Sample Item	
Tier 1	Brent had a cat in the house. Brent and his friend came home to feed the cat. They found a broken bottle on the floor. What could have caused the bottle to break? A. cat **(audio: The cat knocked it over.)** B. wind (audio: The wind blew it over.) C. friend (audio: Brent's friend knocked it over.)

Reporting Category	Analyzing, Interpreting, and Computational Thinking
Content Connector	**SEPS.5:** Using mathematics and computational thinking: In both science and engineering, mathematics and computation are fundamental tools for representing physical variables and their relationships. They are used for a range of tasks such as constructing simulations; solving equations exactly or approximately; and recognizing, expressing, and applying quantitative relationships. Mathematical and computational approaches enable scientists and engineers to predict the behavior of systems and test the validity of such predictions. Scientists and engineers understand how mathematical ideas interconnect and build on one another to produce a coherent whole.
IAS Standard	**SEPS.5:** Using mathematics and computational thinking: In both science and engineering, mathematics and computation are fundamental tools for representing physical variables and their relationships. They are used for a range of tasks such as constructing simulations; solving equations exactly or approximately; and recognizing, expressing, and applying quantitative relationships. Mathematical and computational approaches enable scientists and engineers to predict the behavior of systems and test the validity of such predictions. Scientists and engineers understand how mathematical ideas interconnect and build on one another to produce a coherent whole.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem. Any necessary stimulus should be written with clear language following the rules for "plain language." Any necessary stimulus text complexity should increase as the tiers increase. Tier 1 items should contain picture support in answer choices when possible to aid comprehension. Tier 2 items can contain picture support in answer choices. Tier 3 items should not contain picture support unless necessary. Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill. Tier 2 distractors should be possible misunderstandings of the concept or skill. Limit to comparisons of weight, height, length, temperature. Limit to quantitatively similar comparisons (e.g., same units).

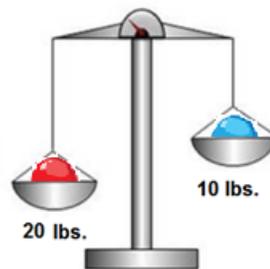|	
Allowable Stimulus Material	graphics; graphs; tables; diagrams
Context	No context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS)Table Match (TM)
Construct-Relevant Vocabulary	mathematics, computation, tools, variables, range, solve equations, relationships, compute, predict, equal
Cognitive Complexity	4
Evidence Statements	
Evidence Statements	**Tier 1** Given a picture or scenario, student will select the correct tool to measure units.
	Tier 2 Student will be able to comparatively measure two objects.
	Tier 3 Student will order measured objects from least to greatest (or greatest to least) according to given quantities.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

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Sample Item

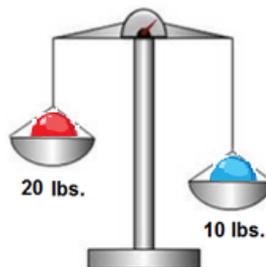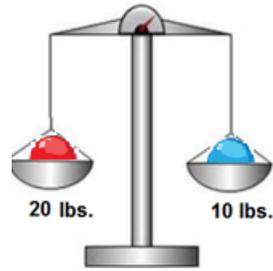|	Here is a picture of a balance and two balls. Each ball is the same size. The red ball weighs 20 pounds. The blue ball weighs 10 pounds.
Tier 2	 Sara places the objects on the balance. How will the balance look when the balls are placed on the scale? A. **(audio: The pan with the red ball is lower than the pan with the blue ball.)** B. (audio: The pan with the red ball is higher than the pan with the blue ball.)

20 lbs.   10 lbs.

C.

    (audio: The pan with the red ball is even with the pan with the blue ball.)

Reporting Category	Explaining Solutions, Reasoning, and Communicating
Content Connector	**SEPS.6:** Constructing explanations (for science) and designing solutions (for engineering): Scientists and engineers use their results from the investigation in constructing descriptions and explanations, citing the interpretation of data, connecting the investigation to how the natural and designed world(s) work. They construct or design logical coherent explanations or solutions of phenomena that incorporate their understanding of science and/or engineering or a model that represents it and are consistent with the available evidence.
IAS Standard	**SEPS.6:** Constructing explanations (for science) and designing solutions (for engineering): Scientists and engineers use their results from the investigation in constructing descriptions and explanations, citing the interpretation of data, connecting the investigation to how the natural and designed world(s) work. They construct or design logical coherent explanations or solutions of phenomena that incorporate their understanding of science and/or engineering or a model that represents it and are consistent with the available evidence.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Explanation of data must be provided.
	Do not assess the term "phenomena."
Allowable Stimulus Material	graph; table; chart
Context	Required

Recommended Response Mechanisms	Multiple Choice (MC)
	Multiple Select (MS)
Construct-Relevant Vocabulary	data, investigation, average, prediction, represent, scientific outcome, interpretation, design, engineering, construct, model, consistent, evidence, observation
Cognitive Complexity	5

Evidence Statements	
Evidence Statements	**Tier 1**
	Student can recognize the appropriate representation of given data.
	Tier 2
	Student can select the appropriate representation of data from an investigation.
	Tier 3
	Student can evaluate data to make a prediction.

Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 3	This table contains the amount of rainfall in Indiana during the month of June. <table><tr><td colspan="2">Rainfall in Indiana</td></tr><tr><td>June 2014</td><td>5 inches</td></tr><tr><td>June 2015</td><td>3 inches</td></tr><tr><td>June 2016</td><td>5 inches</td></tr><tr><td>**Average June**</td><td>**4 inches**</td></tr></table> Which year had rainfall that was below the average? A. 2014 B. **2015** C. 2016

Reporting Category	Explaining Solutions, Reasoning, and Communicating
Content Connector	**SEPS.7:** Engaging in argument from evidence: Scientists and engineers use reasoning and argument based on evidence to identify the best explanation for a natural phenomenon or the best solution to a design problem. Scientists and engineers use argumentation, the process by which evidence-based conclusions and solutions are reached, to listen to, compare, and evaluate competing ideas and methods based on merits. Scientists and engineers engage in argumentation when investigating a phenomenon, testing a design solution, resolving questions about measurements, building data models, and using evidence to evaluate claims.
IAS Standard	**SEPS.7:** Engaging in argument from evidence: Scientists and engineers use reasoning and argument based on evidence to identify the best explanation for a natural phenomenon or the best solution to a design problem. Scientists and engineers use argumentation, the process by which evidence-based conclusions and solutions are reached, to listen to, compare, and evaluate competing ideas and methods based on merits. Scientists and engineers engage in argumentation when investigating a phenomenon, testing a design solution, resolving questions about measurements, building data models, and using evidence to evaluate claims.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem.
	Any necessary stimulus should be written with clear language following the rules for "plain language."
	Any necessary stimulus text complexity should increase as the tiers increase.
	Tier 1 items should contain picture support in answer choices when possible to aid comprehension.
	Tier 2 items can contain picture support in answer choices.
	Tier 3 items should not contain picture support unless necessary.
	Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill.
	Tier 2 distractors should be possible misunderstandings of the concept or skill.
	Limit the number of variables in the argument or counter-argument to one.

Allowable Stimulus Material	tables; graph
Context	Required
Recommended Response Mechanisms	Multiple Choice (MC)
Construct-Relevant Vocabulary	opinion, fact, argument, evidence, support, data, solution, claim, model
Cognitive Complexity	5
Evidence Statements	

Evidence Statements	**Tier 1** Student will recognize an opinion (argument) vs. a fact.
	Tier 2 Student will support a simple argument with evidence. (e.g., students recognize what clothing choice to wear based on the weather.)
	Tier 3 Student will choose a piece of evidence to support an argument.

Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

	Sample Item
Tier 1	What is the appropriate clothing to wear when it is snowing outside? **sandals and shorts** A. (audio: sandals and shorts) **jacket and boots** B. **(audio: jacket and boots)** **raincoat and rubber boots** C. (audio: a raincoat and rubber boots)

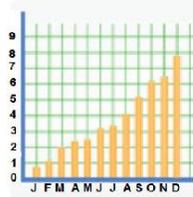| Reporting Category	Explaining Solutions, Reasoning, and Communicating
Content Connector	**SEPS.8:** Obtaining, evaluating, and communicating information: Scientists and engineers need to be communicating clearly and articulating the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity. Communicating information and ideas can be done in multiple ways: using tables, diagrams, graphs, models, and equations, as well as, orally, in writing, and through extended discussions. Scientists and engineers employ multiple sources to obtain information that is used to evaluate the merit and validity of claims, methods, and designs.
IAS Standard	**SEPS.8:** Obtaining, evaluating, and communicating information: Scientists and engineers need to be communicating clearly and articulating the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity. Communicating information and ideas can be done in multiple ways: using tables, diagrams, graphs, models, and equations, as well as, orally, in writing, and through extended discussions. Scientists and engineers employ multiple sources to obtain information that is used to evaluate the merit and validity of claims, methods, and designs.
Content Limits	Tier 1 and 2 items should avoid the word "best" in the stem. Any necessary stimulus should be written with clear language following the rules for "plain language." Any necessary stimulus text complexity should increase as the tiers increase. Tier 1 items should contain picture support in answer choices when possible to aid comprehension. Tier 2 items can contain picture support in answer choices. Tier 3 items should not contain picture support unless necessary. Tier 1 distractors should demonstrate clear misunderstanding of the concept or skill. Tier 2 distractors should be possible misunderstandings of the concept or skill. Data tables should have 1:1 correspondence to graphs. Data should be limited to whole numbers.

Allowable Stimulus Material	data tables; graphs
Context	Required
Recommended Response Mechanisms	Multiple Choice (MC)
Construct-Relevant Vocabulary	bar graph, pie chart, line graph, picture graph, data table, tally marks
Cognitive Complexity	4

Evidence Statements	
Evidence Statements	**Tier 1** Student will recognize grade appropriate graphs.
	Tier 2 Student will select an appropriate representation of the data given.
	Tier 3 Student will match a data table to the appropriate graph.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

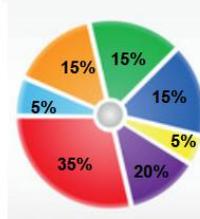| Sample Item	
Tier 1	Which of the following is a bar graph? Graph 1 A. **(audio: Graph 1)** Graph 2 B. (audio: Graph 2) Graph 3 C. (audio: Graph 3)