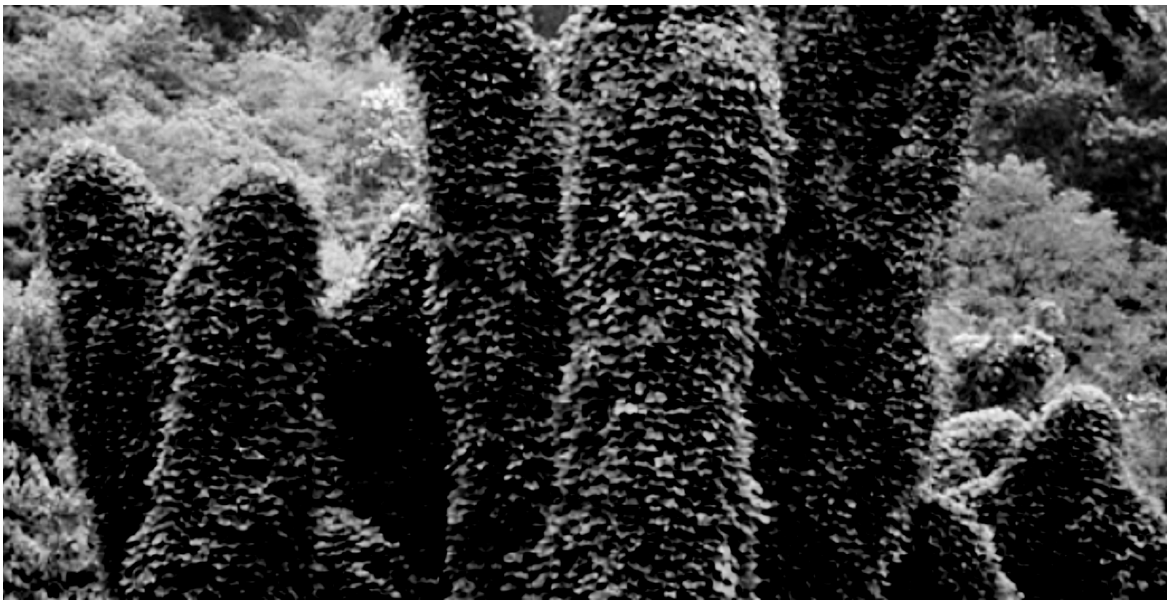
Kentucky Summative Assessments

Grade 7 Science
Released Items
2023



Hannah's family took a trip to Florida. As they drove through several southern states, she saw a vine growing along the roadside. In some places it covered the entire hillside. Her mom told her the vine is called kudzu, and that it was brought to the United States from Asia to control erosion.

In several of the places where the kudzu was very thick, she noticed that the vine appeared to be growing over dead trees. Her mom said, "Yes, there were some beautiful old oak trees there before, but the kudzu has finally managed to kill them all." Hannah wondered how a vine could kill a tall, healthy tree.

1

SC071613_01_2

Which one of these **best** explains how a fast-growing vine could cause the death of an otherwise healthy tree?

A Kudzu produces excess carbon dioxide, preventing the tree from performing photosynthesis.

B Kudzu outcompetes the tree for sunlight, preventing the tree from performing photosynthesis.

C Kudzu outcompetes the tree for pollinators, preventing the tree from reproducing effectively.

D Kudzu adds excess weight to the tree, preventing it from remaining rooted and upright in the soil.

Released Item Performance

Kentucky Summative Assessments

Spring 2023
Grade 7
Science

Item: SC071613_01
Book Question Number: 1

Standard: 06-LS2-2

Item Type: MC
Key: B

Student Group	Number of Students	Percent Correct	Average Item Score	Item Breakout Statistics - Answer Choice Options			
				A (%)	B (%)	C (%)	D (%)
All Students	**24,800**	57%	0.57	20%	57%	12%	12%
Gender							
Female	**11,876**	54%	0.54	20%	54%	12%	14%
Male	**12,923**	59%	0.59	19%	59%	11%	10%
Ethnicity							
African American	**2,749**	41%	0.41	27%	41%	16%	16%
American Indian or Alaska Native	**32**	56%	0.56	13%	56%	25%	6%
Asian	**506**	59%	0.59	15%	59%	12%	15%
Hispanic or Latino	**2,237**	47%	0.47	23%	47%	15%	16%
Native Hawaiian or Pacific Islander	**39**	56%	0.56	13%	56%	18%	13%
White (non-Hispanic)	**18,001**	61%	0.61	18%	61%	10%	11%
Two or more races	**1,235**	54%	0.54	21%	54%	12%	12%
Migrant	**131**	44%	0.44	22%	44%	15%	19%
English Learner	**1,313**	35%	0.35	27%	35%	19%	20%
Economically Disadvantaged	**15,094**	52%	0.52	22%	52%	13%	13%
Students with Disabilities	**4,211**	43%	0.43	25%	43%	16%	15%

Hannah said, "You said people brought it over from Asia. If it kills trees, why would we ever have wanted to bring it to the United States?"

"Because it stabilizes the soil and does a really good job of preventing soil from being washed away," Mom replied.

"But it's killing the trees," Hannah said.

"I know. Sometimes when people do things, there are consequences that they didn't intend to happen. If your soil was being washed away, then maybe planting kudzu was a good idea. The problem is that the kudzu didn't stay where it was planted."

"So is it considered an invasive species?"

"Yes, it is."

"Is there anything we can do to control it?"

"I'm not sure. I wonder how big a problem it really is?"

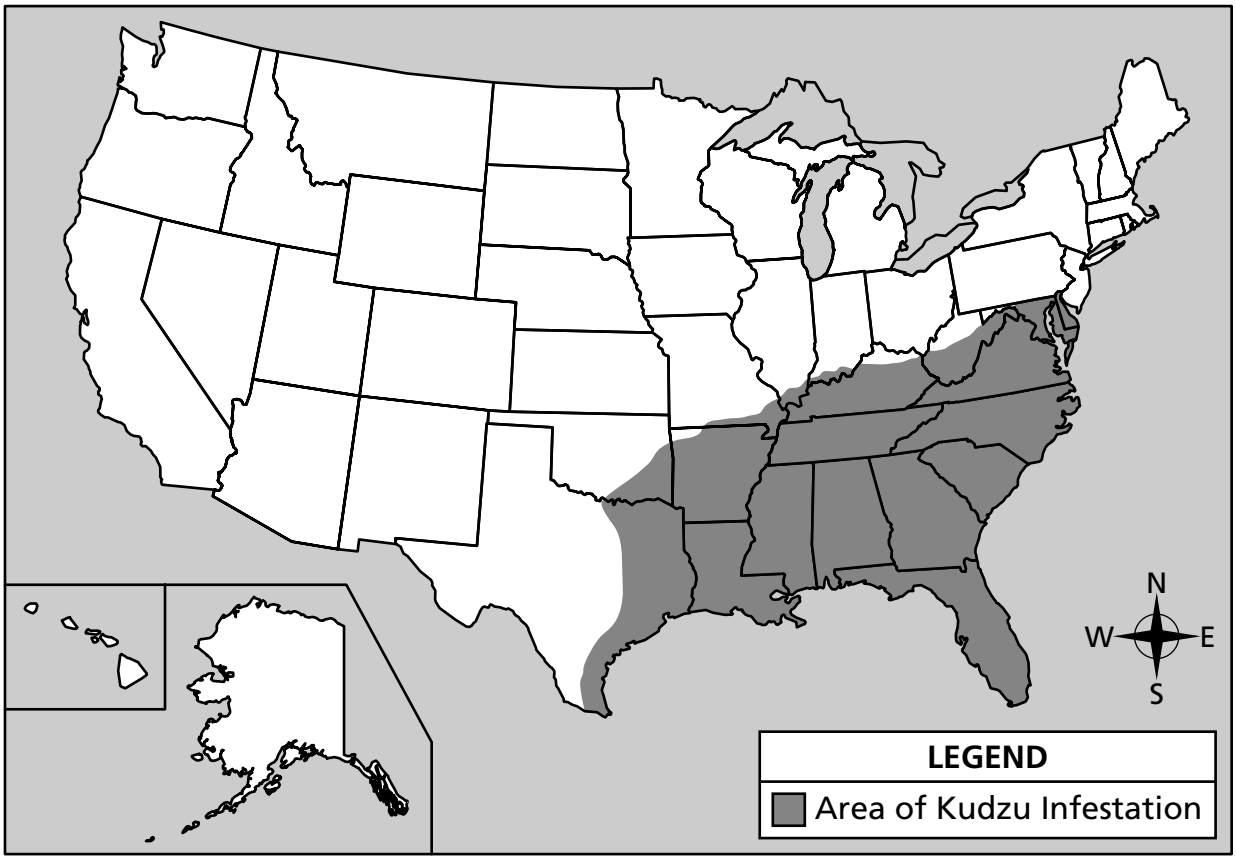
After their vacation was over, Hannah did some research about kudzu. She found this map showing how widespread it is.

After reading some more, she found an article that made the case that kudzu is less of a problem than many people think it is. Highlights from the article included:

- Kudzu was once thought to cover seven million to nine million acres across the United States.
- The U.S. Forest Service has done new surveys that indicate only about 227,000 acres of forestland are impacted.
- The total area covered is now thought to be only the size of a small county.
- 99.9% of the South's 200 million acres of forest are believed to be kudzu-free.
- The Forest Service expects an increase of no more than 2,500 acres a year, in spite of other, much larger predictions.

In another article, she learned that an insect called the Japanese kudzu bug was found in a garden near the Atlanta, Georgia, airport six years ago. It appears to have accidentally come across the ocean on an airplane and is now infesting vines across the South. The kudzu bug feeds by sucking the plant's juices. In places where kudzu once thrived, the bug-infested vines are being overtaken by other roadside weeds. In one site, the kudzu biomass was reduced by 2/3 in just two years.

Infestation of Kudzu in the United States



2

SC071613_02_4

Kudzu has a competitive relationship within the ecosystems where it has spread. Which one of these observations **best** explains this statement?

A Insect populations decrease because of predation on kudzu leaves.

B Deer populations increase because of the availability of leaves to forage on.

C Bacteria populations increase because kudzu is very efficient at fixing nitrogen.

D Native grass populations decrease because of a reduction in available soil water.

Released Item Performance

Kentucky Summative Assessments

Spring 2023
Grade 7
Science

Item: SC071613_02
Book Question Number: 2

Standard: 06-LS2-2

Item Type: MC
Key: D

Student Group	Number of Students	Percent Correct	Average Item Score	Item Breakout Statistics - Answer Choice Options			
				A (%)	B (%)	C (%)	D (%)
All Students	**24,791**	38%	0.38	24%	14%	24%	38%
Gender							
Female	**11,873**	38%	0.38	25%	12%	25%	38%
Male	**12,917**	38%	0.38	22%	16%	24%	38%
Ethnicity							
African American	**2,745**	29%	0.29	24%	15%	32%	29%
American Indian or Alaska Native	**32**	31%	0.31	31%	9%	28%	31%
Asian	**506**	47%	0.47	27%	9%	18%	47%
Hispanic or Latino	**2,236**	36%	0.36	22%	13%	28%	36%
Native Hawaiian or Pacific Islander	**39**	41%	0.41	21%	10%	28%	41%
White (non-Hispanic)	**17,997**	40%	0.40	23%	14%	23%	40%
Two or more races	**1,235**	37%	0.37	24%	13%	26%	37%
Migrant	**131**	40%	0.40	20%	13%	27%	40%
English Learner	**1,312**	33%	0.33	21%	15%	31%	33%
Economically Disadvantaged	**15,086**	35%	0.35	23%	15%	27%	35%
Students with Disabilities	**4,207**	32%	0.32	21%	19%	28%	32%

3

SC071613_03_:

The preceding article gives the impression that we should not be greatly concerned about kudzu as an invasive species. The map, however, makes it seem as if kudzu is a major problem all across the South.

Part A

Cite specific information from the article that supports a claim that kudzu does not pose a major problem for ecosystems not currently infested with kudzu.

Part B

Explain what additional information would be needed in order to make a decision about whether an effort needs to be made to control kudzu. How would this information help you make a decision?

Released Item Performance

Kentucky Summative Assessments

Spring 2023
Grade 7
Science

Item: SC071613_03
Book Question Number: 3

Standard: MS-ETS1-1

Item Type: ER
Key: Rubric

Student Group	Number of Students	Percent Correct	Average Item Score	Item Breakout Statistics - Score Percentages				
				Score 0 (%)	Score 1(%)	Score 2 (%)	Score 3 (%)	Score 4 (%)
All Students	**23,801**	25.9%	1.04	42%	26%	20%	8%	3%
Gender								
Female	**11,560**	28.7%	1.15	38%	26%	21%	10%	4%
Male	**12,240**	23.3%	0.93	46%	26%	19%	6%	2%
Ethnicity								
African American	**2,482**	16.6%	0.67	58%	24%	13%	4%	1%
American Indian or Alaska Native	**32**	25.8%	1.03	44%	25%	22%	3%	6%
Asian	**496**	35.3%	1.41	33%	24%	20%	15%	9%
Hispanic or Latino	**2,144**	19.5%	0.78	52%	25%	17%	5%	1%
Native Hawaiian or Pacific Islander	**39**	23.7%	0.95	46%	21%	28%	3%	3%
White (non-Hispanic)	**17,417**	27.9%	1.11	39%	27%	22%	9%	4%
Two or more races	**1,190**	24.8%	0.99	45%	24%	20%	8%	3%
Migrant	**125**	14.8%	0.59	62%	18%	19%	1%	0%
English Learner	**1,226**	10.7%	0.43	70%	19%	10%	1%	0%
Economically Disadvantaged	**14,304**	21.8%	0.87	49%	26%	18%	6%	2%
Students with Disabilities	**3,885**	13.8%	0.55	64%	21%	12%	2%	1%

	Kentucky Academic Standards Science Rubric
Score Point	**Description**
4	There is evidence in this response that the student has a complete and thorough understanding of the multi-dimensional question as evidenced by their explanation of the phenomenon and/or solution to the problem. The response is complete, thorough and correct and based on appropriate knowledge and skills The response does not contain errors or flaws in logical thinking or those flaws are irrelevant to the accuracy of the answer The response reflects complete synthesis and understanding of complex ideas The response is completely coherent and based on effective application of relevant dimensions (SEP and/or DCI and/or CC) The response integrates a solution that is completely correct and based on the principles of engineering design (if applicable)
3	There is evidence in this response that the student has a general understanding of the multi-dimensional question as evidenced by their explanation of the phenomenon and/or solution to the problem. The response is generally complete and the question is answered using appropriate knowledge and skills The response may contain minor errors or flaws in logical thinking and those flaws may or may not be irrelevant to the accuracy of the answer The response reflects a general synthesis and understanding of complex ideas The response is generally coherent and based on application of relevant dimensions (SEP and/or DCI and/or CC) The response integrates a solution that is generally correct and mostly based on the principles of engineering design (if applicable).
2	There is evidence in this response that the student has a limited understanding of the multi-dimensional question as evidenced by their explanation of the phenomenon and/or solution to the problem. The response is partially complete and/or the question is answered using limited understanding of knowledge and skills The response may contain significant errors or flaws in logical thinking The response reflects a limited synthesis and understanding of complex ideas The response may or may not be coherent and based on some application of relevant dimensions (SEP and/or DCI and/or CC) The response integrates a solution that is partly correct and may or may not be based on the principles of engineering design (if applicable).
1	There is evidence in this response that the student has a minimal understanding of the multi-dimensional question as evidenced by their explanation of the phenomenon and/or solution to the problem. The response is minimal and/or the question is answered using minimal understanding of knowledge and skills The response may contain major significant errors or flaws in logical thinking The response reflects a minimal synthesis and understanding of complex ideas The response is not coherent or is not based on application of relevant dimensions (SEP and/or DCI and/or CC) The response integrates a solution that is minimally correct and may or may not be based on the principles of engineering design (if applicable).
0	There is no evidence that the student has an understanding of the material related to the question being asked in terms of science content and logical thinking skills. The response is blank, entirely incorrect and/or irrelevant.

Anchor Set

A1

Part A.

According to the text, “it stabilizes soil and does a really good job from being washed away.” This explains how kudzu is not a maJor problem.

Part B.

Additional information that would be needed is to give me 3 reasons why kudzu needs to be under control. This will explain to me why it needs to be.

Anchor Annotation, Paper 1
Score Point 0

There is no evidence that the student has an understanding of how to cite specific information from the article that supports a claim that kudzu does not pose a major problem, nor were they able to explain what additional information would be needed in order to make a decision about whether an effort needs to be made to control kudzu, or answer how this information would help in making a decision. The response contains an attempt to support a claim that kudzu does not pose a major problem, but this attempt contains no information from the article and only includes a citation from Hannah’s mother (According to the text, “it stabilizes soil and does a really good job from being washed away”). This information provides no support to a claim that kudzu does not pose a major problem; only that kudzu has a beneficial feature. The attempt to explain what additional information would be needed to make a decision to control kudzu and answer how this information would be helpful lacks relevant specifics (Additional information that would be needed is to give me 3 reasons why kudzu needs to be under control. This will explain to me why it needs to be). There is nothing in the response that indicates an understanding of the material as it relates to the question being asked in terms of science content.

Part A. The kudzu does not affect the ecosystem be cause the kudzu does not absorb soil or water for the ecosystem to have soil and water.

Part B. The Kudzu kills tree's which tree's makes oxygen for everybody and everybody seuervives on oxygen and if the kudzu kill's every single tree there will be no more oxygen.

Anchor Annotation, Paper 2
Score Point 0

There is no evidence that the student has an understanding of how to cite specific information from the article that supports a claim that kudzu does not pose a major problem, nor were they able to explain what additional information would be needed in order to make a decision about whether an effort needs to be made to control kudzu, or answer how this information would help in making a decision. The response contains an attempt to support a claim that kudzu does not pose a major problem, but no information from the article is cited. Instead, the information given is incorrect and irrelevant (The kudzu does not affect the ecosystem because the kudzu does not absorb soil or water for the ecosystem to have soil and water). This information does not support a claim that kudzu does not pose a major problem. The attempt to explain what additional information would be needed to make a decision to control kudzu and answer how this information would be helpful is not relevant (Kudzu kills tree's which tree's makes oxygen for everybody . . . and if the kudzu kill's every single tree there will be no more oxygen).

Part A.

Kudzu does not pose a major problem for ecosystems not currently infested with Kudzu because, kudzu kill's trees and plants it covers most of the south. The text says "the problem is that the kudzu would not stay where it was planted." The reason they wanted it in the U.S. is to help to "stablilize the soil and does really good job of preventing soil from being washed away."

Part B.

An effort needs to be made to control the kudzu. If we dont find a way to control the kudzu we will not have any trees. The kudzu will kill all the trees. The text says "kudzu covers most of the south. It is not a big Problem now but it will be if nothing is done about it growing everywhere and killing trees.

Anchor Annotation, Paper 3
Score Point 0

There is no evidence that the student has an understanding of how to cite specific information from the article that supports a claim that kudzu does not pose a major problem, nor were they able to explain what additional information would be needed in order to make a decision about whether an effort needs to be made to control kudzu, or answer how this information would help in making a decision. The response contains an attempt to support a claim that kudzu does not pose a major problem, but the information is presented incoherently and is irrelevant and/or incorrect (Kudzu does not pose a major problem . . . because, kudzu kills trees and plants it covers most of the south . . . The text says "the problem is that the kudzu would not stay where it was planted" . . . The reason they wanted it in the U.S. is to help to "stablilize the soil and does really good job of preventing soil from being washed away"). The attempt to explain what additional information would be needed to make a decision to control kudzu and answer how this information would be helpful is also incorrect since no additional information is provided. Instead, evidence is presented that is meant to persuade that kudzu needs to be controlled (An effort needs to be made to control the kudzu . . . kudzu will kill all the trees . . . "kudzu covers most of the south . . . not a big problem now but it will be if nothing is done), which indicates a lack of understanding of the material related to the question being asked.

Part A. Kudzu kills trees, but for areas without kudzu the trees there will stay strong, and Healty. the text says "But the Kudzu has managed to kill them all". This shows that Kudzu kills trees.

Part B. Some information that would help make a desision about Kudzu is what trees is it attracted to, and what vegitation. This information would help me target where the kudzu will spread to learn more about it.

Anchor Annotation, Paper 4
Score Point 1

There is evidence that the student has a minimal understanding of how to cite specific information from the article that supports a claim that kudzu does not pose a major problem, explain what additional information would be needed in order to make a decision about whether an effort needs to be made to control kudzu, and answer how this information would help in making a decision. The response contains an attempt to support a claim that kudzu does not pose a major problem, but the information cited is from Hannah's mother and this information does not at all support the claim since it focuses on the fact that kudzu kills trees (the text says "But the Kudzu has managed to kill them all" . . . shows that Kudzu kills trees). The response does contain a relevant, minimal explanation regarding additional information that would be needed to make a decision on controlling kudzu and how this information would be helpful (information that would help make a desision about Kudzu is what trees is it attracted to, and what vegitation. This information would help me target where the kudzu will spread to learn more about it). This portion of the response is sufficient to indicate a minimal understanding.

Part A. As it was said in the article it's only the size of a small country. The population keeps going down every year.

Part B. We need to concrol it becaues if we stop killing it will spred more and more. It will infest other areas, and other trees.

Anchor Annotation, Paper 5
Score Point 1

There is evidence that the student has a minimal understanding of how to cite specific information from the article that supports a claim that kudzu does not pose a major problem, explain what additional information would be needed in order to make a decision about whether an effort needs to be made to control kudzu, and answer how this information would help in making a decision. The response contains minimal relevant information from the article to support a claim that kudzu does not pose a major problem (As it was said in the article it's only the size of a small country), which indicates a minimal understanding. The misspelling of the word "county" as "country" does not detract. The response contains erroneous information regarding a decrease in population (population keeps going down every year) which does detract, but it does not change the fact that the response has already demonstrated minimal understanding. The attempt to provide an explanation regarding additional information and how this information would be helpful is similar to the explanation in Anchor paper 3, which is incorrect since it does not contain information pertinent to the question being asked (need to concrol it becaues if we stop killing it will spred more and more . . . infest other areas, and other trees). Part B is asks for what additional information needs to be collected in order to determine if an effort should be made to control Kudzu – not how or why Kudzu is harmful.

Part A. One information is that the total area covered is now thought to only be only the size of a small county. And the kudzu helps prevent the soil going away.

Part B. The information you will need in order to make a decision about whether an effort needs to be made or not. Is you need to do more research on what the kudzu do to help the ecosystem.

Anchor Annotation, Paper 6
Score Point 1

There is evidence that the student has a minimal understanding of how to cite specific information from the article that supports a claim that kudzu does not pose a major problem, explain what additional information would be needed in order to make a decision about whether an effort needs to be made to control kudzu, and answer how this information would help in making a decision. A minimal amount of relevant information is provided to support the claim with a brief citation from the article (the total area covered is now thought to only be only the size of a small county). The response reflects a minimal synthesis and understanding of complex ideas with the inclusion of a relevant piece of additional information that would be needed to make a decision (you need to do more research on what the kudzu do to help the ecosystem), although there is no attempt to explain this additional information, and nothing is included that speaks to how this additional information would help in making a decision.

Part A. According to page 8 kudzu does not pose a major problem for ecosystems that are not infested with kudzu because the Kudzu prevents washing soil away and it does a great job of doing it.

Part B. Additional information that would be needed in order to make a decision about whether to control Kudzu would be a average chart that tells you how many trees have been killed by kudzu. If you know this information then you could think if kudzu has killed many trees then we need to stop it. But if kudzu hasn't killed many trees then you can think kudzu hasn't killed a lot of trees so the problem is not a major problem. With this information you can determine how to handle the situation of kudzu.

Anchor Annotation, Paper 7
Score Point 2

There is evidence that the student has a limited understanding of how to cite specific information from the article that supports a claim that kudzu does not pose a major problem, explain what additional information would be needed in order to make a decision about whether an effort needs to be made to control kudzu, and answer how this information would help in making a decision. The response contains an attempt to support a claim that kudzu does not pose a major problem, but the information provided centers on the fact that kudzu prevents erosion, which does not support the claim (Kudzu prevents washing soil away and it does a great job of doing it). The explanation regarding additional information and how it would help in making a decision is relevant and reasonable (information that would be needed in order to make a decision about whether to control Kudzu would be a average chart that tells you how many trees have been killed by kudzu. If you know this information then you could think if kudzu has killed many trees then we need to stop it . . . if kudzu hasn't killed many trees . . . the problem is not a major problem. With this information you can determine how to handle the situation). The strength of the information in Part B is sufficient to reflect limited synthesis and understanding of the complex ideas associated with the question.

Part A. According to the text, kudzu does not pose a major threat for ecosystems because the U.S. Forest Service has done surveys that concludes 227,000 acres of forest is impacted, so that means the total area covered is now thought to be the size of a small country. Which also means 99.9% of the south's 200 million acres of forest are believed to be kudzu free.

Part B. Based on the passage, additional information that would be needed in order to make a decision about whether an effort needs to be made to control kudzu would be, kudzu is an invasive species. So it kills wide amounts of forest.

Anchor Annotation, Paper 8
Score Point 2

There is evidence that the student has a limited understanding of how to cite specific information from the article that supports a claim that kudzu does not pose a major problem, explain what additional information would be needed in order to make a decision about whether an effort needs to be made to control kudzu, and answer how this information would help in making a decision. The response contains citations from the article with relevant information that supports the claim (the U.S. Forest Service has done surveys that concludes 227,000 acres of forest is impacted, so that means the total area covered is now thought to be the size of a small country. Which also means 99.9% of the south's 200 million acres of forest are believed to be kudzu free). The misspelling of the word "county" as "country" does not detract. The explanation regarding additional information needed to make a decision about whether or not to control kudzu contains a significant flaw since it restates information that is already known (kudzu is an invasive species. So it kills wide amounts of forest). This indicates limited understanding and limited synthesis of the question being asked. Overall, the response contains an attempt to address all facets of the question using limited knowledge and skills with the understanding demonstrated in Part A.

Part A.
The U.S. Forest Service has done new surveys that indicate only about 227,000 acres of forest land are impacted. 99.9% of the South's 200 million acres of forest are believed to be kudzu-free.

Part B.
Is kudzu dangerous to people and animals? If yes then it needs to be controlled right away, but if not then it is fine we do not need to control it.

Anchor Annotation, Paper 9
Score Point 2

There is evidence that the student has a limited understanding of how to cite specific information from the article that supports a claim that kudzu does not pose a major problem, explain what additional information would be needed in order to make a decision about whether an effort needs to be made to control kudzu, and answer how this information would help in making a decision. The response contains citations from the article with relevant information that supports the claim (only about 227,000 acres of forest land are impacted. 99.9% of the South's 200 million acres of forest are believed to be kudzu-free). The explanation regarding additional information needed to make a decision about whether or not to control kudzu is reasonable, but contains logic that is flawed (Is kudzu dangerous to people and animals? If yes then it needs to be controlled right away, but if not then it is fine we do not need to control it). The additional information about possible harm to people and animals by kudzu is relevant; however, a lack of danger to people and animals does not necessarily mean that kudzu would not need to be controlled. This response is bit stronger than both Anchor papers 7 and 8, but still indicates limited synthesis of the complex ideas associated with the question.

Part A. Acording to the article kudzu is not a problem because it helps the soil, only the size of a small country, and some insects help tame it. First, it helps the soil. “It keeps the soil from washing away,” as said in the article. Secondly, it isn’t all over America only a small part. “Kudzu only covers the amount of a small countrie,” as shown in the map and talked about in the article. Finally, there is an insect called kudzu bug that eats kudzu. “The kudzu biomass was reduced by 2/3 in just two years,” as state in the last paragraph.

Part B.
Some additional information would be how it effects people, how much land it fully covers, and how fast it grows. I would need to know this to know if it was a harm or not. If it grew fast then there might be a problem.

Anchor Annotation, Paper 10
Score Point 3

There is evidence that the student has a general understanding of how to cite specific information from the article that supports a claim that kudzu does not pose a major problem, explain what additional information would be needed in order to make a decision about whether an effort needs to be made to control kudzu, and answer how this information would help in making a decision. The response contains citations from the article with relevant information that supports the claim (it isn’t all over America only a small part. “Kudzu only covers the amount of a small countrie” . . . there is an insect called kudzu bug that eats kudzu. “The kudzu biomass was reduced by 2/3 in just two years”). Note that citations drawn from the information associated with the kudzu bug are acceptable. The information regarding kudzu’s ability to prevent erosion is a minor flaw since it is irrelevant to the claim. The explanation regarding additional information needed to make a decision about whether or not to control kudzu is reasonable and generally complete (how it effects people, how much land it fully covers, and how fast it grows), but contains a minor flaw since some of this information is already partially addressed; namely how much land kudzu covers. The response contains an attempt to answer how this information would help in making a decision on whether or not to control kudzu, but this answer is vague (I would need to know this to know if it was a harm or not). Overall, the response indicates a general synthesis and understanding of the multi-dimensional question.

Part A. Kudzu does not pose a major problem to ecosystems that aren't currently infested. According to research done by Hannah, there are 99.9% of forests kudzu free. Also, The Forest Service predicts only about a 2,500 acre spread a year. Which is not alot considering currently it only covers about the size of "a small county."

Part B. In order to make a decision on weither or not kudzu needs to be controlled I must first know what benefits is it doing to the ecosystem. With this I would know what it would be taking away. Also, I would like to know if it's doing any harm to insects or animals we need. If I knew these things I would decide weither or not kudzu should be controlled. The information would help me to see what kudzu is supplying and taking away from ecosystems.

Anchor Annotation, Paper 11
Score Point 3

There is evidence that the student has a general understanding of how to cite specific information from the article that supports a claim that kudzu does not pose a major problem, explain what additional information would be needed in order to make a decision about whether an effort needs to be made to control kudzu, and answer how this information would help in making a decision. The response contains citations from the article with integrated, relevant information that supports the claim (there are 99.9% of forests kudzu free. Also, The Forest Service predicts only about a 2,500 acre spread a year. Which is not alot considering currently it only covers about the size of "a small county"). The explanation regarding additional information needed to make a decision about whether or not to control kudzu is reasonable and relevant (know what benefits is it doing to the ecosystem. With this I would know what it would be taking away . . . know if it's doing any harm to insects or animals we need). The response contains an answer to how this information would help in making a decision on whether or not to control kudzu, indicating general synthesis (The information would help me to see what kudzu is supplying and taking away from ecosystems). The answer to **how** the additional information will help to make a decision is a bit stronger in this response than in Anchor paper 10. Stronger, more complete explanations of additional information needed, and how that information would help to form a decision, is necessary to move into the score point 4's.

Part A. Kudzu doesn't pose as a major problem to ecosystems without infested kudzu because kudzu is spreading slowly. In the article, some highlights about kudzu are: kudzu only increases about 2,500 acres a year, 99.9% of the South's 200 million acres of forest is kudzu free, and some kudzu is dying off from roadside weeds. This is why kudzu isn't a major threat to ecosystems.

Part B. Some additional information that is needed to make a decision about what to do about kudzu infestations are: how kudzu affects an ecosystem, what the cure to kudzu would cost, and would the troble to get rid of kudzu be worth it? This information would help people make a decision about kudzu because they would learn the benefits and cons that kudzu causes (make a decision faster).

Anchor Annotation, Paper 12
Score Point 3

There is evidence that the student has a general understanding of how to cite specific information from the article that supports a claim that kudzu does not pose a major problem, explain what additional information would be needed in order to make a decision about whether an effort needs to be made to control kudzu, and answer how this information would help in making a decision. The response contains citations from the article with relevant information that supports the claim (kudzu is spreading slowly . . . kudzu only increases about 2,500 acres a year, 99.9% of the South's 200 million acres of forest is kudzu free . . . some kudzu is dying off from roadside weeds). Note that citations drawn from the information associated with the kudzu bug are acceptable. The explanation regarding additional information needed to make a decision about whether or not to control kudzu is reasonable and relevant (how kudzu affects an ecosystem, what the cure to kudzu would cost, and would the troble to get rid of kudzu be worth it?). General synthesis is achieved with a relevant, but general, answer to how this information would help in making a decision on whether or not to control kudzu (This information would help people make a decision about kudzu because they would learn the benefits and cons that kudzu causes [make a decision faster]).

Part A. Kudzu isn't a major problem for ecosystems not currently infested with it because the forest service only predicts an increase of no more than 2,500 acres of it each year. Also, 99.9% of the South's 200 million acre forests are believed to be kudzu free. Only about 227,000 acres of forest land are believed to be infected with Kudzu. For those reasons it is not a major problem.

Part B. Some additional information that could be added are, "How many trees does it kill a year?" and "How many species does it impact?" This information could be important because if it's killing to many trees then it can be a big problem. It would also be important to know how many species it impacts because it could potentially affect the ecosystem and food chain.

Anchor Annotation, Paper 13
Score Point 4

There is evidence that the student has a complete and thorough understanding of how to cite specific information from the article that supports a claim that kudzu does not pose a major problem, explain what additional information would be needed in order to make a decision about whether an effort needs to be made to control kudzu, and answer how this information would help in making a decision. The response contains citations from the article with complete, relevant information that supports the claim (the forest service only predicts an increase of no more than 2,500 acres of it each year. Also, 99.9% of the South's 200 million acre forests are believed to be kudzu free. Only about 227,000 acres of forest land are believed to be infected with Kudzu). The explanation regarding additional information needed to make a decision about whether or not to control kudzu is reasonable and relevant ("How many trees does it kill a year?" and "How many species does it impact?"). The answer to how this information would help in making a decision on whether or not to control kudzu is relevant and strengthens the response, indicating complete synthesis and showing understanding of ecosystem impacts (This information could be important because if it's killing to many trees then it can be a big problem. It would also be important to know how many species it impacts because it could potentially affect the ecosystem and food chain). The explanation regarding additional information and the answer to how the additional information will help to make a decision are more specific and better synthesized in this response than in Anchor paper 12.

Part A. The kudzu plant does not pose a major problem for for ecosystems not currently infested with kudzu. In the paragraph with the bulleted list, one the highlights from the passage was that "99.9% of the South's 200 million acres of forest are believed to be kudzu-free." This meaning that only 200,000 acres out of 200,000,000 acres are infested in the South. "The Forest Survice expects an increase of no more than 2,500 acres a year, in spite of other, much larger predictions."

Part B. Some additional information needed to make a decision about whether an effort needs to be made to control kudzu is how much it would cost, statistics of how fast it's spreading, and exactly how harmful it is. We need to figure out how much it will cost so that we know if it's worth it. It would be helpful to know how fast it is spreading in order to know how fast we need to attempt to control it. We also need to be aware of the harm of it so that we don't waste time and money on a very minor problem.

Anchor Annotation, Paper 14
Score Point 4

There is evidence that the student has a complete and thorough understanding of how to cite specific information from the article that supports a claim that kudzu does not pose a major problem, explain what additional information would be needed in order to make a decision about whether an effort needs to be made to control kudzu, and answer how this information would help in making a decision. The response contains citations from the article with complete, relevant information that supports the claim (the paragraph with the bulleted list . . . "99.9% of the South's 200 million acres of forest are believed to be kudzu-free." This meaning that only 200,000 acres out of 200,000,000 acres are infested in the South. "The Forest Survice expects an increase of no more than 2,500 acres a year, in spite of other, much larger predictions."). The determination and inclusion of the actual number of acres infested provides additional synthesis showing an effective application of the information to support the claim. The explanation regarding additional information needed to make a decision about whether or not to control kudzu along with how this information would help is insightful, relevant, and tightly integrated, indicating complete synthesis and understanding (how much it would cost, statistics of how fast it's spreading, and exactly how harmful it is . . . need to figure out how much it will cost so that we know if it's worth it. It would be helpful to know how fast it is spreading in order to know how fast we need to attempt to control it . . . also need to be aware of the harm of it so that we don't waste time and money on a very minor problem).

Part A. Firstly, the third bullet states, “The total area covered is now thought to be only the size of a small county”, meaning that if we were to put all of the kudzu in one area, it would be about half the size of the county you live in. Also, the fourth bullet states, “99.9% of the South’s 200 million acres of forest are believed to be kudzu free”, meaning that only 0.1% of the South’s 200,000,000 acres is infested.

Part B. I believe that a projection in 10 years should be included, as well as the effects on the enviroment, and the cost of actions to eliminate the kudzu. The projection would show us how much kudzu would go if we took no action against it, the effects would obviously show what kudzu does to its surroundings, and the cost would show how much of an investment the US would need to make to stop the spread of kudzu. These factors would play a key role in deciding if kudzu is worth fighting. or ignoring.

Anchor Annotation, Paper 15
Score Point 4

There is evidence that the student has a complete and thorough understanding of how to cite specific information from the article that supports a claim that kudzu does not pose a major problem, explain what additional information would be needed in order to make a decision about whether an effort needs to be made to control kudzu, and answer how this information would help in making a decision. The response contains citations from the article with complete, relevant information that supports the claim (“The total area covered is now thought to be only the size of a small county”. . . “99.9% of the South’s 200 million acres of forest are believed to be kudzu free”, meaning that only 0.1% of the South’s 200,000,000 acres is infested). The explanation regarding additional information needed to make a decision about whether or not to control kudzu along with how this information would help is insightful, relevant, and tightly integrated, indicating complete synthesis and understanding (a projection in 10 years should be included, as well as the effects on the environment, and the cost of actions to eliminate the kudzu. The projection would show us how much kudzu would go if we took no action against it, the effects would obviously show what kudzu does to its surroundings, and the cost would show how much of an investment the US would need to make to stop the spread of kudzu. These factors would play a key role in deciding if kudzu is worth fighting. or ignoring).

SC071613_00b

Hannah wondered how people might be able to control kudzu in those places where it is a problem. She read about different methods that have been proposed to eliminate kudzu from infested areas.

4

SC071613_04_5,1

Which methods of kudzu control should a community choose in order to minimize unwanted impacts on the environment?

Select the TWO **best** answers.

A Using goats and cattle to eat the vine

B Spraying the vines with oil and burning them

C Infecting the plant with a disease that kills it

D Spraying chemical weed killers on the vines while they are actively growing

E Repeatedly mowing down newly sprouted vines until the roots finally die because of the lack of leaves to perform photosynthesis

Released Item Performance

Kentucky Summative Assessments

Spring 2023
Grade 7
Science

Item: SC071613_04
Book Question Number: 4

Standard: MS-ETS1-2

Item Type: MS
Key: A,E

Student Group	Number of Students	Percent Correct	Average Item Score	Item Breakout Statistics - Score Percentages		
				Score 0 (%)	Score 1 (%)	Score 2 (%)
All Students	**24,792**	46.0%	0.92	29%	51%	21%
Gender						
Female	**11,872**	44.7%	0.89	30%	50%	20%
Male	**12,919**	47.2%	0.94	27%	51%	22%
Ethnicity						
African American	**2,745**	38.1%	0.76	35%	55%	11%
American Indian or Alaska Native	**32**	45.3%	0.91	28%	53%	19%
Asian	**506**	50.0%	1.00	26%	48%	26%
Hispanic or Latino	**2,237**	42.5%	0.85	30%	55%	15%
Native Hawaiian or Pacific Islander	**39**	39.7%	0.79	38%	44%	18%
White (non-Hispanic)	**17,998**	47.7%	0.95	27%	50%	23%
Two or more races	**1,234**	44.1%	0.88	31%	51%	19%
Migrant	**131**	43.1%	0.86	24%	65%	11%
English Learner	**1,312**	37.2%	0.74	34%	58%	8%
Economically Disadvantaged	**15,085**	43.6%	0.87	30%	52%	17%
Students with Disabilities	**4,203**	40.7%	0.81	33%	53%	14%

SC071613_00c

She did some research and found that some of the same characteristics that make kudzu an invasive species also make it difficult to control effectively. [Some of the characteristics that make kudzu difficult to control are listed below.]

- Kudzu grows rapidly (30 centimeters per day).
- Kudzu stems can create new roots wherever they touch the soil.
- Kudzu grows well in poor soil.
- Kudzu prefers full sun, but can tolerate partial shade.
- Kudzu's extensive root structure allows regrowth after vines are killed.

Everything she read emphasized how harmful kudzu has been. Hannah wondered if there were any relationships where kudzu could be beneficial.

5

SC071613_05_2

Which one of these **best** describes a relationship where both kudzu and another organism benefit?

A Trees provide a structure for the vines to grow on.

B Insects spread the pollen and consume the nectar.

C Consumer organisms eat the leaves and gain nutrients.

D Decomposer organisms recycle the dead leaves and increase their population.

Released Item Performance

Kentucky Summative Assessments

Spring 2023
Grade 7
Science

Item: SC071613_05
Book Question Number: 5

Standard: 06-LS2-2

Item Type: MC
Key: B

Student Group	Number of Students	Percent Correct	Average Item Score	Item Breakout Statistics - Answer Choice Options			
				A (%)	B (%)	C (%)	D (%)
All Students	**24,787**	20%	0.20	20%	20%	25%	34%
Gender							
Female	**11,870**	18%	0.18	20%	18%	26%	36%
Male	**12,916**	22%	0.22	20%	22%	25%	33%
Ethnicity							
African American	**2,742**	19%	0.19	24%	19%	25%	32%
American Indian or Alaska Native	**32**	19%	0.19	25%	19%	28%	28%
Asian	**506**	23%	0.23	16%	23%	26%	34%
Hispanic or Latino	**2,230**	18%	0.18	22%	18%	26%	34%
Native Hawaiian or Pacific Islander	**39**	13%	0.13	28%	13%	21%	38%
White (non-Hispanic)	**18,003**	21%	0.21	19%	21%	25%	35%
Two or more races	**1,234**	20%	0.20	22%	20%	26%	32%
Migrant	**131**	11%	0.11	18%	11%	28%	42%
English Learner	**1,306**	20%	0.20	25%	20%	22%	33%
Economically Disadvantaged	**15,085**	19%	0.19	22%	19%	26%	34%
Students with Disabilities	**4,208**	20%	0.20	23%	20%	25%	32%

SC071613_00d

Hannah wondered about other nonnative species. She learned that many of them are considered invasive because of their effect on the native ecosystem.

6

SC071613_06_2

Which one answer **best** explains how ecosystem interactions could be used to identify a species as invasive?

A The interactions with the species are primarily competitive, with the native species outcompeting the nonnative species.

B The interactions with the species are primarily competitive, with the nonnative species outcompeting the native species.

C The interactions with the species are primarily beneficial, with the nonnative species helping to increase the success of both species.

D The interactions with the species are primarily beneficial, with the nonnative species helping to increase the success of the native species.

Released Item Performance

Kentucky Summative Assessments

Spring 2023
Grade 7
Science

Item: SC071613_06
Book Question Number: 6

Standard: 06-LS2-2

Item Type: MC
Key: B

Student Group	Number of Students	Percent Correct	Average Item Score	Item Breakout Statistics - Answer Choice Options			
				A (%)	B (%)	C (%)	D (%)
All Students	**24,780**	51%	0.51	17%	51%	18%	15%
Gender							
Female	**11,867**	50%	0.50	16%	50%	18%	16%
Male	**12,912**	52%	0.52	17%	52%	17%	14%
Ethnicity							
African American	**2,743**	39%	0.39	17%	39%	26%	18%
American Indian or Alaska Native	**32**	53%	0.53	16%	53%	13%	19%
Asian	**505**	62%	0.62	13%	62%	14%	12%
Hispanic or Latino	**2,231**	42%	0.42	17%	42%	22%	19%
Native Hawaiian or Pacific Islander	**39**	49%	0.49	21%	49%	18%	13%
White (non-Hispanic)	**17,995**	53%	0.53	17%	53%	16%	14%
Two or more races	**1,234**	50%	0.50	17%	50%	19%	14%
Migrant	**131**	37%	0.37	18%	37%	21%	24%
English Learner	**1,304**	32%	0.32	17%	32%	28%	23%
Economically Disadvantaged	**15,080**	46%	0.46	18%	46%	20%	16%
Students with Disabilities	**4,206**	37%	0.37	19%	37%	23%	21%

SC071613_00e

Hannah learns that kudzu isn't the most widespread invasive species in her neighborhood. Her dad tells her that he spends hours every year trying to eliminate a fast-growing vine called honeysuckle from their backyard. She finds out that this is a problem all across the state, and that Kentucky actually has developed plans to control it. These plans were developed after considering a number of criteria and constraints, including those in the table.

Criteria for Success	Constraints on Implementation
• Solution should reduce the invasive population as much as possible. • Solution should have minimal or no impact on the ecosystem. • Solution should last as long as possible before needing to be repeated.	• Solution should have the lowest cost possible. • Solutions with significant effects on the ecosystem can't be considered. • Solution should require the least amount of labor. • Solution should be as attractive as possible.

7

SC071613_09_2,5

Using the Criteria for Success and Constraints on Implementation from the table, select the TWO **best** reasons below why government agencies refuse to remove kudzu by spraying oil and burning the plant.

A Solution should reduce the invasive population as much as possible.

B Solution should have minimal or no impact on the ecosystem.

C Solution should last as long as possible before needing to be repeated.

D Solution should have lowest cost possible.

E Solution should be as attractive as possible.

Released Item Performance

Kentucky Summative Assessments

Spring 2023
Grade 7
Science

Item: SC071613_09
Book Question Number: 7

Standard: MS-ETS1-1

Item Type: MS
Key: B,E

Student Group	Number of Students	Percent Correct	Average Item Score	Item Breakout Statistics - Score Percentages		
				Score 0 (%)	Score 1 (%)	Score 2 (%)
All Students	**24,777**	44.5%	0.89	25%	62%	14%
Gender						
Female	**11,866**	45.2%	0.90	25%	61%	15%
Male	**12,910**	43.9%	0.88	25%	63%	13%
Ethnicity						
African American	**2,739**	38.4%	0.77	33%	58%	10%
American Indian or Alaska Native	**32**	45.3%	0.91	22%	66%	13%
Asian	**505**	50.9%	1.02	16%	66%	18%
Hispanic or Latino	**2,231**	40.5%	0.81	30%	60%	11%
Native Hawaiian or Pacific Islander	**39**	38.5%	0.77	31%	62%	8%
White (non-Hispanic)	**17,996**	45.9%	0.92	23%	62%	15%
Two or more races	**1,234**	43.3%	0.87	26%	61%	13%
Migrant	**131**	40.5%	0.81	26%	67%	7%
English Learner	**1,305**	34.7%	0.69	37%	56%	7%
Economically Disadvantaged	**15,076**	41.5%	0.83	28%	61%	11%
Students with Disabilities	**4,202**	38.2%	0.76	34%	56%	10%

As Hannah reads more, she finds a government website that lists 27 different plants as "severe threats" and contains a map showing large areas of Kentucky that are over 80% covered by invasive plants.

The website lists possible plans for dealing with these areas as shown below.

Plans for Dealing with Invasive Plants

Plan	What It Does	Positives	Negatives
Heavy spraying of herbicides (plant killers) followed by replanting	Kills all invaders, allows native species to be replaced	Allows people to control which species are replanted, effective	Expensive, uses man-made chemicals, some invaders aren't easily killed
Manual removal (digging, sawing)	Removes invaders without damaging native species	No chemicals used, doesn't kill native plants	Requires many hours of work and many workers, very expensive, works best in small areas
Preventing spreading only	Spray or manually remove invasive plants only when they move into new areas	Protects new areas from invaders, costs less than other plans	Does nothing to improve areas already invaded
No action	Allows invasive species to continue pushing out native plants and eventually taking over an area	No cost, no immediate effort required	Native species may be lost forever, other plants, animals, and people may be harmed by environmental changes

Hannah reads the different plans and considers which ones best meet the criteria and constraints for success.

8

SC071613_08_1

Which one combination of criteria for success and constraints on implementation does the plan that calls for "preventing spreading only" **best** meet?

A The solution should have minimal or no impact on the ecosystem, and the solution should have the lowest cost possible.

B The solution should reduce the invasive population as much as possible, and the solution should be as attractive as possible.

C The solution should reduce the invasive population as much as possible, and the solution should require the least amount of labor.

D The solution should have minimal or no impact on the ecosystem, and the solution with significant effects on the ecosystem can't be considered.

Released Item Performance

Kentucky Summative Assessments

Spring 2023
Grade 7
Science

Item: SC071613_08
Book Question Number: 8

Standard: MS-ETS1-1

Item Type: MC
Key: A

Student Group	Number of Students	Percent Correct	Average Item Score	Item Breakout Statistics - Answer Choice Options			
				A (%)	B (%)	C (%)	D (%)
All Students	**24,777**	29%	0.29	29%	23%	23%	25%
Gender							
Female	**11,865**	28%	0.28	28%	23%	23%	26%
Male	**12,911**	29%	0.29	29%	24%	23%	24%
Ethnicity							
African American	**2,740**	23%	0.23	23%	29%	25%	22%
American Indian or Alaska Native	**32**	22%	0.22	22%	19%	25%	34%
Asian	**504**	38%	0.38	38%	19%	17%	25%
Hispanic or Latino	**2,230**	25%	0.25	25%	25%	25%	25%
Native Hawaiian or Pacific Islander	**39**	44%	0.44	44%	15%	21%	21%
White (non-Hispanic)	**17,997**	30%	0.30	30%	23%	23%	25%
Two or more races	**1,234**	28%	0.28	28%	24%	23%	25%
Migrant	**131**	20%	0.20	20%	25%	23%	32%
English Learner	**1,305**	21%	0.21	21%	29%	24%	26%
Economically Disadvantaged	**15,078**	26%	0.26	26%	25%	24%	25%
Students with Disabilities	**4,206**	24%	0.24	24%	27%	24%	25%

Investing in Kentucky's Future, One Student at a Time